Does Physician Conscience–Based Refusal to Perform Abortions Increase Self–Induced Abortion?

Evidence from Italian Provinces

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Does Physician Conscience-Based Refusal to Perform Abortions Increase Self-Induced Abortion? Evidence from Italian Provinces [*]

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Abstract

Among European countries, Italy has one of the highest percentages of doctors in public hospitals who deny performing abortions on the basis of conscientious objection. Using (i) newly collected Italian data from 2015 to 2018 on the share of conscientious objectors in each province-year and (ii) individual-level hospital discharge data on likely self-induced abortion, I evaluate the relationship between physicians conscientious objection rates and the probability of hospital discharge after likely self-induced abortions. I find that a 10% increase in the share of objecting gynecologists is associated with a 4 to 5% increase in the individual probability of self-inducing an abortion.

 Keywords: *Abortion Access; Conscientious Objection; Illegal Abortion*

JEL Classification: I10; I11; I18; J13

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1 Introduction

Conscientious objection is defined as the *"refusal to participate in an activity that an individual considers incompatible with his/her religious, moral, philosophical, or ethical beliefs."*[1] The concept of conscientious objection was born in the military context during the mid-18th-century and it was expanded to healthcare provision about a century later (Stahl et al., 2017). In 1973, in response to Roe v. Wade U.S. Supreme Court decision that legalized abortion, Senator Frank Church sponsored the first federal healthcare conscience clause. The Church Amendment allowed federally funded physicians, nurses, and hospitals to refuse to perform abortions or sterilizations on the basis of religious or moral convictions or policies. Within a year after the passage of the amendment, 28 states had enacted similar conscience clauses (Stahl et al., 2017). Nowadays, 46 U.S. states[2] and 21 European countries allow individual healthcare providers to refuse to provide abortion services (Heino et al., 2013).

The recent changes in the U.S. abortion landscape open the door to possible changes in the level of the actual invocation of the clause by physicians. On June 24, 2022, the U.S. Supreme Court issued a decision in Dobbs v. Jackson Women's Health Organization case, overruling both Roe v. Wade (1973) and Planned Parenthood v. Casey (1992). The court decision takes away the constitutional right to abortion and gives individual states the full power to regulate abortion. As of December 2022, 13 U.S. states have banned abortion completely.[3,4] It is plausible that the latest wave of restrictions to abortion in the U.S. may lead to changes in values and beliefs – as well as in stigmas – that may affect physicians' decisions to provide abortion. In this context is extremely relevant to understand how

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[1]International Covenant on Civil and Political Rights (1966)

[2]Guttmacher Institute: https://www.guttmacher.org/state-policy/explore/refusing-provide-health-services

[3]https://www.nytimes.com/interactive/2022/us/abortion-laws-roe-v-wade.html

[4]Regulations restricting abortion access in recent years have been implemented in other western states. On January, 27 2021 Poland ruled to make abortion legal only in cases when the pregnancy is a result of a criminal act or when the woman's life or health is in danger and the following year restrictions to abortion have been introduced in Hungary.

physicians' discretion regarding abortion provision affects abortion access.

The very few studies on conscientious objection among health care providers (Autorino et al., 2020, Bo et al., 2015, Meier et al., 1996) suggest that the effect of objection on abortion access is conditional on the actual number of doctors declaring objection. Using publicly available data on objection in Italy,[5] Bo et al. (2015) and Autorino et al. (2020) provide evidence of the fact that when the percentage of physicians declaring objection is too high abortion access is restricted. On the contrary, the presence of the conscience clause itself seems not to have an effect on abortion provision in contexts with relatively low-level of objection and not controlling for a measure of physicians' actual invocation of the clause (Meier et al., 1996).

High percentages of objectors may result in many women being denied a service that they legally qualify for, pushing them to resort to homemade practices or clandestine abortion to terminate the unwanted pregnancy (Chavkin et al., 2013). As underlined in the review by Chemlal and Russo (2019) and by the Guttmacher Institute, self-managed abortion occurs across settings, including where abortion is legally available on request and accessible. Among the reasons why women in settings where abortion is legal decide to self-manage an abortion, there is the "staff unwillingness to provide abortion or make a referral" on the ground of personal, religious, and cultural reasons (Chemlal and Russo, 2019). According to a recent study, between 2011 and 2015 the number of Google searches using terms related to self-abortion increased from 119,000 to 700,000 and these searches were more common in states with the highest number of abortion restrictions (Stephens-Davidowitz, 2016). In Texas, another study estimated that at least 100,000 Texas residents had ever attempted to end a pregnancy on their own (Grossman et al., 2015).

In this paper, I evaluate the impact of the share of gynecologists who declare objection on the individual probability of illegal abortion in Italy. Italy constitutes a particular case

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[5]They used the data collected every year by the Ministry of Health and published in the annual report: "Relazione del Ministero della Salute sulla attuazione della legge contenente norme per la tutela sociale della maternitá e per l'interruzione volontaria di gravidanza"

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since among western countries, it has one of the highest shares of gynecologists in public hospitals who deny performing abortions on the basis of conscientious objection and it is the only state collecting individual data on objection. Some preliminary evidence of this mechanism is given by the trends in the abortion rate, fertility rate, and contraception. The abortion rate in Italy has dramatically decreased in the last decades, but this trend has not been accompanied by a rise in the fertility rate, which instead is also decreasing over time (see Figure A.1 of the Appendix). The rates of abortions and births are also particularly low from a comparative perspective, as shown in Figure 1. The two panels plot the information on birth and abortion rates for the European countries[6] for which the information is available. Among them, Italy shows the lowest birth rate and ranks low also for the abortion rate. In addition, Italy has poor access to contraception when compared to other European countries.[7] The discrepancy among these trends may be partly due to the increasing phenomenon of illegal abortions. In 2016, the Italian National Institute of Statistics (Istat), in collaboration with the Italian Institute of Health, estimated the number of clandestine abortions in Italy for the years 2014, 2015, and 2016, as around 10.000-13.000 cases per year. For this estimate, they use the positive difference between the expected births and reported births, minus the registered voluntary terminations of pregnancy (Ministero Della Salute, 2017).

I use a regression model that includes three types of fixed effects: province of abortion, province of birth, and year fixed effects. The identification strategy relies on fixed effects that should capture all the time-invariant characteristics of the place of the abortion and the place a woman comes from (especially due to the short time frame), plus possible time shocks. In addition, the richness of the data allows the researcher to include many individual control variables.[8] To asses the validity of the identification strategy, I follow

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[6]I chose to use European-only countries as comparison group since Italy shares with them cultural traits. This may imply more similar reproductive behaviors, making these trends more comparable.

[7]See the Contraception Atlas at `https://www.epfweb.org/node/89`

[8]The application of two-way fixed effect estimates in the case of multiple periods adoption of treatment has been criticized by the recent literature as producing biased estimates in the presence of heterogeneous and dynamic treatment effects (Goodman-Bacon, 2021). At the time of this paper's writing, an estimator that expunges bias caused by heterogeneous and dynamic treatment effects when dealing with continuous

Card et al. (2019) and implement a series of OLS models for a set of observed individual characteristics, looking for evidence of correlation with the measure of objection, finding no significant coefficients. The empirical analysis reveals that a 10% increase in the share of objecting gynecologists is associated with a 4 to 5% increase in the individual probability of self-inducing an abortion.

To the extent of my knowledge, no previous studies have tried to measure the effect of objection on illegal abortion. Also, the analysis relies on a unique dataset on conscientious objection collected by the author for the period 2015-2018. These data are matched with the restricted dataset compiled by the Italian National Institute of Statistics *Survey on hospital discharge after miscarriages*, that comprises anonymized information on all the miscarriages recorded in Italy every year.

The paper is organized as follows. Section 2 describes the Italian situation regarding abortion accessibility and the phenomenon of self-induced abortions. Section 3 is dedicated to the data and Section 4 contains the empirical analysis. The last Sections are dedicated to several robustness checks, and the discussion and conclusion.

2 Background

2.1 Conscientious Objection

Italian law (*law 194 of May 22, 1978*[9] *on the adoption of social protection of motherhood and the voluntary termination of pregnancy*) guarantees the right for women to terminate a pregnancy on request during the first 90 days. Abortions are performed free of charge in public hospitals or private structures authorized by the regional health authorities. The law also allows termination in the second trimester of the pregnancy only when the life of the woman would be at risk if the pregnancy is carried to term or the fetus carries genetic or other serious malformations which would put the mother at risk

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treatment variables has not yet been solved (other than by dichotomizing treatment).

[9] https://www.trovanorme.salute.gov.it/norme/dettaglioAtto?id=22302

of serious psychological or physical consequences.

The law gives the option for health professionals to claim the right to refuse to perform abortions (unless the personal intervention is essential to save the life of a woman in imminent danger), i.e., to declare conscientious objection. Italy has one of the highest percentages of objecting gynecologists with respect to the other countries: according to data from the Ministry of Health, between 1997 and 2016 there was a 12.9% increase in the number of gynecologists who refuse to perform abortions, from 62.8 percent to 70.9 percent, the highest percentage ever recorded (Figure 2).

This percentage varies widely across regions. Figure 3 shows the distribution of objecting gynecologists across Italian regions for the four years of my sample (2015-2018). As of 2016, for example, the percentage was higher than the national average in Southern Italy (83.5%) and Sicily and Sardinia (77.7%), and lower in Central (70.1%) and Northern Italy (63.9%). As a result, voluntary abortion was performed only in 60 percent of the hospitals in the country that have a gynecologist department.

The latest annual relation of the Ministry of Health (2020) confirms that the number of objectors does not create a problem for the supply of the service. Despite the Ministry's consideration, in a 2013 decision, the European Council established that the Italian situation was discriminatory and violated the right to health. In 2016 the Council of Europe verified that Italy was violating the European Social Charter at two main levels. On one hand, it was violating the right to protection of the health of women seeking an abortion, and on the other, it was violating the right to work and to dignity at work of non-objecting medical practitioners, because of different treatment and moral harassment. Again on January 24, 2019, the European Committee of Social Rights of the Council of Europe reaffirmed that there was "disparity of access" to abortion in Italy. Nowadays, Italy is a special observed by the European Council.

There is very little empirical evidence on the impact of conscientious objection on abortion access, partly because of the limited data availability in most countries. Meier et al. (1996), analyzing how twenty-three different U.S. state-level abortion restrictions

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affected abortion rates, found the conscience clause that allows physicians to refuse to perform abortions to be irrelevant. However, the model incorporated only a dummy variable indicating the existence of this clause, and not a measure of physicians' actual invocation of the clause. For Italy, Bo et al. (2015) find a correlation at the regional level between the workload of non-objecting gynecologists and the waiting times needed to obtain an abortion. Autorino et al. (2020) use regional and individual data on abortion in Italy between 2002 and 2016 and find the share of objecting gynecologists per region to be a significant driver of a woman's decision of having an abortion out of the region of residence and to increase largely the waiting times to obtain one.

