

To Pill or not to Pill? Access to Emergency Contraception and Contraceptive Behavior*

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Abstract

We examine the effects of free-of-charge availability of emergency contraception on contraceptive behaviour in Chile. Using a survey of individuals 15 to 29, we exploit variation at the municipality level in availability as a consequence of legal and judicial decisions in the late 2000s. We find an increase in the use of emergency contraception in municipalities in which it was available through the public health system, but also an increase in the use of other methods of hormonal, pre-coital contraception, and a decrease of more traditional contraceptive methods. This effect is concentrated among groups with a low starting use of contraceptives, who may benefit from the contact with the health services. Unlike previous results for developed countries, our results indicate that there is scope for an effect of emergency contraception in settings with low starting levels of contraceptive use, and a significant potential for policies to increase adoption of regular contraception.

1 Introduction

Family planning programs have been an essential part of the development agenda for a few decades (UNFPA, 2012). However, the direction of the causality between contraceptive availability and development is still unclear. Does development reduce the demand for children —hence increasing the demand for contraception— or does contraception and the reduction in population growth play a key role in development? The consequences of

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free-of-charge distribution of contraceptives in fertility and risky behaviours in developing countries are still open to debate, and the repercussions of the introduction of post-intercourse contraception (*emergency contraception*) have not been sufficiently explored by the literature.

In developed countries, the introduction of modern contraceptive methods (*the pill*) reduced the risk of pregnancy, freeing women and partners from the cost of unwanted fertility (Goldin, 1990). This in turn affected education, labor force participation, income or child investments (Goldin and Katz, 2002; Bailey, 2006). However, contraception reduces the cost of engaging in sexual intercourse, and increases in sexual activity could (partially or totally) compensate the effect of the decrease in the probability of the undesired outcome. A similar mechanism operates in the case of abortion: its availability should decrease unwanted births unless the increase in unprotected sexual activity compensates for the reduction of pregnancies taken to term.¹ Hence, the net effect has been regarded as an empirical question.

Emergency Contraception (EC), also known as *the morning after pill*, lays between abortion and regular contraception. Unlike regular contraception, it can be taken once sexual activity has taken place, but the time window for its intake prevents any update in information that occurs in the case of abortion.² Since its introduction in 1980s, the conditions in which it can be accessed have substantially varied across countries and over time. The literature has reported only limited impact of EC in developed countries. For instance, Girma and Paton (2006, 2011) find no effect in teen births after an improvement on access in the UK, but an increase in sexually transmitted diseases. In the U.S., Gross, Lafortune and Low (2014) report no effect on birth or abortion, but a decrease in reports of sexual assault when they become unnecessary to access EC, and Durrance (2013) and Mulligan (2016) show an increase in sexually transmitted diseases.

Contrary to developed countries, there is limited and mixed evidence of the effect of family planning policies on low and middle income countries. Joshi and Schultz (2013) find a substantial decrease on fertility when pre-intercourse contraception becomes available in Bangladesh, and Angeles, Guilkey and Mroz (2005) report a similar result for an expansion of a family planning program in Peru. On the other hand, Miller (2010) reports small effects on total fertility using the expansion of the *Profamilia* program in Colombia, but large gains from postponing first births. Miller and Valente (2016) show evidence of the substitutability between abortion and modern contraception in Nepal, while Cavalcanti, Kocharkov and Santos (2016) find larger positive welfare effects of subsidizing abortion than contraceptives.

¹Levine, Trainor and Zimmerman (1996) or Ananat, Gruber, Levine and Staiger (2009) present evidence for a large effect of abortion on fertility rates and maternal characteristics.

²EC reduces the probability of pregnancy from 42 to 95 percent, depending on the time passed between sexual activity and its intake, but it offers only a 5-day window for its intake.

We contribute to this literature by studying the consequences of free-of-charge availability of EC in contraceptive behaviour of young people of a middle income country, Chile. The context of Chile is ideal for analysing the effects of EC for various reasons. First, according to the World Health Organization, Chile has a relatively low rate of contraceptive use, even compared to other Latin American countries.³ Teenage pregnancy is still a relevant issue, with 55 births per 1,000 women between ages 15 to 19 in 2012 (compared to 33 for U.S. or 11 for Spain). Second, Chile has been one of the last countries to legalize abortion, and did so after our period of study, allowing us to isolate the effect on contraceptive choices.⁴ Finally, between years 2007 and 2010 there were a series of measures and counter-measures to allow/block the distribution of the EC pill, in the form of legal changes and judiciary decisions. This produced changes in EC availability across municipalities and over time, explained in detail in Section 2, that we exploit to identify a causal effect.

The paper closest to us, [Bentancor and Clarke \(2017\)](#), uses the same changes in EC availability in Chile to assess its effect on birth rates, foetal deaths and mother characteristics. Using data from 2009 to 2011, they report a substantial decrease in fertility, and in late foetal deaths, used as a proxy for abortion, suggesting that the results reported previously for developed countries may not extend to developing countries. However, little is yet known of the direct effect on contraceptive behaviour.

We analyse the impact of EC availability on a representative sample of individuals aged 15 to 29. The Chilean National Surveys of Youth (*Encuesta Nacional de la Juventud*) includes not only information on municipality of residency and individual characteristics, but also self-reported contraceptive use, and other non-sexual risky behaviour, that we will use as a control experiment. We find a substantial increase in the use of emergency contraception when freely available, but also an increase in the use of the regular pill and other hormonal, pre-coital, contraceptives, suggesting some spillovers and effects that go beyond the use of emergency contraception itself. Importantly, the effect is concentrated among sectors of the population that reported a low level of contraceptive use before any policy change.

³Only 58 percent of women in Chile use contraception regularly, compared with 80 percent in Brazil, 78 percent in Uruguay or 80 percent in Mexico or Peru (http://www.un.org/en/development/desa/population/theme/family-planning/cp_model.shtml, accessed May 5th 2015.)

⁴In Latin America, only El Salvador and Honduras have a similarly restrictive legislation, but it is commonly the case in Sub-Saharan Africa. While this may affect the external validity of our results, it simplifies the estimation procedure, since there is possible substitution between contraception and abortion.

2 Background

This section describes the Chilean context and argues why this case study can expand the understanding of the role of contraception in developing countries. The Chilean Constitution (1980) protects the “right of life of those soon to be born” (*la vida del que está próximo a nacer*). Until 2017, Chile was one of the few countries in Latin America in which abortion was forbidden altogether.⁵ Illegal abortions do nevertheless occurred in Chile, and estimates range between 60,000 and 100,000 per year (Casas and Vivaldi, 2014).