Even if there is a very little piece of evidence on the consequences of objection, lots of authors have studied the impact of restricted or denied access to abortion on women's reproductive outcomes, finding a strong and significant association between restrictions on abortion access and the abortion rate (Colman and Joyce, 2011, Fischer et al., 2018, Grossman et al., 2017, Lindo, Myers, Schlosser and Cunningham, 2020, Quast et al., 2017, Venator and Fletcher, 2020). Fischer et al. (2018), Lu and Slusky (2019), Venator and Fletcher (2020), and Myers (2021) estimated that the decrease in the abortion rate was accompanied by an increase in the birth rate, but of smaller size. On the opposite, Lindo, Myers, Schlosser and Cunningham (2020) find no evidence of this phenomenon and explain this also through the higher accessibility, safety, and lower cost of modern methods to self-induce an abortion.

Religious justification is usually accepted without argument as the primary motivation behind conscientious objection and, not surprisingly, higher levels of self-described religiosity are associated with higher levels of disapproval and objection regarding the provision of certain procedures (Fonnest et al., 2000). Several empirical studies confirm self-reported religiosity to be associated with unwillingness to perform abortion (Aiyer et al., 1999, Hammarstedt et al., 2005). Looking at the existing literature (for a review see (Chavkin et al., 2013, De Zordo and Mishtal, 2011, Fiala and Arthur, 2014) prevalent causes of objection include: (1) lack of economic incentive; (2) stigmatization, i.e.

non-objecting doctors suffer discrimination and stigmatization; (3) career considerations. Silvana Agatone, a gynecologist and founder of the LAIGA (Libera Associazione Italiana Ginecologi per l'applicazione della legge 194/78) association of non-conscientious objectors, suggests that widespread conscientious objection in Italy has little to do with religious or moral beliefs and more to do with doctor's careers: *"Non-objector gynecologists are often seen as the "dirty" ones, sometimes colleagues isolate them. [...] Moreover, they have more difficulties in advancing their career. The reason is simple: the majority of hospital directors are conscientious objectors, and they often come from religious schools. So in turn they tend to prefer doctors who are objectors"*[10]; (4) inadequate medical training; (5) religious and moral beliefs; (6) the excessive workload for non-objectors: because of the very low number of doctors who perform abortions, non-objecting gynecologists are forced to spend all their work hours delivering such service, without accessing the other gynecological specialties; (7) abortion is seen as an uninteresting medical procedure.

Another important reason behind objection is the incorrect idea that facilitating access to safe and legal abortion services promotes abortions. Many practitioners feel uncomfortable with the notion of increasing the number of abortions and following this reasoning, lots of states around the world have restricted access to the service in the past decade (Joyce, 2011). Despite this idea, empirical pieces of evidence show that making legal abortion more broadly available does not increase the abortion rate but reduces maternal mortality and morbidity (Joyce, 2011). On the opposite, countries with the most restrictive abortion laws have the highest rates of abortion, as reported by a study by the Guttmacher Institute of March 2018.[11] The report also found that it is instead the easiest access to birth control that drives down abortion rates. Sedgh et al. (2012) estimate that in 2008, the abortion rate was lower in subregions where larger proportions of the female population lived under liberal laws than in subregions where restrictive abortion laws prevailed.

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[10]https://www.opendemocracy.net/en/5050/abortion-italy-conscientious-objection/

[11]http://www.guttmacher.org/fact-sheet/induced-abortion-worldwide

Abuse of conscientious objection can result in inequities in access, creating dispro-portionate risks for poor women, young women, ethnic minorities, and other particularly vulnerable groups of women who have fewer alternatives for obtaining services. In Italy, the right of performing abortions is extended to physicians working in private clinics, towards which wealthy women can appeal in case of limited public access.

2.2 Illegal Abortions

The drug most commonly used to self-induce an abortion is Misoprostol, mostly known under the brand name Cytotec, sold for the treatment of gastric ulcer, but inducing uterine contractions in 90% of the cases.[12] Misoprostol together with Mifepristone are the two drugs approved by the U.S. Food and Drug Administration (FDA) to perform a medication abortion.[13] Misoprostol alone is effective and safe for medical abortion in the first trimester (Raymond et al., 2019). Jones (2011) estimates that, during the period 2008-2009, 1.2 percent of abortion clinics patients reported that they have self-induced abortion on their own using Misoprostol.

Misoprostol is only available by prescription in Italy but, in addition to being sold on the black market, it is also provided by some international organizations fighting for women's reproductive rights. Among them, *Women on Web* is a non-profit organization providing support for the right to access safe abortion for all pregnant women around the world. In countries where abortion is legal, they provide medical prescriptions for Misoprostol to women less than 10 weeks pregnant. I requested access to their data to gain some evidence about the existence of the phenomenon. The dataset for the period 2015-2019 shows how the requests for medical prescription of Misoprostol in Italy are growing, with a big jump after the translation of the website in Italian in 2018 (Figure 4). This trend also proves how the demand for illegal abortion depends mainly on the acces-

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[12]Medical abortion within authorized facilities involves the use of Misoprostol together with Mifepris-tone.

[13]https://www.guttmacher.org/evidence-you-can-use/medication-abortion

sibility of the supply and it increases as the provision of the service increases. These data need to give empirical evidence of the existence of the phenomenon but they dramatically underestimate it. First of all, there exist many websites that freely provide or sell abortion pills online, as well as, medical staff or sellers in the black market, for which I do not have any information. Moreover, a lot of women could resort to abortion techniques that do not involve the use of pills (Grossman et al., 2010). Despite these limitations, these data constitute one of the unique empirical proof of the re-emergence of the practice of illegal abortion in Italy.

Even if Misoprostol is the most commonly used technique to self-induce an abortion in Western countries, other methods should be mentioned. It is in fact plausible that some disadvantaged and poor women may not have access to the web or may not possess the necessary knowledge to find the pills online and buy them. Moseson et al. (2020) collect the methods reported to self-induce an abortion into eight categories: (1) plants/herbs (ingestion), (2) toxic substances (ingestion), (3) intrauterine trauma, (4) physical trauma, (5) a combination of Mifepristone and Misoprostol, (6) Misoprostol only (7) alcohol and drug abuse, and (8) other drugs, substances, and mixtures.[14] The use of Misoprostol and Mifepristone or Misoprostol alone cover 71% of the studies published during or after 2000 contained in the review. The authors report that the studies described people obtaining these pills through online telemedicine services, online vendors, telephone vendors, their social networks, over-the-counter pharmacies, friends, relatives, accompaniment groups, doctors, nurses, and community health workers.

Illegal abortion methods other than medication abortion are less safe and expose women to more serious risks. Moseson et al. (2020) cite seven studies that reported on the occurrence of heavy bleeding after a self-managed abortion. Among those who self-managed their abortions using medications after receiving evidence-based guidelines on

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[14]In my definition of illegal abortion I do not distinguish between "traditional" approaches that rely on herbs, tisanes, massage, etc..., and approaches that rely on allopathic medication (e.g., Mifepristone and Misoprostol) used outside the confines of clinical supervision. Given the widespread use of abortion pills for abortions outside the legal setting in Western countries, I use indistinctly throughout the paper the terms illegal abortion or self-induced/self-managed abortion.

how to administer Mifepristone and Misoprostol, or Misoprostol alone, the proportion with heavy bleeding ranged from 5.2% up to 13%. They also find that eight studies reported on participants seeking care at a health facility following a self-managed abortion. The percentage of women who visited a doctor or hospital after self-managing an abortion varies between 0.3% and 29%, depending on the geographical area and the type of procedure used. Concerning the occurrence of surgical intervention following self-managed abortion to complete the abortion, the percentage of women varies again across studies, and by method of self-managed abortion, from 2% up to 56%.

3 Data and Descriptive Statistics

Unique dataset on objectors. The first great challenge of the present study concerns the collection of information on the number of gynecologists per hospital who declare and do not declare conscientious objection. The only available dataset on the subject is the one published every year by the Ministry of Health. After the Law on the voluntary termination of pregnancy came into force in 1978, the Surveillance System on Induced Abortion was launched. Within this framework, the National Institute of Statistics started to collect data on conscientious objectors among gynecologists, anesthetists, and non-medical personnel, in coordination with the Italian Regions, the Italian Ministry of Health, and the Italian Institute of Health. Statistics on objection are published every year in a ministerial report that provides information at the regional level. Beyond the high level of aggregation that is problematic in my setting, these public data on objection present a huge measurement error that will be discussed in depth later in this Section. Hence, I collect new data by contacting every regional contact person for the Italian Institute of Health. I obtained information for 322 facilities distributed in 92 provinces of 19 Italian regions (N=964).

Given the reluctance of several regions to transmit such information, the collection lasted for almost a year and data are missing for two regions (Sardinia and Apulia). There

are many missing values also in the other regions so, for each year, I exclude from the dataset all the provinces where at least one hospital presents some missing values, for a total of 6 provinces dropped.[15] This check is done at the provincial level, since the independent variable of interest is the number of gynecologists who declare conscientious objection over the total number of gynecologists, per province. The denominator also includes the external gynecologists temporarily hired each year by the hospitals to perform abortions in case of scarcity of non-objecting doctors. I choose to use a provincial measure of access to the procedure to account for the fact that a woman may be willing to move at least within her province to get an abortion. Using a municipal aggregation level was unfeasible since several municipalities do not have a hospital; at the same time, using the hospital level was unrealistic, since large municipalities have more than a single facility. Before aggregation, 24 private facilities are also excluded from the dataset, assuming that women who can afford to be hospitalized in a private hospital are also very likely to be able to pay for abortions in private facilities or to travel outside the province to get an abortion. The final province-level dataset contains 281 observations distributed in 86 provinces during the period 2015 to 2018.

As mentioned earlier, there are issues related to the right of objection that concern legality and that collaborate to generate measurement problems in the public dataset on objection published by the Ministry of Health. The right to objection is illegally applied to entire hospitals generating a huge problem in terms of data collection.[16] Gynecologists working in objecting structures do not have to declare objection and thus they are all registered as non-objecting doctors, even if, in practice, they do not perform abortions. This bias in the data is worsened by the fact that some facilities do not have an abortion point, even if they have an obstetrics and gynecology department.[17] This can be a problem if gy-

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[15]To keep more observations, when a province presented missing values for only one year and the share of objectors was stable over time, I imputed the number of gynecologists, objectors, and non-objectors from the previous/following year.

[16]Conscientious objection is also often applied improperly and illegally to emergency contraception with the lack of medical prescriptions by the doctors or with the refusal of pharmacists to sell the day-after pill.

[17]For the whole population, I compare the miscarriage dataset with the induced abortion dataset identifying more than 100 Italian facilities having an obstetrics and gynecology department, but not a abortion

necologists in these facilities are registered as non-objectors. To account for these, when I collected the data I explicitly asked the number of non-objectors who perform abortions. Figure 5 shows data misreporting for Sardinia,[18] where stable and relevant differences between reported non-objectors and the real number of doctors who perform abortions can be observed. Since not all Regions specified how many non-objecting gynecologists perform an abortion, I also inspected whether every hospital in my dataset with a positive number of objectors registered at some point in time with at least one abortion, thus identifying all the facilities where no one performs abortions.

By looking at the facilities reported in the Istat dataset on induced abortions, I find 61 hospitals in my dataset registering zero abortions in every period[19]. Of these facilities, 22 reported a positive number of non-objectors: I control for this by imputing them 100% of objectors.

Survey on hospital discharge after miscarriages. As argued in the previous Section, a share of the women who self-manage their abortion ends up in the hospital, both because of complications and/or heavy bleeding and to complete the procedure. Usually, these abortions are registered as miscarriages, since it is very difficult to distinguish a medication abortion from a miscarriage. In addition, physicians may decide not to register the episode as an induced abortion to protect the woman, since inducing an abortion outside a hospital or a private authorized facility is illegal in Italy.

I required access to the dataset *Survey on hospital discharge after miscarriages* compiled by the Italian National Institute of Statistics and comprising anonymized information on all the miscarriages recorded in Italy between 2015 and 2018.[20] After the Law on the voluntary termination of pregnancy came into force in 1978, Istat started collecting

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point.

[18]Sardinia did not send me data disaggregated by hospital or province, so it is excluded from the analysis.

[19]This information is obviously limited to my restricted sample. It does not give a complete picture of the Italian situation in terms of abortion access.

[20]Data analysis for this work was conducted at the Laboratory for Elementary Data Analysis of Istat and was carried out in compliance with the law concerning the protection of statistical secrecy and personal data. Results and opinions reported in this study are the exclusive responsibility of the author and do not constitute official statistics.

detailed information about each episode of miscarriage taking place in any Italian health-care facility. Detailed characteristics are gathered through an individual and anonymous form filled out by the physician who treats the miscarriage. From this dataset, I built the outcome variable of the present study, which is the individual probability to have tried to self-induce an abortion. To build this variable, I submitted a brief online survey to some gynecologists around the country. I asked them which ones of the 36 causes that appear on the discharge form for miscarriages are most likely connected with the suspect of an illegal abortion. Among the complete list of possible causes for miscarriages reported on the discharge form, the interviewed gynecologists agreed upon only 9 causes as likely to be attributed to a self-induced abortion. These causes constitute the references of the main dependent variables, in the sense that it takes value one if the cause of the mis-carriage is one of the followings: *Professional physical trauma; Other physical trauma; Psychic trauma; Other infectious and parasitic diseases; Cervix lacerations and inflam-mation; Cervical insufficiency; Endometritis; Inflammatory diseases of the appendages; Rh incompatibility*. Another possible cause is *Other or not determined*, but since it covers too many possible cases, it is not considered as taking value 1 in the construction of the dependent variable. Hence, the individual probability of self-induced abortion takes value 1 for the 0.8% of observations.

To check my results on a different definition of the dependent variable, I build another measure of the probability of self-induced abortion, similar to the first one but less strict. I include as causes related to self-induced abortion, all the causes indicated cumulatively by all gynecologists interviewed (not only the ones upon which everyone agrees). The new causes, that add to the previous ones, are: *Syphilis and its consequences; Influenza and other viroses; Uterine fibroids*. For this second definition - from now on *wider defi-nition* - the individual probability of self-induced abortion takes value 1 for the 0.9% of observations.

The fact that the category *Other or not determined* includes both miscarriages and self-induced abortions and covers many cases creates a measurement error in both these

specifications of the dependent variable. This error is very likely to be random, hence creating an issue only in terms of significance level, not of endogeneity bias. To account for this issue, I use a third specification for the dependent variable that does not suffer from this particular form of error. Then, following the 2016 analysis of Istat on clandestine abortions (included in Ministero Della Salute (2016), pp. 95-104), I build a third definition for the dependent variable: the individual probability of miscarriage in the first 9 weeks of amenorrhea[21], since a self-induced abortion is usually performed in the early stages of the pregnancy. Early-stage miscarriages are very frequent so this variable may suffer from an even larger measurement error but of a different nature. Thus, the fact that the main results are confirmed using this definition is reassuring of the validity of the estimates. Throughout the analysis, the first definition will be taken as the preferred specification. It presents a smaller error when compared to the probability of early-stage miscarriage and it is more strict when compared to the *wider definition*.

To give a first look at the association between miscarriages and objection level, Figure 6 shows the distribution of the miscarriage rate across the Italian regions (in green shades) and the percentage of objectors in each region, using data from the Ministry of Health.

The data on miscarriages dramatically underestimate the phenomenon of self-induced abortions since a consistent part of them does not require hospitalization. Due to the introduction of medical termination of pregnancy, the rate of complications from unsafe abortion has hugely decreased. Studies[22] report a 6-8% curettage/vacuum aspiration rate for incomplete termination of pregnancy using medical abortion. Piffer et al. (2014), in a study in the Province of Trento, estimate that on average, 46% of the cases registered in the emergency room are reported by Istat data.

The use of this dataset presented one main challenge. Each facility may have several identification codes and, often, these codes do not perfectly match the ones reported by

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[21]The Istat analysis uses the gestational weeks, but I only have information on weeks of amenorrhea. Using weeks of amenorrhea is slightly more restrictive with respect to the official definition.

[22]Gomperts et al. (2008), Faucher et al. (2005) and Ravn et al. (2005)

the Ministry of Health.[23] Hence, to identify facilities, I manually check each code over more than 300,000 observations.

I consider only miscarriages in public hospitals for the provinces for which I have information on objectors (N=154,792). I restrict the sample to the subpopulation of women aged less than 40 years - since the risk of miscarriage increases dramatically for women older than 40, as shown by Figure 7 - and more or equal to 13 years, the age around which most women become fertile. I also exclude women who became pregnant through the use of artificial reproductive techniques, who are very unlikely to desire an abortion after opting for this procedure.

Figure 8 gives a graphical representation of the percentage of objecting gynecologists per province. White areas represent provinces with some missing values so that the Figure shows the unbalancedness of the sample. Data for the South and Islands have a lot of missing values, both because of the high number of missing observations and the fact that Apulia and Sardinia did not transmit the data. For these geographical areas, I have a total of 20 provinces out of 42. Thus, I decided to cut the sample and conduct the analysis only in the North and the Center of Italy. Coefficients from regressions run first on the entire sample and then on the South and Islands alone are described in Section 5 and suggest that results are manly driven by the North and the Center of Italy.

I end up with a pooled cross-section for the period 2015-2018, composed of 76,743 individual observations, for 426 facilities distributed in 67 provinces[24]. The dataset on miscarriages also includes several individual information on women's socio-economic characteristics and reproductive history, that are included in the main model as individual controls.

Additional datasets from the National Institute of Statistics. To better account for possible sources of endogeneity, robustness of the estimates are checked to the inclusion of a time-varying measure of religiosity: the share of religious marriages over the to-

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[23]http://www.dati.salute.gov.it/dati/homeDataset.jsp
[24]Sample selection is described in Table A.1 of the Appendix.

tal number of marriages. This is calculated from the dataset *Marriages* by the National Institute of Statistics.

Table 1 reports summary statistics for all the variables used for the analysis.

4 Empirics

4.1 The Empirical Model

I estimate the following model:

$$y_{ipt} = \alpha_{ipt} + \beta_1\, Objectors_{pit} + \beta_2\, \Delta_{obj_{p_i,t}-obj_{p_j,t}} + X'_{it}\Gamma + \gamma_{pm} + \zeta_{pb} + \eta_t + \varepsilon_{ipt} \qquad (1)$$

where i indicates the individual, p the province, and t the year. y_{ipt} is the individual probability of self-inducing an abortion that has been described above. $Objectors_{pit}$ is the share of gynecologists who declare conscientious objection to abortion per province (i.e. number of objectors over the total number of gynecologists, that includes gynecologists temporarily hired by the hospital to perform abortions). X is a vector of individual controls which includes: complications (during the intervention), citizenship, marital status, educational level, age, number of previous live births, number of previous abortions, number of previous miscarriages, position in the profession, and weeks of amenorrhea. γ_{pm}, ζ_{pb}, and η_t are respectively province of miscarriages, province of birth, and year fixed effects.

I assume that women can move to different provinces to get an abortion in the case they cannot obtain one in their own province, before trying to self-induce an abortion, i.e. I consider the possibility of spillover effects. To take into account this issue, I include in the main model the difference between the share of objectors in province i and the share of objectors in neighboring province j ($\Delta_{obj_{p_i,t}-obj_{p_j,t}}$). I do not directly use the spatial lag of the share objectors per province, since there could be a high correlation among neighboring provinces in the percentage of objecting doctors. Hence, the spatial lag may

absorb part of the effect of the main independent variable[25].

4.2 Identifying assumption

Regarding the validity of the identifying assumption, a concern could be that the share of objecting gynecologists may be correlated with underlying determinants of women's decision to terminate their pregnancy outside the legal setting. To assess this concern, I follow Card et al. (2019) and implement a series of OLS models for a set of observed individual characteristics, looking for evidence of correlation with my measure of objection. Every regression includes year, province of birth, and province of abortion fixed effects, and errors are always clustered at the provincial level. Table B.1 of Appendix B summarizes these results. None of the coefficients is statistically significant, providing evidence of the exogeneity of the regressor.

It is reasonable to assume that fixed effects are able to capture cultural and religious traits that may be correlated with the share of objectors and the woman's probability to self-induce an abortion. Given the centrality of the religious justification in explaining the decision to object, I check the validity of my results to the inclusion of a time-varying measure of religiosity, i.e. the share of religious marriage over the total number of marriages by province. Section 5, which contains the robustness checks, reports these results. The check is done for every definition of the dependent variable, given the importance to assess exogeneity in every regression. As expected, coefficients remain almost unchanged.

4.3 Results

Results for the main specification are presented in Table 2, top panel. Errors are clustered at the provincial level.

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[25] As robustness check, I show in Section 5 coefficients from a regression that does not account for spatial dependency.

I estimate the model through OLS, Probit, and Logit. The linear probability model gives non-significant coefficients probably due to the distribution of the dependent variable, i.e. it takes value one for almost 1% of the observations. Thus, I focus on the Maximum Likelihood estimates.

The marginal effects show that a 10% increase in the share of objecting gynecologists is associated with a 3.8-5.1% increase in the individual probability of self-inducing an abortion. The effect is sizable and consistent across all the estimations. This result shows that the high percentage of objectors within Italian public hospitals creates a problem of access that pushes many women to resort to abortion outside the legal setting.

4.4 Heterogeneous effects

The richness of the dataset allows the researcher to conduct many heterogeneous and subsample analyses. After analyzing all possible heterogeneous specifications, four main results emerge. First, women who already have other kids are less likely to self-induce an abortion (Figure 9, panel (a)[26]). Women who already have many children may be more likely to have a partner and/or a net of support. These factors are particularly important because, as already mentioned, poor and disadvantaged women are likely to suffer the most from restrictions on access to abortion in public hospitals. Moreover, women with large families may be less likely to have an abortion for cultural and religious reasons, or simply because of their preferences. As shown by Figure 9 panel (a), the effect decreases with the number of previous births, and for women with 7 or more children, it disappears. This may be due to the very low number of women with 7 or more children[27], while the general decreasing trend in the estimated coefficients is confirmed from the beginning of the distribution.