Pre-intercourse contraception has become widely available for the entire population over the last decades. The decree from the Ministry of Health called *Normas Nacionales sobre Regulación de la Fertilidad* (National Rules on Regulation of Fertility) published in 2007 regulates the access to contraceptive methods in the public health service (FONASA). Modern contraceptive methods are available for all women through hospitals and local health centers. Hospitals are operated by the Ministry of Health through its regional branches called *Servicios de Salud*, while local health centers, called *consultorios*, are run directly by municipalities.

In contrast, emergency contraception has been openly debated in Chile for over a decade. Denounced as abortive, its distribution was forbidden in August 2001 by the Chilean Supreme Court, regardless of whether the health care provider was public or private. This Decision was subsequently challenged and revoked in November 2005, with the Supreme Court not finding enough evidence of emergency contraception being abortive. Until February 2007, the EC pill was provided by the public health service only in case of rape. Pharmacies were allowed to sell EC, but a substantial share of them, including some of the most important pharmacy chains in the country, refused to do so. Therefore, access to emergency contraception was possible but restricted and expensive for the majority of the Chilean population.

The 2007 Decree also regulated this anomalous situation. It allowed free distribution of emergency contraception in the public health service through hospitals and local clinics (*consultorios*). This regulation was subsequently challenged in front of the Supreme Court. The Supreme Court decision of April 2008 forbade the distribution of emergency contraception in the public health network, arguing that such distributions needed to be authorized by a higher order norm, namely by law rather than by Decree.

This decision ended the first period of free distribution of EC and gave place to an anomalous situation, in which EC was available through pharmacies (at a cost) and, in some cases, through clinics. Clinics are operated by municipalities instead of the Ministry

⁵A bill approved in 2017 known as abortion under three circumstances (*aborto en tres causales*) allowed women to have an abortion if the mother’s life is at risk, the fetus will not survive the pregnancy, or in the case of rape.

of Health, and it was unclear from the Supreme Court decision whether the prohibition operated at this level. Therefore, EC was available in some municipalities but not in others, depending, for instance, on the opinion of the mayor in the matter. This “partial ban” on emergency contraception lasted until June 2009. The *Contraloría* (government’s auditor) established that the Supreme Court decision was also applicable at the municipality level, and therefore all distribution of EC within any public health service was illegal. The “full ban” lasted until January 2010, when congress approved a bill (Law No. 20418 of 8 January 2010) allowing the free distribution of the EC pill. However, the lower rank norm putting these dispositions into practice was delayed until 2013 (Health Ministry Decree of 28 March 2013), yielding a period of uncertain distribution. [Dides, Benavente, Sáez, Nicholls and Correa \(2011\)](#) describe two reasons for this uncertainty. First, the director of a *Servicio de Salud* forbade midwives from prescribing contraceptives, arguing that according to the Sanitation Code they could only prescribe drugs needed for deliveries. A bill was put forward in Congress to allow midwives to prescribe contraceptives (Law No. 20533), and enacted in September 2011. Second, several *consultorios* did not distribute the emergency pill arguing that they were out of stock. Some *consultorios* offered the *Yuzpe Method*, a combination of several doses of pre-intercourse contraceptive pills, as an alternative.⁶ This lack of stock of emergency contraception was greatly reduced with the enactment of the 2013 Health Ministry Decree. From 2013 onwards, the emergency contraception pill has been freely distributed.

Figure 1 illustrates the different periods regarding EC availability, along with the survey waves that we use in our estimation (presented in the next section).

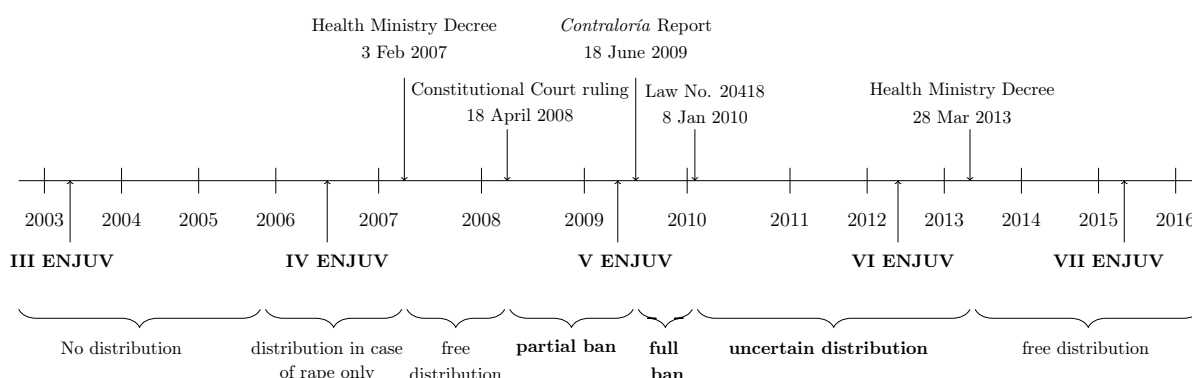


Figure 1: Emergency Contraception Availability and ENJUV Surveys

⁶It is possible that some *consultorios* gave the “out of stock” explanation as an excuse for not distributing the pill.

3 Data

We take advantage of the timing of the Chilean National Surveys of Youth (*Encuestas Nacionales de Juventud*, ENJUV hereafter), a cross section survey that took place at intervals since the 1990s. In particular, we use waves III to VII, that occurred in 2003, 2006, 2009, 2012 and 2015. The ENJUV interviews a nationally representative sample of men and women aged 15 to 29. It contains information on personal characteristics, including municipality of residence, education, religion or socio-economic status. Additionally, young people were asked to fill a self-completing questionnaire regarding their sexual behavior, among other sensitive topics. Each respondent was asked whether they ever had sexual intercourse, and, if so, which contraceptive method was used on their most recent intercourse, although no information was recorded on when it occurred. They were presented with a list of contraceptive methods that included the morning after pill (*píldora del día después* or *píldora anticonceptiva de emergencia*).

Contraceptive choices and the probability of having ever had intercourse, our main outcomes of interest, are presented in Table 1. For those individuals who reported prior sexual intercourse, we have information on the contraceptive method used. For our estimation, we classify pre-intercourse contraceptive methods in highly effective and non-highly effective, considering highly effective only the following methods: pill, IUD, diaphragm, injectable and other types of hormonal contraception.⁷ This classification also allow us to abstract from the introduction of new contraceptive methods, particularly new hormonal contraceptives (e.g., patches or injectables). Contraceptive choices are then grouped in 4 categories: emergency contraception, highly effective methods, non-highly effective methods and no method at all.⁸

We observe a small increase over time in the share of respondent who had sexual intercourse prior to the interview, particularly from 2006 to 2009. This increase appears to have a different timing than the increase in the use of emergency contraception (column (2)), more concentrated between 2009 and 2012, as it would be expected from the policy changes reported in Figure 1. Over time, young people appear more likely to be using any contraception, and mostly so highly effective contraception.

Table A1 in the Appendix includes the mean and standard deviations for the individual characteristics included in our estimation. We control for age, gender, education, religion, marital status, number of children, socio-economic background or labour force status of respondent and occupational group of household head.

⁷Individuals who report using male or female sterilization are small in number and excluded from our analysis

⁸We keep one contraceptive method per respondent in the following way: if EC was used, we assumed all other methods were used unsuccessfully. If a highly effective used was used, we assume the goal of other methods (e.g., condoms) was not preventing pregnancy. Only if no EC and no highly effective method was used, a non-highly effective method is recorded.

Table 1: Descriptive Statistics: individual intercourse and contraception choices

| Survey year | Ever sexual intercourse | Contraceptive choice at last sexual intercourse | | | |
|-------------|---------------------------|---|---------------------------|-----------------------------|---------------------------|
| | (1) | Emergency contraception | Highly effective method | Non-highly effective method | No method |
| | (1) | (2) | (3) | (4) | (5) |
| 2003 | 0.681 (0.466) 6962 | 0 4738 | 0.421 (0.494) 4738 | 0.238 (0.426) 4738 | 0.341 (0.474) 4738 |
| 2006 | .0651 (0.475) 6034 | 0.003 (0.053) 3958 | 0.362 (0.481) 3958 | 0.345 (0.475) 3958 | 0.291 (0.454) 3958 |
| 2009 | 0.708 (0.455) 7294 | 0.003 (0.057) 5163 | 0.398 (0.490) 5163 | 0.328 (0.470) 5163 | 0.270 (0.444) 5163 |
| 2012 | 0.717 (0.451) 7623 | 0.028 (0.166) 5465 | 0.437 (0.496) 5465 | .0331 (0.471) 5465 | 0.203 (0.402) 5465 |
| 2015 | 0.707 (0.455) 7333 | 0.018 (0.131) 5187 | 0.425 (0.494) 5187 | 0.343 (0.475) 5187 | 0.214 (0.410) 5187 |
| Total | 0.695 (0.460) 35246 | 0.011 (0.105) 24511 | 0.411 (0.492) 24511 | 0.317 (0.465) 24511 | 0.260 (0.439) 24511 |

Notes: Only the pill, IUD, diaphragm, injectable and other pre-intercourse hormonal contraceptives are considered highly effective methods. Few individuals report male or female sterilization, and these are dropped from our sample.

As previously available information on emergency contraception at the municipality level was taken with a yearly frequency, and not necessarily close to the survey, we rely on the information reported by ENJUV respondents to develop a measure of availability at the municipality level, introduced in Table 2.⁹ Column (1) presents the probability of anyone in the municipality of the respondent reporting having used emergency contraception during their last sexual intercourse, by survey year. Thus, we assume EC to be available if anyone (including the respondent itself) used it on the municipality as contraceptive during their last sexual intercourse. This measure experience a small increases from 2006 to 2009 and a sharp increase in the next interval, reflecting the changes in policy presented in Figure 1. This measure, however, is problematic. As explained in Section 2, emergency contraception was only freely available in the public health from 2007, but it was available in pharmacies (at a cost) and through the private health system since

⁹ENJUV surveys usually took place during the months of March and April, while the FLASCO survey of municipalities by Dides, Benavente and Moran (2009) used by Bentancor and Clarke (2017) took place in October/November, and only for some years in our sample.

November 2005 and throughout the entire period.¹⁰ For this reason, use of emergency contraception does not necessarily reflect free availability through the public health service. Hence, we construct an alternative measure (column (2)) that assumes no availability in 2003 and 2006 for all municipalities, and that only assumes availability if the number of respondents reporting emergency contraception as the method used in the last sexual intercourse is higher than the one reported for 2006. Finally, we assume no availability in 2003 and 2006 and availability thereafter if the share of emergency contraception users is higher than in 2006 (column (3)), to account for changes in the composition of the EN-JUV survey.¹¹ We observe similar levels and pattern for all measures, with an increase availability particularly from 2009 to 2012, as the changes in regulation would predict. Our measures are highly correlated to each other. Our preferred measure is presented in column (2), although the results are robust to the use of alternative measures.

Table 2: Descriptive statistics: EC availability in municipality c in year t

| Survey year | P(any respondent used EC _{ct}) (1) | P(# EC users _{ct} > # EC users _{c,2006}) (2) | P(%EC users _{ct} > %EC users _{c,2006}) (3) |
|-------------|---|--|--|
| 2003 | 0 6967 | 0 6967 | 0 6967 |
| 2006 | 0.217 (0.412) 6034 | 0 6034 | 0 6034 |
| 2009 | 0.301 (0.459) 7360 | 0.276 (0.447) 7360 | 0.251 (0.433) 7360 |
| 2012 | 0.726 (0.446) 7655 | 0.625 (0.484) 7655 | 0.632 (0.482) 7655 |
| 2015 | 0.708 (0.455) 7422 | 0.636 (0.481) 7422 | 0.636 (0.481) 7422 |
| Total | 0.405 (0.491) 35438 | 0.326 (0.469) 35438 | 0.322 (0.467) 35438 |

Notes: Column (1) considers emergency contraception was available if anyone in that municipality reported using emergency contraception; columns (2) and (3) considers emergency contraception was available if a higher number and a higher share of respondents respectively than that municipality in 2006.

¹⁰Emergency contraception was also available in cases of rape through the public health service since the 2005 Supreme Court not finding evidence of the morning after pill being abortive (see Section 2 for more details).

¹¹Note that these measures do not exclude the own use of emergency contraception. Hence, by construction, municipalities with emergency contraception will have higher use.

4 Results

4.1 Contraception availability and engagement in sexual activity

Contraception availability may affect not only the type of contraception used, but also whether or not individuals engage in sexual intercourse in the first place. An increase in sexual activity as the one reported in [Arcidiacono, Khwaja and Ouyang \(2012\)](#) may alter the unobservable characteristics of individuals making contraceptive choices, confounding our parameters of interest. Hence, we first consider whether emergency contraception availability at the municipality level is correlated with a higher proportion of young people reporting ever had sex. Specifically, we estimate the following equation:

$$\text{Ever intercourse}_{ict} = \alpha + \beta \text{ EC availability}_{ct} + \gamma X_{ict} + \delta_t + \mu_c + \phi_c * \text{year}_t + \varepsilon_{ict}$$

where $\text{Ever intercourse}_{ict}$ takes value 1 if individual i in municipality c and year t reports having had sexual intercourse; $\text{EC availability}_{ct}$ takes value 1 if emergency contraception was available in his or her municipality at the time; X_{ict} are individual characteristics; δ_t and μ_c are time and municipality specific fixed effects and $\phi * \text{year}_t$ are municipality specific time trends. Standard errors are clustered at the municipality level.