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[26]In the Appendix are reported average marginal effects of the share of objectors on the probability of self induced abortion with respect to weeks of amenorrhea, number of previous abortions, and number of previous births, estimated both through Probit and Logit models (Tables C.1, C.2 and C).

[27]To clarify how many women belong to each category, Table C.4 in the Appendix collects information of the frequency for number of previous births, previous abortions, and weeks of amenorrhea.

Similarly, the probability of illegal abortion increases with the number of previous induced abortions. This is in line with women who already had an abortion being more likely to self-induce one. The same reasoning discussed earlier on the insufficient number of observations for women with more than 4 past abortions suggests looking at the trend for women with few previous abortions. Even restricting the analysis to the left part of the distribution, the increasing trend persists.

On the contrary, women in their initial weeks of amenorrhea show a lower probability of self-inducing an abortion (Figure 9, panel (c)). It is implausible that this is an indicator of women in the first stage of their pregnancy being less like to self-induce an abortion, and more in accordance with illegal abortions in the first weeks of pregnancy being undistinguishable from real miscarriages for which the doctor is not able to determine a specific cause.

Finally, the magnitude and the significance of the effect decrease when I run the regression on the subsample of Italian women, as shown in Figure 10.[28] This is in line with poorer immigrant women suffering more from restrictions on public access to abortion, hence being the main driver of the results.

5   Robustness Checks

The robustness checks included in this Section are all performed on the preferred definition of the dependent variable, except for the first one, which plays a role in confirming the exogenity of the model. For all tests, coefficients remain consistent to the use of alternative definitions of the probability of illegal abortion.[29]

As anticipated during the discussion on possible sources of endogeneity, a time-varying measure of religiosity – share of religious marriages – is included in all specifications, given the relevance of such a justification in explaining the objection decision.

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[28]Estimated coefficients are reported in Table C.5 of the Appendix.

[29]Results are available under request.

As shown in Table 3, coefficients remain stable in size and significance, confirming the validity of fixed effects in capturing cultural and religious traits in a short time span.

Since the analysis is restricted to the North and Center of the country, I look at the effect for two other specifications of the geographic area - Italy as a whole, and the South and Island. Figure 11 compares point estimates obtained from the main regression runs over these two samples. The effect appears to be driven by the impact in the North and the Center, while it disappears in the South and Islands[30]. This can both be caused by women in the North and Center of Italy being more likely to substitute an abortion at the hospital with a self-induced abortion – for cultural reasons as well as for different levels of access to the necessary information – and by the huge amount of missing observations for the southern regions.

Finally, to confirm the validity of the analysis, I perform a set of robustness checks, reported in Table 4. In columns (1) and (2), standard errors are clustered by region, instead of province; in columns (3) and (4), I insert a fourth type of fixed effects, i.e. province of residence fixed effects. This should account for women moving across provinces to get an abortion, for whom the province of abortion differs from the province of residence. Finally, I run a regression that does not account for spillover effects among provinces. Results are reported in the last two columns. Coefficients remain consistent in magnitude and significance for all specifications except the last one. This result confirms of the presence of spillover effects across provinces.

6 Discussion and Conclusion

My research inserts into the policy debate about abortion by considering the effect of the limited applicability of the Italian law that regulates the voluntary termination of pregnancy. I find a positive and significant relationship between the number of objectors in a province and the women's probability to self-induce an abortion in the same province.

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[30]Coefficients are reported in Table D.1 of the Appendix

The empirical analysis also highlights inequalities in access to abortion among women from different socioeconomic backgrounds, as Italian women suffer less from restrictions on abortion in public hospitals. This study contributes to the very small literature on conscientious objection to abortion, by providing evidence on the practical limits poses by the high number of objectors and its impact on the growing phenomenon of illegal abortions.

The first important implication of restrictions on abortion access in the public sector is its impact on inequalities. Limiting access to abortion outside the private sector has its largest effect on disadvantaged categories who cannot travel to find a provider and cannot pay for the procedure privately (Harris et al., 2018). This is in line with the heterogeneous analysis conducted in this paper, which shows that the effect of restrictions on abortion access decreases when non-Italian women are excluded from the sample. The fact that the negative consequences of limiting abortion are mainly experienced by the most disadvantaged social categories has not only social justice implications - inequalities in reproductive rights between rich and poor individuals - but it also worsens the economic and social situation of poorer women, who, when abortion is restricted, find themselves more likely to have unwanted children to provide for (the additional costs associated with raising a child typically exceed $9,000 in annual expenses (Lino et al., 2017)) when compared to more advantaged women. In line with that, many studies have estimated the positive relationship between abortion access and women's socioeconomic conditions. Increased legal access to the abortion procedure is associated with an increase in high school completion, employment rates, earnings, and labor force participation rates (Abboud, 2019, Angrist and Evans, 1999, Jones et al., 2021, Kalist, 2004, Lindo, Pineda-Torres, Pritchard and Tajali, 2020); a decreased likelihood of needing public assistance, living under the federal poverty line and working full time one year later (Foster et al., 2018, Jones et al., 2021); and a higher probability of women moving between occupations and into higher-paying occupations (Bahn et al., 2020). Miller et al. (2020) estimate that women who were denied an abortion experience a significant increase in financial distress during the year that they give birth, compared to women who received a wanted abortion.

These effects were particularly strong among Black women (Jones et al., 2021, Kalist, 2004, Lindo, Pineda-Torres, Pritchard and Tajali, 2020), confirming the hypothesis on the unequal impact of abortion access across the economic ladder.

A second relevant implication concerns the economic costs related to this situation. Many hospitals need to use external gynecologists to perform abortions, in the case that the small number of non-objectors hired by the hospital is not enough to assure the service. The amount of doctors temporarily hired by each hospital varies greatly among facilities. Here I show the example of Lazio which reports a large use of external doctors. In 2016 - a year for which I do not have missing provinces for this region - the percentage of objectors in Lazio was around 80%. In the same year, about 10% of all gynecologists performing abortions in Lazio were externally hired just to do abortions. Of the 24 public facilities for which I got the data, 23 use external gynecologists for at least one year of the dataset,[31] Figure 12 shows the shares of objectors and external gynecologists, calculated as the number of objectors (external gynecologists) over the total number of gynecologists performing abortions in each public facility for which I have data.

The present analysis has two main limitations that point to the need for further research on the matter. The dependent variable - in all its specifications - suffers from some measurement problems related to the unavailability of information of self-induced abortions (see Section 3). In addition, data on objection are unbalanced. Researchers interested in going deep into the subject should mainly focus on building a complete and updated dataset on objection, paying attention to which doctors effectively perform abortions - not only to the ones who declare to not object. Anyway, the real turning point in the field would be to find a way to better measure illegal abortions.

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[31]The remaining hospital (n=11 in Figure 12) has missing information for 3 out of 4 years of the panel.

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Figures

Figure 1: Comparative Statistics: Birth Rate and Abortion Rate by European Country, Year 2020
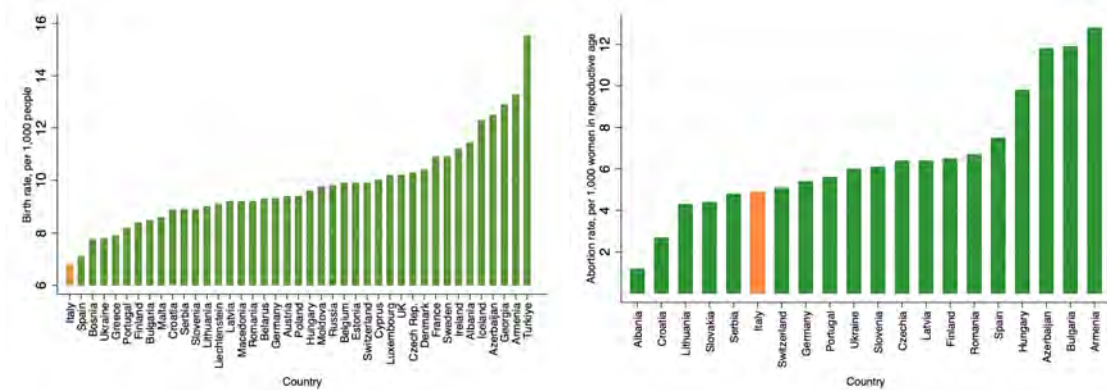
Note: The abortion rate is the number of abortions per 1,000 women in reproductive ages in a given year. Crude birth rate indicates the number of live births per 1,000 midyear population.
Source: Data on birth rates are from The World Bank database and data on abortion rates are from the Eurostat database.

Figure 2: Trends in the Percentage of Objecting Gynecologists
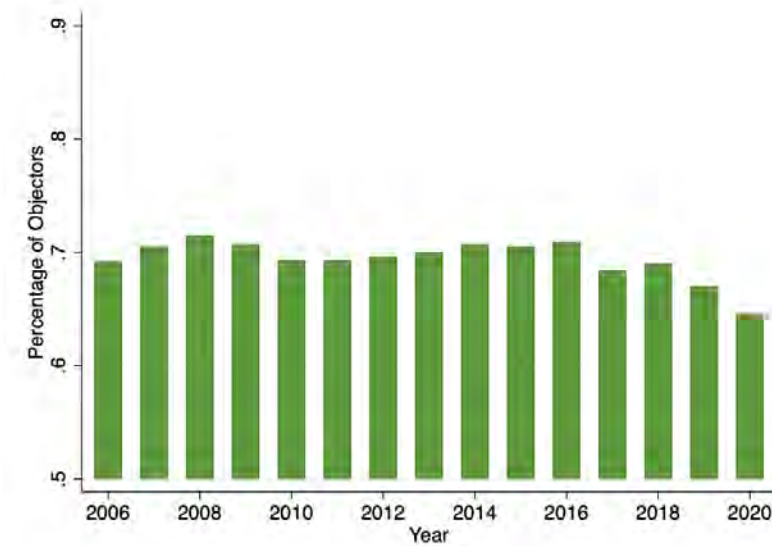
Note: Percentage of gynecologists who declare conscientious objection in Italy. Years 2006-2020.[32]
Source: Ministry of Health

Figure 3: Distribution of Objection Across Italian Regions, Years 2015-2018.