Table 3 presents the OLS results for this estimation. Column (1) includes the results without any individual, municipality or time controls. Municipalities where the morning after pill was available present a higher share of young people who ever had sex, suggesting the same unconditional relationship observed in previous literature. However, once controls for individual characteristics (column (2)) are added, the size of the coefficient is substantially reduced. Adding municipality- and time-fixed effects (columns (3) and (4)) and municipality-specific time trends (column (5)) appears to completely dismiss this relationship, showing, if anything, a small negative but insignificant relationship between availability of emergency contraception and sexual intercourse.¹² This suggest that the availability of contraception is not likely to have a significant impact on the composition of our estimating sample, and, as such, unlikely to affect the unobservable characteristics of individuals making contraceptive choices.

4.2 Use of contraceptive methods

We now turn to the contraceptive choice for individuals 15 to 29 during their last sexual intercourse. We classified the pre-sexual intercourse methods in highly effective or non-highly effective methods and study the probability of choosing (1) Emergency Con-

¹²Our results are robust to alternative specifications, namely logit and probit (results available upon request).

Table 3: Probability of ever having had sexual intercourse, 15-29 year old (OLS)

| | (1) | (2) | (3) | (4) | (5) |
|-----------------------------------|---------------------|-------------------|-------------------|--------------------|-------------------|
| EC pill availability | 0.028*** (0.007) | 0.012* (0.006) | -0.016 (0.012) | -0.016* (0.009) | -0.017 (0.011) |
| N | 35246 | 35246 | 35246 | 35246 | 35246 |
| R ² | 0.001 | 0.336 | 0.002 | 0.335 | 0.340 |
| Municipality and year FE | | | ✓ | ✓ | ✓ |
| Individual characteristics | | ✓ | | ✓ | ✓ |
| Municipality-specific time trends | | | | | ✓ |

Notes: Robust standard errors clustered at the municipality level are reported in parentheses. * denotes significance at the 10% level, ** at the 5% level and *** at the 1% level. Individual controls include age, gender, education, marital status, children, socio-economic status and occupation.

trapection; (2) a highly effective method; (3) a non-highly effective method; or (4) no method at all. We estimate the following equation by OLS separately for each choice:

$$\text{Contraceptive method}_{ict} = \alpha + \beta \text{EC pill availability}_{ct} + X'_{ict} \gamma + \delta_t + \mu_c + \phi_c * \text{year}_t + \varepsilon_{ict}$$

where $\text{Contraceptive method}_{ict}$ takes value 1 if the corresponding method was reported, and 0 otherwise. Hence, each column represents a separate OLS regression.¹³

Table 4 presents the results for the four alternatives and the same sets of specifications as in Table 3. We observe a large, positive effect of emergency contraceptive availability on its use (Panel A, column (1)), which is robust to include controls for personal characteristics, municipality- and year-fixed effects and municipality-specific time trends (columns (2) to (5)). This could be due to the way our treatment variable was constructed, as own use is not excluded from our measure. However, the size of the coefficient (an increase in the probability of 2.2 percentage points, with an average level of 11%) suggests that the coefficient captures an actual increase in the use of emergency contraception in municipalities included in our treatment group. This leads us to believe that the policy was effective and indeed emergency contraception was used more frequently on those municipalities in which it was available free of charge.

Furthermore, the availability of emergency contraception is accompanied by an increase in the use of other forms of modern contraception. Panel B presents this set of results. The use of effective contraception increases by 2.9 percentage points (average use of 40%). Note that no other element regarding contraceptive provision was left up to discretion of the municipality officials, so this would suggest a spillover effect of emergency contraception availability. On the other hand, the likelihood of using non-effective

¹³Our results are robust to alternative specifications. The multinomial logit specification report similar results, but our data does not allow controlling for municipality-specific time trends.

contraception substantially decreases in municipalities where emergency contraception is available. Finally, we observe no evidence of emergency contraception availability being correlated with the likelihood of having unprotected intercourse when controls are added (Panel D).¹⁴

Table 4: Method used in last sexual intercourse, 15-29 year old (separated OLS regressions)

| | (1) | (2) | (3) | (4) | (5) |
|---|----------------------|----------------------|----------------------|----------------------|----------------------|
| <i>Panel A: Emergency contraception pill</i> | | | | | |
| EC pill availability | 0.023*** (0.002) | 0.022*** (0.002) | 0.021*** (0.003) | 0.021*** (0.002) | 0.022*** (0.003) |
| N | 24511 | 24511 | 24511 | 24511 | 24511 |
| R ² | 0.010 | 0.013 | 0.013 | 0.015 | 0.015 |
| <i>Panel B: Any highly effective method</i> | | | | | |
| EC pill availability | 0.022* (0.011) | 0.018 (0.012) | 0.034** (0.014) | 0.032** (0.014) | 0.026* (0.014) |
| N | 24511 | 24511 | 24511 | 24511 | 24511 |
| R ² | 0.000 | 0.082 | 0.003 | 0.086 | 0.087 |
| <i>Panel C: Any non-highly effective method</i> | | | | | |
| EC pill availability | 0.022* (0.012) | 0.004 (0.012) | -0.057*** (0.015) | -0.056*** (0.015) | -0.053*** (0.015) |
| N | 24511 | 24511 | 24511 | 24511 | 24511 |
| R ² | 0.000 | 0.075 | 0.006 | 0.076 | 0.077 |
| <i>Panel D: No method used</i> | | | | | |
| EC pill availability | -0.067*** (0.009) | -0.043*** (0.009) | 0.003 (0.013) | 0.002 (0.012) | 0.005 (0.012) |
| N | 24511 | 24511 | 24511 | 24511 | 24511 |
| R ² | 0.005 | 0.028 | 0.010 | 0.028 | 0.029 |
| Municipality and year FE | | | ✓ | ✓ | ✓ |
| Individual characteristics | | ✓ | | ✓ | ✓ |
| Municipality-specific time trends | | | | | ✓ |

Notes: Robust standard errors clustered at the municipality level are reported in parentheses. * denotes significance at the 10% level, ** at the 5% level and *** at the 1% level. Pill, IUD, diaphragm, injectable and other hormonal contraceptives are considered highly effective methods. Individual controls include age, gender, education, marital status, children, socio-economic status and occupation.

As we explained in Section 1, contraceptive use in Chile is relatively low, even compared with other Latin American countries of similar characteristics. Emergency contraception is not recommended as a substitute for regular contraception, and its provision is often accompanied by the provision of information or even the alternative contraception method. To understand the mechanism behind this increase in highly effective contra-

¹⁴Unfortunately, the ENJUV is not an adequate dataset to replicate the results on fertility from Bentancor and Clarke (2017), the paper closest to us. Although it includes information on whether the respondent was ever pregnant or had a child, only a very small sample of the respondent experienced a pregnancy or a birth within the last 12 months.

ceptive use, we conducted an online survey of practitioners (doctors and midwives) who were registered to prescribe the EC pill on or around year 2010.¹⁵ Our survey contacted them by email and asked about EC pill distribution and whether additional information was given at the time of the visit. Of a total of 549 registered practitioners with email address, we received a valid answer from 115.

A large majority of these practitioners (94%) reported providing information about other contraceptives at the same time as the EC pill was provided. All of those provided information about the contraceptive pill (or other hormonal contraceptives) and over 90% reported information on preservatives. Hence, it seems that this was a regular convention among doctors and midwives when asked for EC.¹⁶ Furthermore, on average, practitioners reported a 65% of individuals choose to use another method after receiving emergency contraception.

Hence, the increase in highly effective contraception that we observe could be driven by this secondary effect of emergency contraception. This is important for two reasons: first, prior literature has reported large effects of emergency contraception on fertility for Chile. This should be interpreted with care, as it may include both a direct effect of the morning after pill itself, along with the effect of an increase in the use of other highly effective contraceptive methods. Therefore, similar policy changes in settings in which information is already available or in which highly effective contraception is already widely used may not provide similar effects. This would explain, for instance, the lack of effect reported for the US (see, for instance, [Gross *et al.* \(2014\)](#)), or the UK ([Girma and Paton, 2011, 2006](#)). Second, our results indicate that even in settings in which emergency contraception is already available, information or awareness of contraceptive methods, or policies that bring young individuals in touch with the health system may enhance the effects.¹⁷

4.3 Heterogeneous effects

We examine next potential heterogeneous effects that could contribute towards understanding the effects of this policy. In particular, we examine different effects by age, gender and urban status. For each method, odd columns presents the results for the specification including only individual characteristics, year and municipality fixed-effects, while even columns include as well municipality-specific time trends.

¹⁵The website www.profesionalesquedanlapae.org, maintained by the ONG Prosalud, listed practitioners who were willing to prescribe the EC pill. The website is no longer available.

¹⁶Most practitioners report having done this through a conversation, although some reported providing information through flyers.

¹⁷Chile has implemented programs, such as *Programa Puente*, in which a central part of them is ensuring disadvantaged families are connected to the formal social system.

Age Panel A of Table 5 presents heterogeneous effects of emergency contraception availability by age. We choose 20 at the time of the interview as cut-off age, as it is the average of our estimating sample, but the results presented here are robust to alternative cut-offs.¹⁸ The effect of emergency contraception availability on its use is significantly stronger among the youngest respondents, with the results in columns (1) and (2) suggesting an increase of 2.7 percentage points for the younger group, with a smaller increase (around 2 percentage points) for older respondents.

This group is not only more reactive to the policy itself, but its spillovers appear larger as well. The effect of free-of-charge EC availability on the use of highly effective methods is mostly driven by younger respondents, with virtually no effect for individuals 20 to 29. They are also more likely to have substituted away from non-highly effective methods. Finally, while for the entire sample we observe no change in the probability of not using contraception, younger individuals in municipalities in which Emergency Contraception was available report less frequently (3 percentage points) having had unprotected sexual intercourse than in municipalities without EC availability.

Overall, the relation between emergency contraception availability and behaviour change appears stronger among younger respondents, not only through its use, but also changing the use of other contraceptive methods. These individuals, aged 20 and younger, were using less frequently highly effective contraception in 2006, before the policy came into effect (see Table A2 in the Appendix). Only 24% of individuals aged 20 or younger report a highly effective method in 2006, compared with 44% for those older than 20. Hence, they may be less aware of the alternatives to emergency contraception than older respondents, and more responsive to the increase in information that came along with availability.

Gender Panel B of Table 5 present our baseline results when an interaction for gender is included. This estimation provides some interesting insights. Surprisingly, the effect is highly concentrated among men. The increase in the use of EC in municipalities in which it is available free of charge is stronger for men (3 percentage points for 1.7 for women), suggesting a larger decrease in contraception access by gender. Furthermore, this lower cost is also associated with a decrease in unprotected sex for men. On the other hand, women appear to have more frequent unprotected intercourse when emergency contraception is available.

The effect of EC availability on the use of highly effective methods appears to be driven completely by men, while women do not appear to change their probability of choosing this type of methods. However, we observe no difference on the effect on the use of non-highly effective methods. Taken together, these results suggest that men

¹⁸In particular, we observe the same effect if we choose 18 as cut-off age. The 2013 decree introduced clear conditions for individuals below 18 to access the emergency contraception.

are, as a consequence of EC availability, moving away from unprotected intercourse or non-highly effective methods (i.e., condoms) towards not only emergency contraception by also other pre-intercourse highly effective methods. Women, on the other hand, are substituting away from non-highly effective methods towards emergency contraception, and, quite surprisingly, no method at all.

Similarly to the case of younger respondents, differences in prior use of different contraceptive methods also appear by gender. In 2006, 47% of women reported having used a highly effective contraceptive method for only 24% of men.¹⁹ The pattern described by the “high-use” group for both age and gender is quite similar, as it can be seen in Panels A and B. In both cases, the effect of the policy is larger for the group starting with a lower level of use. These groups also decrease the incidence of unprotected intercourse, while it increases for the other group. The effect in the use of highly effective methods is fully concentrated in the group with a low level of use, suggesting an indirect effect of emergency contraception availability for low use groups. These groups may resort to the use of EC in different situations (e.g., a broken condom, rather than a missed pill), and hence the advice and information that they receive may as well be different, shaping their reaction.

Alternatively, both groups (younger and male respondents) may present a different pattern in the type of relationships to which the “last sexual intercourse” question refers to. This is a feature of the data, so if men and younger respondents have a different number of sexual partners, it might be the case that we capture a higher share of occasional intercourse among these groups than among the women or older respondents. For every wave but the 2012 ENJUV wave, respondents are asked with whom did they have their last sexual encounter. Women report having had it with a stable partner (spouse, fiancé or boyfriend) 88% of times, for 71% of men. We do not find substantial difference on the effect of emergency contraception availability along this dimension (results available upon request).²⁰

Urban Panel C of Table 5 presents the results by whether respondents were living in a urban or rural environment. Note that municipalities may include both rural and urban sections (although not all do), so living in a urban or rural environment does not necessarily imply a particular type of municipality. 86% of our estimation sample lives in an urban environment.

¹⁹In most other dimensions, men and women are well-balanced. The only differences appear in socio-economic status, urbanization and education of the household head. In all of these, women appear more frequently in the group traditionally reporting lower contraceptive use (lower socio-economic status, more frequently rural and a lower education of the household head), so it is unlikely that differences in contraception use are picking up mere differences in background.

²⁰Note that relationship status is not included as a control in our baseline specifications as it is not available for the 2012 wave.