(a) 2015   (b) 2016

(c) 2017   (d) 2018
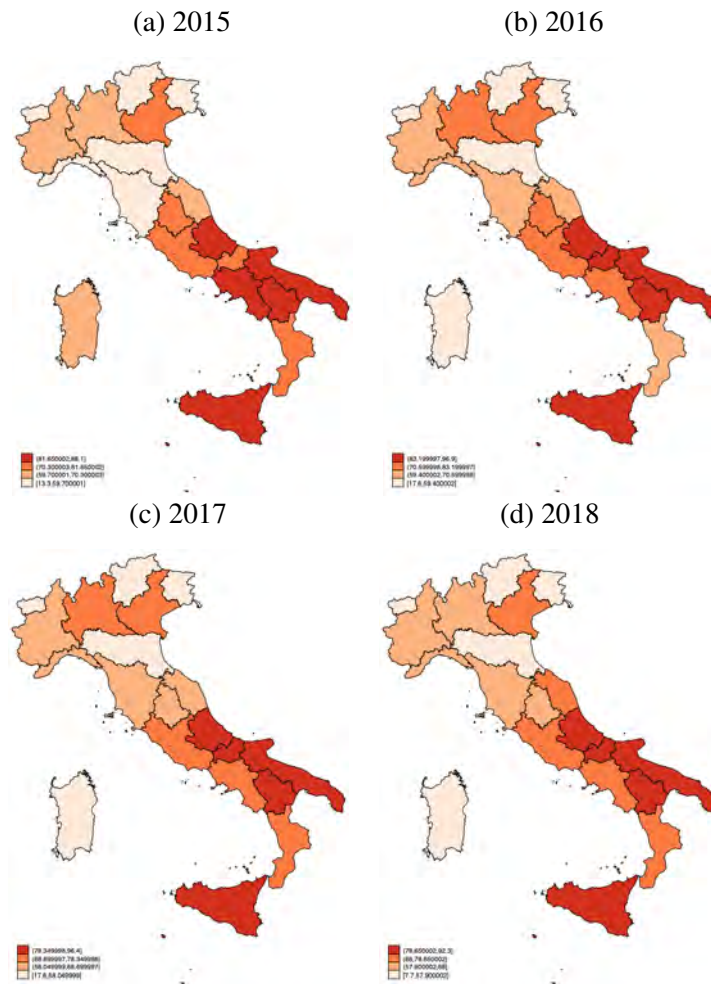
Note: Percentage of gynecologists who declare conscientious objection in Italian regions. Years 2015-2018.
Source: Ministry of Health.

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[32]There are publicly available data on conscientious objectors before 2006, but they present a lot of missing values, resulting in misleading national averages.

Figure 4: Delivery of Medical Prescriptions for Misoprostol. Years 2017 and 2019.
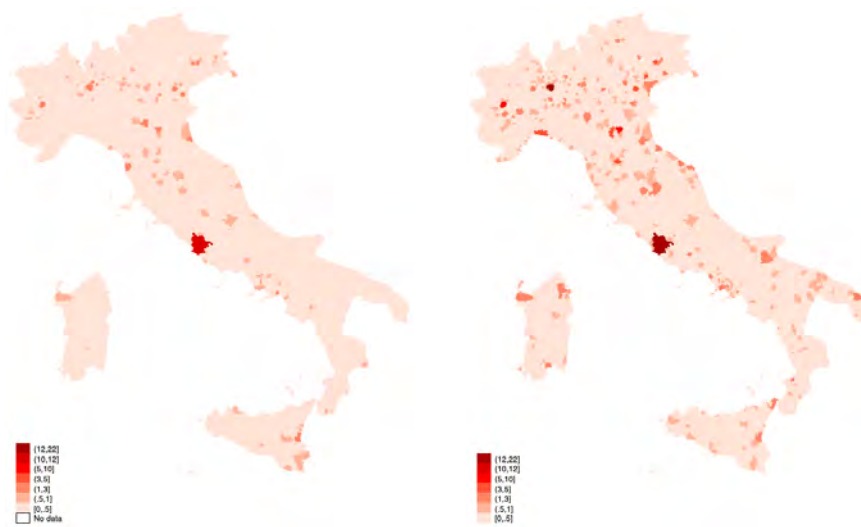
Note: The left figure plots 2017 data and right figure represents 2019 data.
Source: Women On Web (`https://www.womenonweb.org/en/`)

Figure 5: The Size of the Measurement Error: The Example of Sardinia.
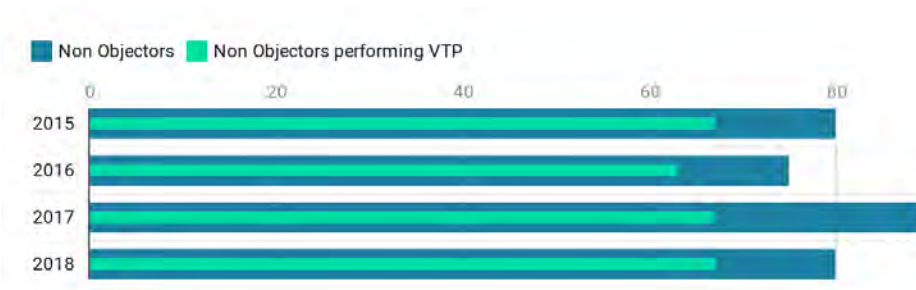
Note: Non-objecting gynecologists in Sardinia, 2015-2018.
Source: Data have been collected by the author.

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Figure 6: Miscarriage Rate and Percentage of Objectors, Years 2015-2018.

(a) 2015

(b) 2016

(c) 2017

(d) 2018
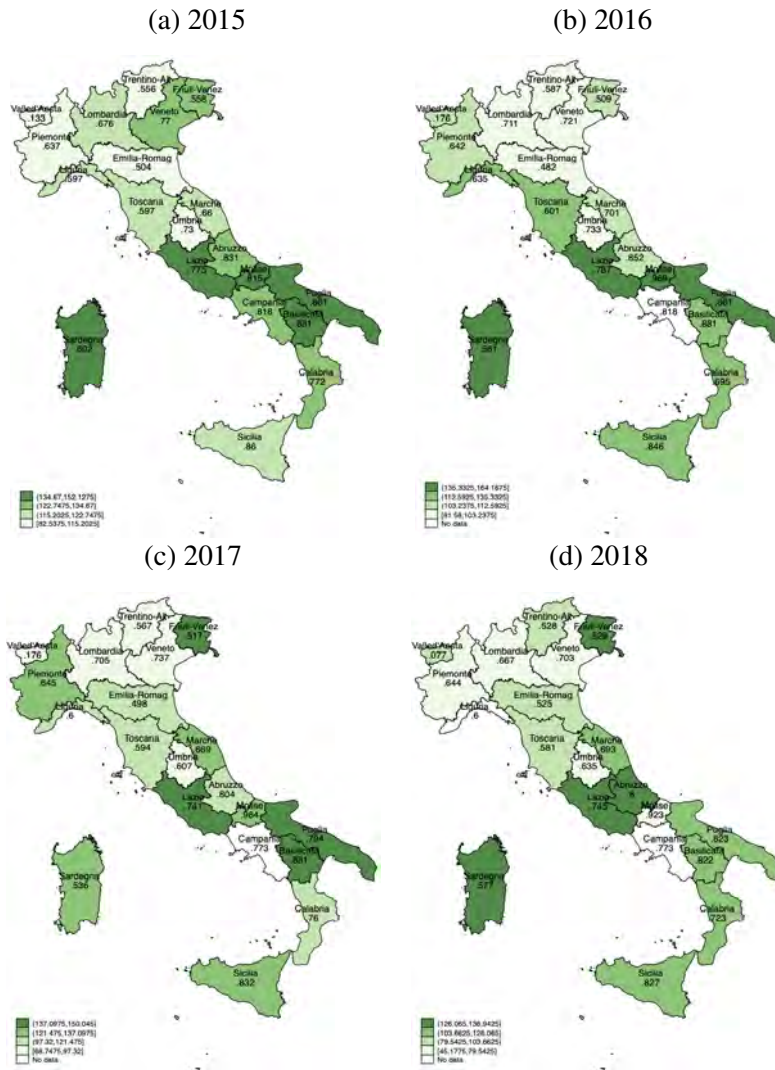
Note: The average miscarriage rate by region is plotted in green shades while the percentage of objectors is overwritten.

Source: Data on miscarriages by region are from Health For All, Istat. The percentage of objectors per region is taken from the relations on the application of the abortion law made every year by the Ministry of Health (Ministero Della Salute, 2015, 2016, 2017, 2018).

Figure 7: Miscarriage Rate by Age Category, Years 2015-2018.
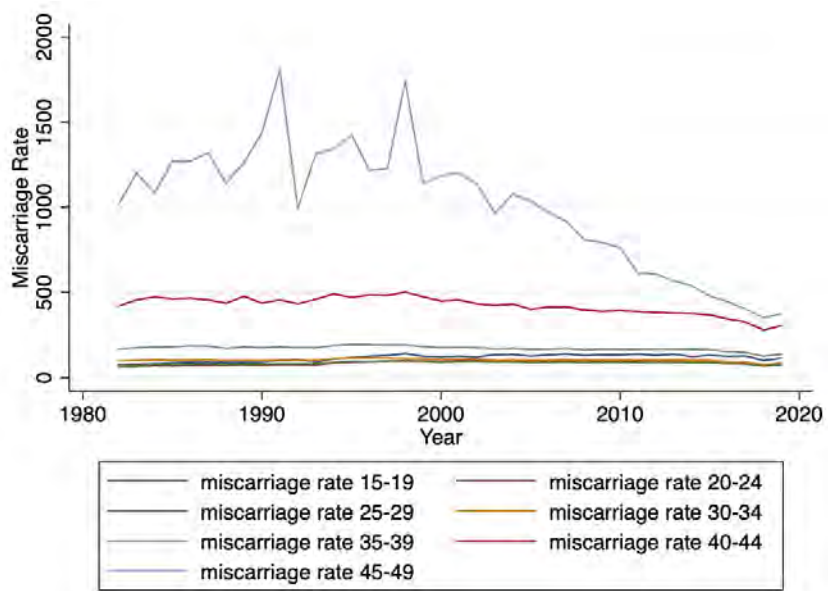
Source: Data are from the project Health-for-All-Italy, by the Italian National Institute of Statistics and the Ministry of Health

Figure 8: Percentage of Objectors by Province, Years 2015-2018.