Table 5: Method used in last sexual intercourse, 15-29 year old (OLS)

| | Emergency contraception | | Highly effective method | | Non-highly effective method | | No method | |
|-----------------------------------|----------------------------|----------------------|----------------------------|----------------------|--------------------------------|----------------------|---------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| <i>Panel A: age</i> | | | | | | | | |
| EC pill availability | 0.026*** (0.004) | 0.027*** (0.004) | 0.082*** (0.015) | 0.070*** (0.016) | -0.078*** (0.016) | -0.063*** (0.019) | -0.030** (0.014) | -0.034** (0.014) |
| EC pill availability*age>20 | -0.007* (0.004) | -0.007* (0.004) | -0.084*** (0.014) | -0.085*** (0.014) | 0.037*** (0.014) | 0.038*** (0.014) | 0.054*** (0.012) | 0.054*** (0.012) |
| N | 24511 | 24511 | 24511 | 24511 | 24511 | 24511 | 24511 | 24511 |
| R ² | 0.015 | 0.014 | 0.087 | 0.090 | 0.076 | 0.078 | 0.029 | 0.032 |
| <i>Panel B: gender</i> | | | | | | | | |
| EC pill availability | 0.028*** (0.004) | 0.030*** (0.005) | 0.059*** (0.014) | 0.046*** (0.016) | -0.054*** (0.017) | -0.039* (0.020) | -0.033** (0.014) | -0.037*** (0.014) |
| EC pill availability*female | -0.013*** (0.004) | -0.013*** (0.004) | -0.048*** (0.012) | -0.049*** (0.013) | -0.003 (0.011) | -0.003 (0.011) | 0.065*** (0.010) | 0.065*** (0.010) |
| N | 24511 | 24511 | 24511 | 24511 | 24511 | 24511 | 24511 | 24511 |
| R ² | 0.016 | 0.015 | 0.086 | 0.089 | 0.076 | 0.078 | 0.029 | 0.033 |
| <i>Panel C: urban</i> | | | | | | | | |
| EC pill availability | 0.021*** (0.007) | 0.019*** (0.007) | 0.007 (0.030) | -0.010 (0.033) | -0.000 (0.027) | 0.010 (0.027) | -0.028 (0.025) | -0.020 (0.027) |
| EC pill availability*urban | 0.001 (0.007) | 0.004 (0.007) | 0.027 (0.030) | 0.031 (0.032) | -0.059** (0.024) | -0.055** (0.024) | 0.032 (0.026) | 0.019 (0.028) |
| N | 24511 | 24511 | 24511 | 24511 | 24511 | 24511 | 24511 | 24511 |
| R ² | 0.015 | 0.014 | 0.086 | 0.089 | 0.076 | 0.078 | 0.028 | 0.031 |
| Municipality and year FE | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Individual characteristics | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Municipality-specific time trends | | ✓ | | ✓ | | ✓ | | ✓ |

Notes: Robust standard errors clustered at the municipality level are reported in parentheses. * denotes significance at the 10% level, ** at the 5% level and *** at the 1% level. Pill, IUD, diaphragm, injectable and other hormonal contraceptives are considered highly effective methods.

There is not significant evidence of a different effect between young people living in rural and urban settings. The only significant difference appears in the probability of using a non-highly effective method of contraception, a probability that decreases significantly only in urban settings when emergency contraception becomes available. Although not significant differences are estimated, it appears to be compensated by smaller increases in the probability of using both no method and highly effective methods. Unlike younger respondents and men, there were no major differences in use between groups in 2006 (see Table A2), although the same of rural respondent was arguably small.

5 Robustness checks

Even when controlling for municipality-specific time trends, it might be the case that our measure of emergency contraception availability is capturing time-varying elements that correlate with risky behaviours. We now perform a robustness check on the relation between emergency contraception availability and other risky choices. The ENJUV data collects information on the probability of having engaged with risky behaviours in the

year prior to the interview. In particular, the young people are asked whether they drink alcohol, smoked cigarettes or marijuana or consumed cocaine. About 65% of our sample reported having consumed alcohol over the last 12 months, 52% smoked cigarettes, 20% marijuana but only 2.5% reported having used cocaine.

Table 6 presents evidence of the relation between emergency contraception availability and these orthogonal risks. As expected, when none or only individual characteristics are included, we observe a positive relation between risky behaviours (cigarettes and marijuana) and availability of the morning after pill. Hence, as previously reported, it would seem that more risk-friendly municipalities are more likely to provide emergency contraception. However, once we add controls for municipality and year (columns (3) and onwards), there is no evidence of individuals aged 15 to 29 being more likely to engage in risky behaviour whose consequences are not affected by emergency contraception availability in municipalities in which this was available.

Table 6: Effect of emergency contraception availability on other risky behaviours in the 12 months prior to interview (OLS)

| | (1) | (2) | (3) | (4) | (5) |
|-----------------------------------|----------|----------|---------|---------|---------|
| <i>Panel A: Alcohol</i> | | | | | |
| EC pill availability | 0.063*** | 0.033*** | 0.022 | 0.020 | 0.026 |
| | (0.011) | (0.009) | (0.020) | (0.016) | (0.019) |
| N | 22584 | 22584 | 22584 | 22584 | 22584 |
| R ² | 0.004 | 0.118 | 0.002 | 0.106 | 0.109 |
| <i>Panel B: Cigarettes</i> | | | | | |
| EC pill availability | 0.018 | 0.004 | 0.010 | 0.010 | 0.010 |
| | (0.012) | (0.012) | (0.015) | (0.013) | (0.016) |
| N | 22501 | 22501 | 22501 | 22501 | 22501 |
| R ² | 0.000 | 0.059 | 0.003 | 0.056 | 0.060 |
| <i>Panel C: Marijuana</i> | | | | | |
| EC pill availability | 0.070*** | 0.039*** | 0.016 | 0.014 | 0.001 |
| | (0.011) | (0.008) | (0.015) | (0.013) | (0.015) |
| N | 22113 | 22113 | 22113 | 22113 | 22113 |
| R ² | 0.008 | 0.075 | 0.019 | 0.070 | 0.075 |
| <i>Panel D: Cocaine</i> | | | | | |
| EC pill availability | 0.004 | 0.001 | 0.003 | 0.004 | 0.003 |
| | (0.003) | (0.003) | (0.004) | (0.004) | (0.006) |
| N | 21915 | 21915 | 21915 | 21915 | 21915 |
| R ² | 0.000 | 0.018 | -0.000 | 0.016 | 0.018 |
| Municipality and year FE | | | ✓ | ✓ | ✓ |
| Individual characteristics | | ✓ | | ✓ | ✓ |
| Municipality-specific time trends | | | | | ✓ |

Notes: Robust standard errors clustered at the municipality level are reported in parentheses. * denotes significance at the 10% level, ** at the 5% level and *** at the 1% level. Individual controls include age, gender, education, marital status, children, socio-economic status and occupation.

6 Conclusion

This paper presents evidence on the consequences of the introduction of freely available emergency contraception in a developing country with a low level of contraceptive use. We exploit a series of policy changes that allow municipalities to decide whether or not to distribute the *morning after pill* free of charge through local clinics or *consultorios*.

Our results show that changing from a situation in which emergency contraception was available only through the private health system at a cost to one in which it was available free of charge in the public health system is correlated with an increase in its use by individuals aged 15 to 29. This suggests an unmatched demand for this type of contraception. Interestingly, this change is also correlated with an increase in the use of other forms of modern or highly effective contraception (i.e., hormonal contraception or IUD), and a decrease in the use of traditional methods, including condoms. Our results are robust to controls not only for individual characteristics and time and municipality fixed effects, but also for municipality-specific time trends, to account for changes over time in the unobservable at the municipality level.

This effect is also concentrated on the parts of the population that exhibit a lower level of use before the policy change, namely younger individuals (below 20) and men. This suggests that the spillovers from emergency contraception availability may be specific to a context of low use of modern contraceptives, such as the pill and other hormonal contraceptive methods. These groups may benefit particularly by being in contact with the formal health system regarding their contraceptive choices, and the additional information that may have been provided alongside the EC pill. The conditions in which they are in touch with health professionals may be determined by their prior use and affect its consequences (i.e., young individuals asking for EC in a local *consultorio* after a broken condom or after a missed pill may receive very different advice from a health professional). Hence, the effects of a policy such as the distribution free of charge of EC through the public health system would be strongly dependent on the starting conditions.

Although our data does not allow us to test this hypothesis, this large effect could also partially be a by-product of encouraging these groups to get in touch with the formal health system. In field experiments in developing countries, it is frequently included as a treatment to provide individuals with information that would allow them to make the best out of the resources available to them (these being private or publicly provided).²¹ Most literature on developed countries explore variations coming from the introduction

²¹Among others, [Barber and Gertler \(2010\)](#) report a better use of pre-natal check-ups for pregnant women who attended information meetings as a part of PROGRESA. In a more similar context to ours, [Desai and Tarozzi \(2011\)](#) report a lack of effect in contraceptive behaviour after a randomized control trial providing credit access and/or information on contraceptive methods. They argue, however, that this might be due to a mismatch between the methods the information provided and those preferred by the women.

of over-the-counter distribution of EC, hence potentially driving individuals away from the formal health system.

Our results are relevant for two reasons: first, it is unlikely that the lack of effect of emergency contraception reported in previous literature for developed countries would apply to developing countries. While Chile presents a lower level of contraceptive use than similar countries, low use of hormonal contraception is the norm for regions targeted by these type of policies, either directly by governments or other organizations. Second, it contributes towards reconciling previous results in developed countries showing little effect of EC with the results of [Bentancor and Clarke \(2017\)](#). The large decrease in fertility observed following the introduction of emergency contraception in Chile may be driven by the overall effect of the policy on contraceptive behaviour, rather than only by emergency contraception itself.

References

- ANANAT, E. O., GRUBER, J., LEVINE, P. B. and STAIGER, D. (2009). Abortion and selection. *The Review of Economics and Statistics*, **91** (1), 124–136.
- ANGELES, G., GUILKEY, D. and MROZ, T. (2005). The determinants of fertility in rural Peru: Program effects in the early years of the national family planning program. *Journal of Population Economics*, **18** (2), 367–389.
- ARCIDIACONO, P., KHWAJA, A. and OUYANG, L. (2012). Habit persistence and teen sex: Could increased access to contraception have unintended consequences for teen pregnancies? *Journal of Business & Economic Statistics*, **30** (2), 312–325.
- BAILEY, M. J. (2006). More power to the pill: The impact of contraceptive freedom on women’s life cycle labor supply. *The Quarterly Journal of Economics*, **121** (1), 289–320.
- BARBER, S. L. and GERTLER, P. J. (2010). Empowering women: how Mexico’s conditional cash transfer programme raised prenatal care quality and birth weight. *Journal of development effectiveness*, **2** (1), 51–73.
- BENTANCOR, A. and CLARKE, D. (2017). Assessing Plan B: The effect of the morning after pill on children and women. *The Economic Journal*, **127** (607), 2525–2552.
- CASAS, L. and VIVALDI, L. (2014). Abortion in Chile: the practice under a restrictive regime. *Reproductive Health Matters*, **22** (44), 70–81.
- CAVALCANTI, T. V. D. V., KOCHARKOV, G. and SANTOS, C. (2016). Family planning and development: Aggregate effects of contraceptive use.
- DESAI, J. and TAROZZI, A. (2011). Microcredit, family planning programs, and contraceptive behavior: Evidence from a field experiment in Ethiopia. *Demography*, **48** (2), 749–782.
- DIDES, C., BENAVENTE, M. and MORAN, J. (2009). Entrega de la píldora anticonceptiva de emergencia en el sistema de salud municipal de Chile: Estado de situación, 2009.
- , —, SÁEZ, I., NICHOLLS, L. and CORREA, T. (2011). Provisión de Anticoncepción de Emergencia en el Sistema de Salud Municipal de Chile: Estado de situación, 2011.
- DURRANCE, C. P. (2013). The effects of increased access to emergency contraception on sexually transmitted disease and abortion rates. *Economic Inquiry*, **51** (3), 1682–1695.
- GIRMA, S. and PATON, D. (2006). Matching estimates of the impact of over-the-counter emergency birth control on teenage pregnancy. *Health Economics*, **15** (9), 1021–1032.
- and — (2011). The impact of emergency birth control on teen pregnancy and STIs. *Journal of Health Economics*, **30** (2), 373–380.
- GOLDIN, C. (1990). *Understanding the Gender Gap*. New York: Oxford University Press.
- and KATZ, L. F. (2002). The power of the pill: Oral contraceptives and women’s career and marriage decisions. *Journal of Political Economy*, **110** (4), 730–770.

- GROSS, T., LAFORTUNE, J. and LOW, C. (2014). What happens the morning after? The costs and benefits of expanding access to emergency contraception. *Journal of Policy Analysis and Management*, **33** (1), 70–93.
- JOSHI, S. and SCHULTZ, T. P. (2013). Family planning and women’s and children’s health: Long-term consequences of an outreach program in Matlab, Bangladesh. *Demography*, **50** (1), 149–180.
- LEVINE, P. B., TRAINOR, A. B. and ZIMMERMAN, D. J. (1996). The effect of Medicaid abortion funding restrictions on abortions, pregnancies and births. *Journal of Health Economics*, **15** (5), 555 – 578.
- MILLER, G. (2010). Contraception as development? New evidence from family planning in Colombia. *The Economic Journal*, **120** (545), 709–736.
- and VALENTE, C. (2016). Population policy: Abortion and modern contraception are substitutes. *Demography*, **53** (4), 979–1009.
- MULLIGAN, K. (2016). Access to emergency contraception and its impact on fertility and sexual behavior. *Health Economics*, **25** (4), 455–469.
- UNFPA (2012). *Choices not Chance UNFPA Family Planning Strategy 2012-2020*. Tech. rep., United Nations Population Fund.