(a) 2015

(b) 2016

(c) 2017

(d) 2018
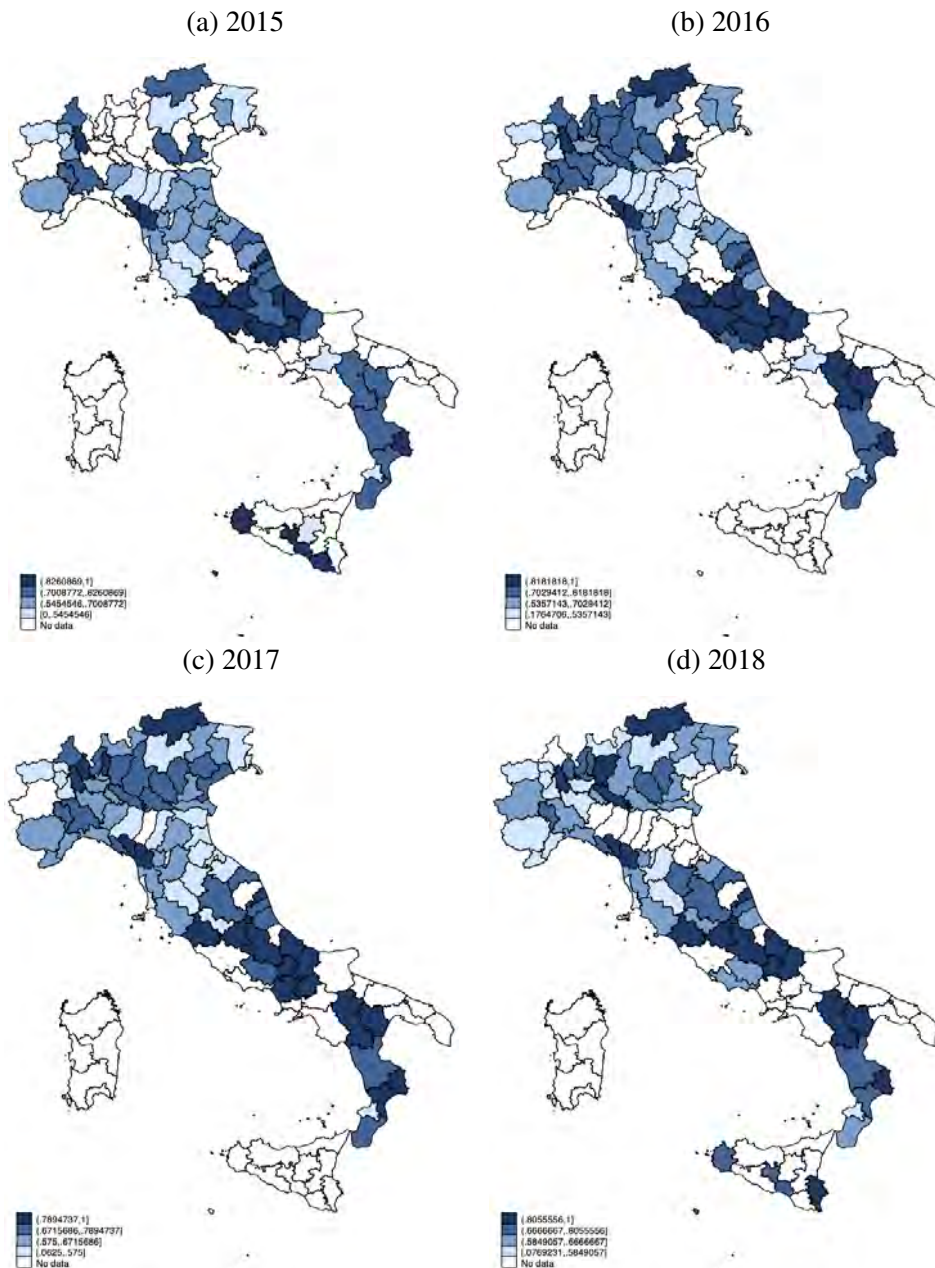
Note: The percentage of objectors is calculated as the ratio between the number of gynecologists who declare conscientious objection and the total number of gynecologists. Every year, only provinces without missing values are considered.
Source: Data have been collected by the author.

Figure 9: Heterogeneous Effects

(a) Previous births
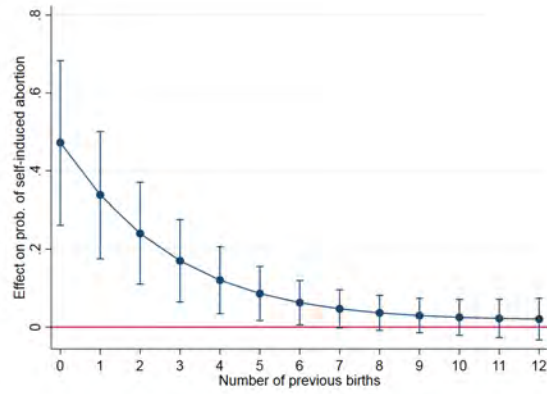
(b) Previous induced abortions
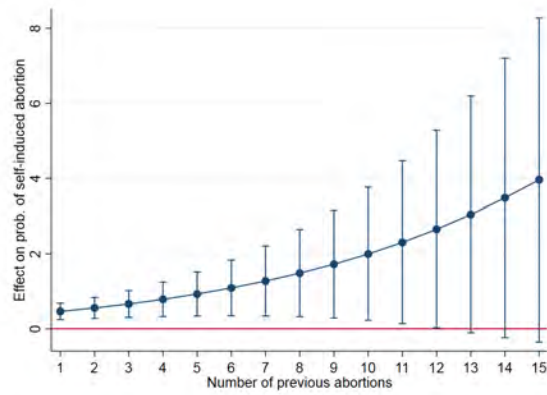
(c) Weeks of amenorrhea
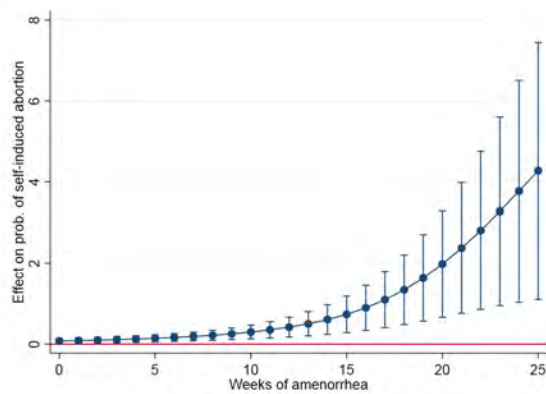
Note: Coefficients are estimated using a Logit model. The figures plot marginal effects.

Figure 10: Self-induced Abortions and Conscientious Objection: Entire Sample vs. Italian Women
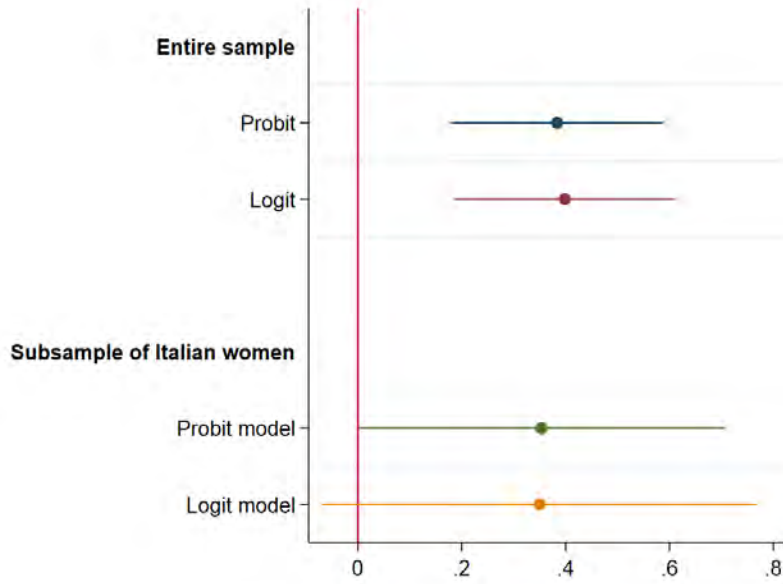
Note: The regression includes all covariates and it is estimated using a Probit and a Logit model.

Figure 11: Impact of Objection on the Individual Probability of Self-inducing an Abortion for Other Geographic Specifications.
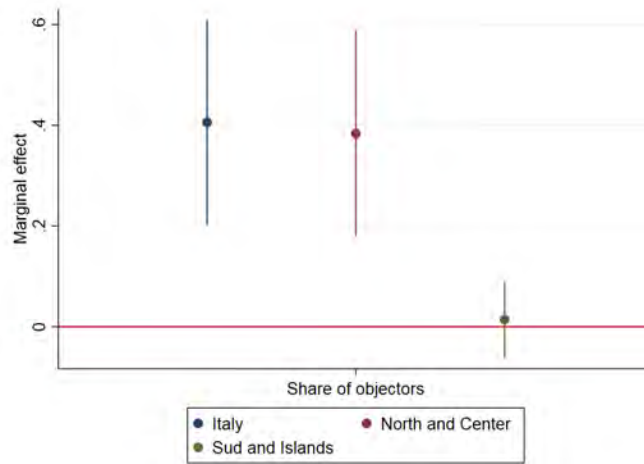
Figure 12: Shares of Objectors and External Gynecologists. Lazio, Years 2015-2018.
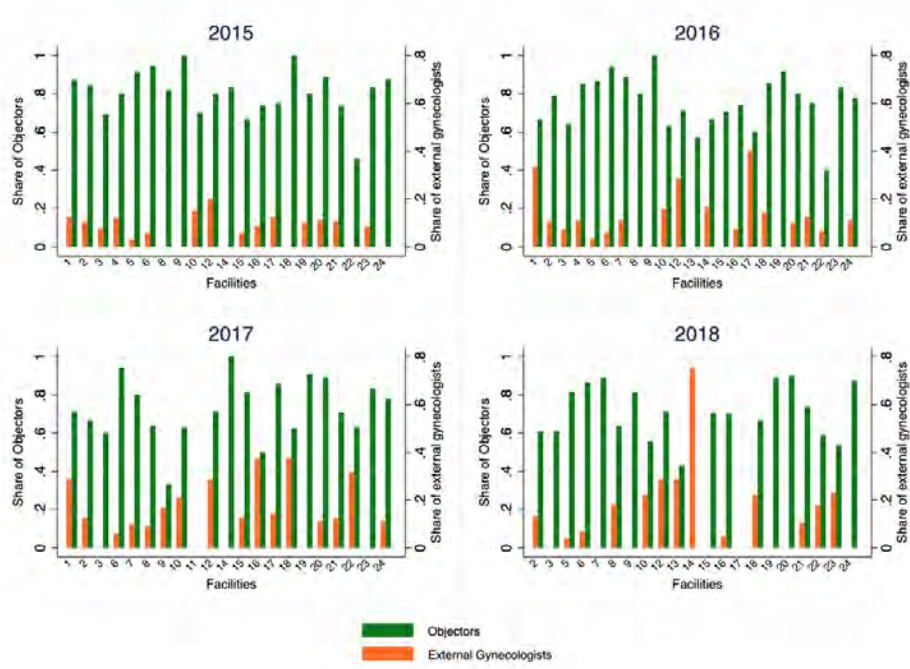
Source: Data have been collected by the author.

Tables

Table 1: Summary Statistics. Years 2015-2018

	Mean	Standard dev.	Min.	Max.	N
Probability of self-induced abortion					
Probability of self-induced abortion	0.008	0.088	0	1	76,743
Prob. of self-induced abortion (wider definition)	0.009	0.097	0	1	76,743
Prob. of self-induced abortion (early-stage misc.)	0.577	0.494	0	1	76,743
Complications					
None	0.985	0.123	0	1	76,743
Haemorrhage	0.008	0.091	0	1	76,743
Infection	0.002	0.042	0	1	76,743
Death	0.005	0.072	0	1	76,743
Marital status					
Unmarried	0.409	0.492	0	1	76,743
Married	0.566	0.496	0	1	76,743
Divorced	0.023	0.151	0	1	76,743
Widow	0.002	0.040	0	1	76,743
Educational attainment					
None or primary school diploma	0.056	0.231	0	1	76,743
Middle school diploma	0.246	0.431	0	1	76,743
High school diploma	0.459	0.498	0	1	76,743
University degree	0.239	0.426	0	1	76,743
Nationality					
Italy	0.718	0.450	0	1	76,743
Africa	0.079	0.270	0	1	76,743
Europe	0.124	0.329	0	1	76,743
Asia	0.053	0.225	0	1	76,743
America	0.008	0.088	0	1	76,743
South America	0.018	0.131	0	1	76,743
Oceania	0.0003	0.017	0	1	76,743

continued

Table 1: Summary Statistics. Years 2015-2018

	Mean	Standard dev.	Min.	Max.	N
Antarctica	0.0005	0.021	0	1	76,743
Employment position					
Unemployed	0.340	0.490	0	1	76,743
Entrepreneur or freelance professional	0.054	0.225	0	1	76,743
Other autonomous worker	0.037	0.189	0	1	76,743
Employee: managing	0.032	0.176	0	1	76,743
Employee: office worker	0.286	0.452	0	1	76,743
Employee: office or factory worker	0.134	0.340	0	1	76,743
Other employee	0.057	0.232	0	1	76,743
Other individual characteristics					
Age	32.284	5.079	13	39	76,743
Number of previous miscarriages	0.360	0.749	0	14	76,743
Number of previous births	0.706	0.889	0	12	76,743
Number of previous abortions	0.125	0.455	0	15	76,743
Weeks of amenorrhea	9.611	2.936	1	25	76,743
Provincial indicators					
Share of objecting gynecologists	0.648	0.193	0.063	1	218
Share of religious marriages	40.525	7.955	23.7	80.3	210

Note: Summary statistics calculated for the period 2015-2018.

Source: Individual variables are taken from the *Survey on hospital discharge after miscarriages* of the National Institute of Statistics – ADELE. The share of religious marriages is calculated from the dataset *Marriages* by the National Institute of Statistics. Data on objection have been collected by the author.

Table 2: Self-Induced Abortions and Conscientious Objection. Marginal Effects.

	(1) (LPM)	(2) (LPM)	(3) (Probit)	(4) (Probit)	(5) (Logit)	(6) (Logit)
Narrow definition of self-induced abortion						
Share of objectors	.0016	.018	.437***	.384***	.435***	.399***
	(.074)	(.073)	(.108)	(.104)	(.113)	(.109)
Number of observations	76,743	76,743	66,459	66,341	66,459	66,341
Wider definition of self-induced abortion						
Share of objectors	.010	.011	.506***	.447***	.486***	.447***
	(.075)	(.074)	(.126)	(.118)	(.127)	(.120)
Number of observations	76,743	76,743	67,669	67,550	67,669	67,550
Early-stage miscarriages						
Share of objectors	.468**	.440**	.475**	.438**	.476**	.444**
	(.217)	(.215)	(.217)	(.215)	(.216)	(.215)
Number of observations	76,743	76,743	76,743	76,736	76,743	76,736
Provinces FE and year FE	Yes	Yes	Yes	Yes	Yes	Yes
Time-varying controls	No	Yes	No	Yes	No	Yes

Note: Estimated effect of the share of objecting gynecologists on the individual probability of self-induced abortion, from 2015 to 2018. Estimates are based on a Linear probability model, and Logit and Probit models and the analysis is at the individual-year level. All regressions include province of miscarriage, province of birth and year fixed effects. Robust standard errors are reported in parentheses and are clustered at the provincial level. *, ** and *** indicate statistical significance at ten, five and one percent levels respectively.

Table 3: Self-induced Abortions and Conscientious Objection, Controlling for a Time-Varying Measure of Religiosity. Marginal Effects.

	(1) (LPM)	(2) (LPM)	(3) (Probit)	(4) (Probit)	(5) (Logit)	(6) (Logit)
Narrow definition of self-induced abortion						
Share of objectors	-.00191	-.0156	.376***	.343***	.370***	.346***
	(.0720)	(.0722)	(.122)	(.117)	(.123)	(.111)
Number of observations	73,068	73,068	62,533	62,420	62,533	62,420
Wider definition of self-induced abortion						
Share of objectors	-.0228	-.0198	.488***	.444***	.463***	.417***
	(.0734)	(.0738)	(.153)	(.143)	(.151)	(.134)
Number of observations	73,068	73,068	68,831	63,717	68,831	63,717
Early-stage miscarriages						
Share of objectors	.478**	.295**	.481**	.514**	.482**	.517**
	(.229)	(.121)	(.229)	(.230)	(.228)	(.229)
Number of observations	73,068	73,068	73,068	73,068	73,068	73,068
Provinces FE and year FE	Yes	Yes	Yes	Yes	Yes	Yes
Religiosity	Yes	Yes	Yes	Yes	Yes	Yes
Time-varying controls	No	Yes	No	Yes	No	Yes

Note: Estimated effect of the share of objecting gynecologists on the individual probability of self-induced abortion, from 2015 to 2018. Estimates are based on a Linear probability model, and Logit and Probit models and the analysis is at the individual-year level. All regressions include province of miscarriage, province of birth and year fixed effects. Robust standard errors are reported in parentheses and are clustered at the provincial level. *, ** and *** indicate statistical significance at ten, five and one percent levels respectively.

Table 4: Robustness Checks. Marginal Effects.

	(1)	(2)	(3)	(4)	(5)	(6)
	Regional cluster		Province of residence FE		No spillover effects	
	(Probit)	(Logit)	(Probit)	(Logit)	(Probit)	(Logit)
Share of objectors	.384***	.399***	.394***	.400***	.0831**	.0937**
	(.127)	(.136)	(.111)	(.115)	(.0389)	(.0372)
Provinces and Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Time-varying controls	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	66,341	66,341	64,538	64,538	66,341	66,341

Note: Robustness checks. Estimated effect of the share of objecting gynecologists on the individual probability of self-induced abortion, from 2015 to 2018. In columns (1) and (2) errors are clustered by region, in columns (3) and (4) province of residence fixed effect is included in the model, and in columns (5) and (6) spillover effects are dropped fro the regression. Estimates are based on a Probit and Logit estimation and the analysis is at the individual-year level. Robust standard errors are reported in parentheses. *, ** and *** indicate statistical significance at ten, five and one percent levels respectively.

Appendix A   Stylized facts

Figure A.1: Trends in Abortion Rate and Birth Rate. Italy, Years 1980-2018
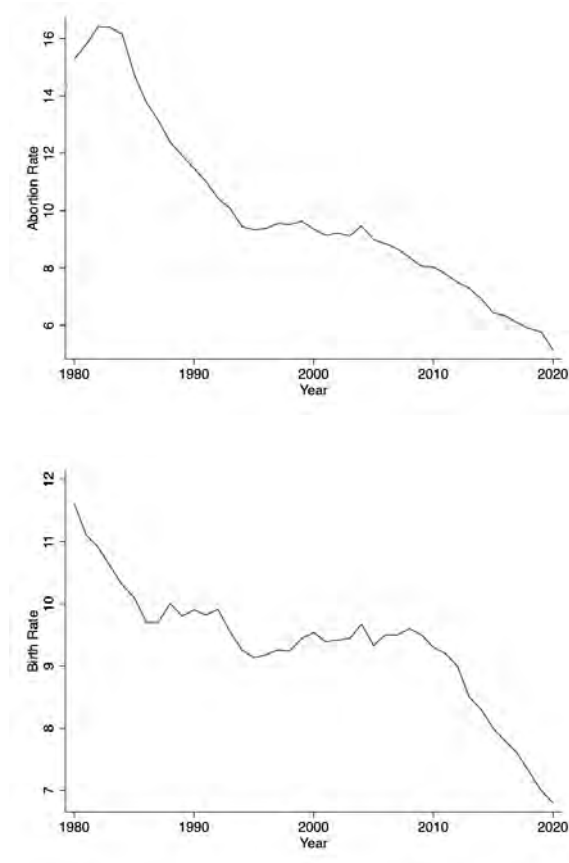
Source: National Institute of Statistics

Table A.1: Sample Selection

Initial sample	154,792
Miscarriage in private facilities	12,727
Women who use artificial reproductive techniques	2,688
Women younger than 13 or older than 39 years	32,751
Miscarriages in South and Islands	18,937
Observations with missing information	10,946
Final sample	76,743

Appendix B   Balance Test

Table B.1: Orthogonality of share of objectors and individual characteristics

	(1)
	Share of objectors
Complications	
None	0.013
	(0.013)
Haemorrhage	-0.010
	(0.010)
Infection	-0.034
	(0.003)
Death	0.0004
	(0.008)
Marital status	
Unmarried	-0.040
	(0.040)
Married	0.048
	(0.043)
Divorced	-0.011
	(0.012)
Widow	0.003
	(0.0035)
Educational attainment	

Table B.1: Orthogonality of share of objectors and individual characteristics

	(1) Share of objectors
None or primary school diploma	0.070
	(0.044)
Middle school diploma	0.002
	(0.028)
High school diploma	-0.032
	(0.041)
University degree	0.023
	(0.035)
Nationality	
Italy	0.008
	(0.023)
Africa	-0.004
	(0.024)
Europe	0.001
	(0.016)
Asia	-0.024
	(0.024)
America	0.009
	(0.009)
South America	0.010
	(0.009)

continued

Table B.1: Orthogonality of share of objectors and individual characteristics

| | (1) |
	Share of objectors
Oceania	0.0001
	(0.0009)
Antarctica	0.0006
	(0.002)
Employment position	
Unemployed	-0.011
	(0.047)
Entrepreneur or freelance professional	-0.017
	(0.024)
Other autonomous worker	0.019
	(0.024)
Employee: managing	0.008
	(0.012)
Employee: office	0.007
	(0.036)
Employee: factory worker	0.013
	(0.038)
Other employee	-0.019
	(0.018)
Other individual characteristics	
Age	0.357

Table B.1: Orthogonality of share of objectors and individual characteristics

	(1)
	Share of objectors
	(0.298)
Number of previous miscarriages	0.019
	(0.082)
Number of previous births	-0.005
	(0.076)
Number of previous abortions	0.046
	(0.037)
Weeks of amenorrhea	-0.217
	(0.257)
Provinces FE and year FE	Yes
Number of observations	76,743

Note: Estimated coefficients of the impact of individual and miscarriage characteristics on the share of objecting gynecologists. Each row indicates a separate regression. Estimates are based on an OLS model and the analysis is at the individual-year level. All regressions include province of miscarriage, province of birth and year fixed effects. Robust standard errors are reported in parentheses and are clustered at the provincial level. *, ** and *** indicate statistical significance at ten, five and one percent levels respectively.

Appendix C   Heterogeneous effects

Table C.1: Self-Induced Abortions and Conscientious Objection with Respect to Previous Births. Marginal Effects.

	(1)	(2)	(3)	(4)
	(Probit)	(Logit)	(Probit)	(Logit)
# of previous births				
1	0.499***	0.457***	.495***	.472***
	(.121)	(.121)	(.125)	(.128)
2	.384***	.334***	.371***	.338***
	(.101)	(.0964)	(0.102)	(0.0990)
3	.296***	.242***	.278***	.240***
	(.087)	(.0789)	(.0871)	(.0792)
4	.230***	.175***	.210***	.170***
	(.0761)	(.0654)	(.0751)	(.0644)
5	.181***	.126**	.161**	.120**
	(.0674)	(.0544)	(.0645)	(.0522)
6	.146**	.0929**	.126**	.0860**
	(.0611)	(.0457)	(.0558)	(.0422)
7	.123**	.0700*	.102**	.0625*
	(.0578)	(.0395)	(.0505)	(.0346)
8	.107*	.0548	.0864*	.0468
	(.0579)	(.0360)	(.0498)	(.0297)
9	.0979	.0451	.0769	.0364
	(.0608)	(.0350)	(.0539)	(.0274)
10	.0932	.0392	.0719	.0295
	(.0655)	(.0359)	(.0619)	(.0270)
11	.0916	.0358	.0703	.0250
	(.0708)	(.0379)	(.0725)	(.0280)
12	.0919	.0341	.0711	.0221
	(.0758)	(.0404)	(.0839)	(.0299)
13	.0932	.0335	.0737	.0204
	(.0798)	(.0429)	(.0939)	(.0325)
Provinces FE and year FE	Yes	Yes	Yes	Yes
Time-varying controls	No	Yes	No	Yes
Number of observations	66,459	66,363	66,459	66,363

Note: Estimated marginal effect of the share of objecting gynecologists on the individual probability of self-induced abortion, by number of previous births. Estimates are based on Logit and Probit models and the analysis is at the individual-year level. All regressions include province of miscarriage, province of birth and year fixed effects. Robust standard errors are reported in parentheses and are clustered at the provincial level. *, ** and *** indicate statistical significance at ten, five and one percent levels respectively.

Table C.2: Self-Induced Abortions and Conscientious Objection with Respect to Previous Induced Abortions. Marginal Effects.

	(1) (Probit)	(2) (Logit)	(1) (Probit)	(2) (Logit)
# of previous abortions				
1	0.442***	0.432***	.462***	.464***
	(.123)	(.122)	(.134)	(.134)
2	.499***	.499***	.534***	.556***
	(.152)	(.148)	(.168)	(169)
3	.563***	.575***	.616***	.663***
	(.192)	(.183)	(.214)	(.217)
4	.633***	.660***	.707***	.786***
	(.241)	(.228)	(.272)	(.279)
5	.710**	.755**	.809**	.928**
	(.301)	(.285)	(.342)	(.357)
6	.795**	.861**	.924**	.090**
	(.372)	(.352)	(.426)	(.452)
7	.887*	.980**	1.050**	1.275**
	(.454)	(.433)	(.525)	(.567)
8	.989*	1.111**	1.191*	1.485**
	(.548)	(.526)	(.640)	(.706)
9	1.099*	1.255**	1.346*	1.724**
	(.654)	(.633)	(.774)	(.874)
10	.1.218	1.413*	1.517	1.995*
	(.774)	(.754)	(0.930)	(1.076)
11	1.348	1.586*	1.707	2.304*
	(.906)	(.889)	(1.110)	(1.317)
12	1.488	1.773*	1.916	2.653*
	(1.053)	(1.038)	(1.319)	(1.597)
13	1.638	1.976*	2.147	3.046
	(1.213)	(1.199)	(1.560)	(1.916)
14	1.798	2.193	2.403	3.482
	(1.386)	(1.373)	(1.834)	(2.262)
15	1.970	2.426	2.684	3.960
	(1.572)	(1.557)	(2.144)	(2.623)
Provinces FE and year FE	Yes	Yes	Yes	Yes
Time-varying controls	No	Yes	No	Yes
Number of observations	66,459	66,363	66,459	66,363

Note: Estimated marginal effect of the share of objecting gynecologists on the individual probability of self-induced abortion, by number of previous abortions. Estimates are based on Logit and Probit models and the analysis is at the individual-year level. All regressions include province of miscarriage, province of birth and year fixed effects. Robust standard errors are reported in parentheses and are clustered at the provincial level. *, ** and *** indicate statistical significance at ten, five and one percent levels respectively.

Table C.3: Self-Induced Abortions and Conscientious Objection with Respect to Weeks of Amenorrhea. Marginal Effects.

	(1)	(2)	(3)	(4)
	(Probit)	(Logit)	(Probit)	(Logit)
Weeks of amenorrhea				
1	.0574**	.0619**	.0703**	0.0781**
	(.0263)	(.0280)	(.0357)	(.0384)
2	.0666**	.0711**	.0795**	.0874**
	(.0282)	(.0299)	(.0375)	(.0401)
3	.0775**	.0820**	.0902**	.0982**
	(.0305)	(.0322)	(.0397)	(.0422)
4	.0908***	.0950***	.103**	.111**
	(.0334)	(.0352)	(.0424)	(.0448)
5	.107***	.111***	.118**	.126***
	(.0370)	(.0389)	(.0459)	(.0481)
6	.127***	.130***	.136***	.143***
	(.0418)	(.0437)	(.0503)	(.0524)
7	.151***	.153***	.157***	.164***
	(.0480)	(.0499)	(.0561)	(.0579)
8	.181***	.182***	.183***	.189***
	(.0561)	(.0580)	(.0637)	(.0651)
9	.218***	0.216***	.214***	.218***
	(.0665)	(.0683)	(.0736)	(.0746)
10	.263***	.259***	.251***	.255***
	(.0800)	(.0814)	(.0867)	(.0868)
11	.320***	.311***	.298***	.299***

continued

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Table C.3: Self-Induced Abortions and Conscientious Objection with Respect to Weeks of Amenorrhea. Marginal Effects.

	(1)	(2)	(3)	(4)
	(Probit)	(Logit)	(Probit)	(Logit)
	(.0972)	(.0981)	(.104)	(.103)
12	.389***	0.375***	.355***	.353***
	(.119)	(.119)	(.126)	(.123)
13	.474***	.453***	.426***	.420***
	(.146)	(.145)	(.154)	(.149)
14	.577***	.547***	.515***	.503***
	(.180)	(.177)	(.190)	(.182)
15	.702***	.659***	.627***	.606***
	(.221)	(.216)	(.235)	(.223)
16	.851***	.792***	.768***	.736***
	(.271)	(.263)	(.293)	(.275)
17	1.026***	0.948***	.945***	.898***
	(.332)	(.319)	(.367)	(.340)
18	1.229***	1.129***	1.166**	1.098***
	(.403)	(.385)	(.459)	(.422)
19	1.463***	1.337***	1.438**	1.343**
	(.487)	(.463)	(.575)	(.524)
20	1.726***	1.570***	1.766**	1.636**
	(.583)	(.552)	(.718)	(.649)
21	2.019***	1.829***	2.152**	1.980**
	(.693)	(.653)	(.893)	(.800)
22	2.337***	2.113***	2.593**	2.372**

continued

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Table C.3: Self-Induced Abortions and Conscientious Objection with Respect to Weeks of Amenorrhea. Marginal Effects.

	(1)	(2)	(3)	(4)
	(Probit)	(Logit)	(Probit)	(Logit)
	(.814)	(.766)	(.099)	(.979)
23	2.678***	2.416***	3.083**	2.807**
	(.947)	(.890)	(1.336)	(1.184)
24	3.036***	2.736***	3.612**	3.277**
	(1.090)	(1.023)	(1.600)	(1.414)
25	3.404***	3.068***	4.166**	3.771**
	(1.241)	(1.166)	(1.884)	(1.663)
26	3.774***	3.403***	4.722**	4.273**
	(1.396)	(1.314)	(2.181)	(1.926)
Provinces FE and year FE	Yes	Yes	Yes	Yes
Time-varying controls	No	Yes	No	Yes
Number of observations	66,459	66,363	66,459	66,363

Note: Estimated marginal effect of the share of objecting gynecologists on the individual probability of self-induced abortion, by weeks of amenorrhea. Estimates are based on Logit and Probit models and the analysis is at the individual-year level. All regressions include province of miscarriage, province of birth and year fixed effects. Robust standard errors are reported in parentheses and are clustered at the provincial level. *, ** and *** indicate statistical significance at ten, five and one percent levels respectively.

Table C.4: Frequency Table. Number of Previous Births, Number of Previous Abortions, and Weeks of Amenorrhea

	Frequency	Percentage
Number of previous births		
0	38,694	50.42
1	26,099	34.01
2	8,911	11.61
3	2,303	3.00
4	500	0.65
5	146	0.19
6	45	0.06
7	19	0.02
8	9	0.01
9	5	0.01
10	9	0.01
11	2	0.00
12	1	0.00
Number of previous abortions		
0	69,460	90.51
1	5,672	7.39
2	1,177	1.53
3	288	0.38
4	74	0.10
5	36	0.05
6	14	0.02
7	8	0.01

Table C.4: Frequency Table. Number of Previous Births, Number of Previous Abortions, and Weeks of Amenorrhea

	Frequency	Percentage
8	8	0.01
9	4	0.01
10	1	0.00
15	1	0.00
Weeks of amenorrhea		
1	32	0.04
2	18	0.02
3	27	0.04
4	293	0.38
5	1,218	1.59
6	5,155	6.72
7	7,652	9.97
8	14,195	18.50
9	15,654	20.40
10	12,329	16.07
11	7,306	9.52
12	5,072	6.61
13	1,904	2.48
14	1,032	1.34
15	838	1.09
16	898	1.17
17	629	0.82
18	557	0.73

continued

Table C.4: Frequency Table. Number of Previous Births, Number of Previous Abortions, and Weeks of Amenorrhea

	Frequency	Percentage
19	516	0.67
20	514	0.67
21	393	0.51
22	327	0.43
23	101	0.13
24	52	0.07
25	31	0.04
	76,743	100.00

Note: Absolute numbers and percentages of women in the sample for each value of the variables: number of previous births, number of previous abortions, and weeks of amenorrhea

Table C.5: Self-Induced Abortions and Conscientious Objection for the Subpopulation of Italian Women. Marginal Effects.

	(1) (Probit)	(2) (Probit)	(3) (Logit)	(4) (Logit)
Share of objectors	.375**	.354**	.383*	.350
	(.184)	(.180)	(.218)	(.213)
Provinces FE and year FE	Yes	Yes	Yes	Yes
Time-varying controls	No	Yes	No	Yes
Number of observations	43,437	43,384	43,437	43,384

Note: Estimated effect of the share of objecting gynecologists by province on the individual probability of self-induced abortion, from 2015 to 2018. The sample is restricted to include only the subpopulation of Italian women. Estimates are based on Logit and Probit models and the analysis is at the individual-year level. All regressions include province of miscarriage, province of birth and year fixed effects. Robust standard errors are reported in parentheses and are clustered at the provincial level. *, ** and *** indicate statistical significance at ten, five and one percent levels respectively.

Appendix D   Robustness checks

Table D.1: Self-Induced Abortions and Conscientious Objection by Geographic Area. Marginal Effects.

	(Italy)		(South & Islands)		(North & Center)	
	(Probit)	(Logit)	(Probit)	(Logit)	(Probit)	(Logit)
Share of objectors	.406***	.424***	.0144	−.0123	.384***	.399***
	(.104)	(.112)	(.0389)	(.0396)	(.113)	(.109)
Provinces FE and year FE	Yes	Yes	Yes	Yes	Yes	Yes
Time-varying controls	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	81,847	81,847	13,459	13,459	66,341	66,341

Note: Estimated effect of the share of objecting gynecologists by province on the individual probability of self-induced abortion, from 2015 to 2018, by geographic area. Estimates are based on Logit and Probit models and the analysis is at the provincial-year level. All regressions include province of miscarriage, province of birth and year fixed effects. Robust standard errors are reported in parentheses and are clustered at the provincial level. *, ** and *** indicate statistical significance at ten, five and one percent levels respectively.