Appendix

Table A1: Descriptive statistics: control variables

| | 2003 | 2006 | 2009 | 2012 | 2015 | All years |
|------------------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Female | 0.5464 (0.498) | 0.5481 (0.498) | 0.5489 (0.498) | 0.5475 (0.498) | 0.554 (0.497) | 0.549 (0.498) |
| Age | 20.845 (4.325) | 20.380 (4.229) | 20.475 (4.129) | 20.769 (4.165) | 20.758 (4.142) | 20.654 (4.199) |
| Urban | 0.869 (0.337) | 0.877 (0.328) | 0.837 (0.370) | 0.874 (0.332) | 0.873 (0.333) | 0.866 (0.341) |
| Catholic | 0.572 (0.495) | 0.595 (0.491) | 0.487 (0.500) | 0.483 (0.500) | 0.374 (0.484) | 0.498 (0.500) |
| Evangelic | 0.151 (0.358) | 0.139 (0.346) | 0.134 (0.341) | 0.130 (0.336) | 0.138 (0.345) | 0.138 (0.345) |
| Student | 0.492 (0.500) | 0.548 (0.498) | 0.542 (0.498) | 0.571 (0.495) | 0.579 (0.494) | 0.547 (0.498) |
| Single | 0.870 (0.336) | 0.922 (0.268) | 0.934 (0.248) | 0.942 (0.235) | 0.960 (0.196) | 0.927 (0.261) |
| Education | | | | | | |
| Primary education | 0.114 (0.318) | 0.075 (0.263) | 0.156 (0.363) | 0.081 (0.272) | 0.061 (0.239) | 0.098 (0.297) |
| High School | 0.646 (0.478) | 0.630 (0.483) | 0.360 (0.480) | 0.572 (0.495) | 0.613 (0.487) | 0.561 (0.496) |
| Vocational training | 0.098 (0.297) | 0.098 (0.298) | 0.426 (0.495) | 0.125 (0.330) | 0.129 (0.335) | 0.178 (0.383) |
| Some college | 0.143 (0.350) | 0.197 (0.398) | 0.058 (0.234) | 0.223 (0.416) | 0.197 (0.398) | 0.163 (0.370) |
| Socio-economic group | | | | | | |
| ABC1 | 0.048 (0.213) | 0.071 (0.257) | 0.050 (0.219) | 0.061 (0.239) | 0.037 (0.189) | 0.053 (0.225) |
| C2 | 0.133 (0.340) | 0.179 (0.384) | 0.302 (0.459) | 0.194 (0.395) | 0.152 (0.359) | 0.193 (0.394) |
| C3 | 0.265 (0.441) | 0.334 (0.472) | 0.198 (0.399) | 0.305 (0.460) | 0.331 (0.471) | 0.285 (0.452) |
| D | 0.396 (0.489) | 0.323 (0.468) | 0.347 (0.476) | 0.397 (0.490) | 0.416 (0.493) | 0.378 (0.485) |
| E | 0.1592 (0.366) | 0.093 (0.290) | 0.103 (0.304) | 0.044 (0.204) | 0.064 (0.245) | 0.091 (0.288) |
| Working | 0.289 (0.453) | 0.281 (0.449) | 0.276 (0.447) | 0.314 (0.464) | 0.309 (0.462) | 0.295 (0.456) |
| Out of labour force | 0.530 (0.499) | 0.509 (0.500) | 0.510 (0.500) | 0.545 (0.498) | 0.531 (0.499) | 0.526 (0.499) |
| Occupation of household head | | | | | | |
| Occasional unskilled worker | 0.070 (0.255) | 0.074 (0.263) | 0.081 (0.273) | 0.032 (0.177) | 0.085 (0.279) | 0.068 (0.252) |
| Unskilled worker | 0.199 (0.399) | 0.185 (0.389) | 0.185 (0.389) | 0.190 (0.392) | 0.024 (0.154) | 0.155 (0.362) |
| Skilled blue collar worker | 0.319 (0.466) | 0.330 (0.470) | 0.379 (0.485) | 0.411 (0.492) | 0.266 (0.442) | 0.342 (0.474) |
| Low skilled white collar worker | 0.222 (0.416) | 0.320 (0.467) | 0.295 (0.456) | 0.258 (0.438) | 0.347 (0.476) | 0.288 (0.453) |
| Medium skilled white collar worker | 0.063 (0.243) | 0.082 (0.274) | 0.047 (0.212) | 0.059 (0.236) | 0.233 (0.423) | 0.098 (0.297) |
| Managers | 0.008 (0.089) | 0.009 (0.092) | 0.007 (0.085) | 0.004 (0.066) | 0.041 (0.199) | 0.014 (0.118) |
| Retired | 0.117 (0.321) | 0 (0) | 0.005 (0.073) | 0.031 (0.173) | 0.003 (0.060) | 0.032 (0.175) |
| Unemployed | 0 (0) | 0 (0) | 0 (0) | 0.010 (0.098) | 0 (0) | 0.002 (0.046) |
| Housewife | 0.003 (0.057) | 0 (0) | 0 (0) | 0.004 (0.067) | 0 (0) | 0.002 (0.040) |
| Observations | 6967 | 6034 | 7360 | 7655 | 7422 | 35438 |

Notes: Note: Means and standard deviations (in parentheses). GSE groups are constructed using information on income and living conditions. ABC1 class is regarded as high class, C2 and C3 as middle class and D and E as lower classes.

Table A2: Descriptive statistics of contraceptive use, 2006 ENJUV survey, by group

| | Ever sexual intercourse | Contraceptive choice at last sexual intercourse | | | |
|------------------------|----------------------------|---|----------------------------|--------------------------------|--------------------------|
| | | Emergency contraception | Highly effective method | Non-highly effective method | No method |
| | (1) | (2) | (3) | (4) | (5) |
| <i>Panel A: age</i> | | | | | |
| Age \leq 20 | 0.449 (0.497) 3420 | 0.003 (0.057) 1534 | 0.242 (0.428) 1534 | 0.439 (0.496) 1534 | 0.316 (0.465) 1534 |
| Age $>$ 20 | 0.927 (0.260) 2614 | 0.002 (0.050) 2424 | 0.437 (0.496) 2424 | 0.285 (0.452) 2424 | 0.275 (0.447) 2424 |
| <i>Panel B: gender</i> | | | | | |
| Men | 0.664 (0.472) 2727 | 0.002 (0.047) 1811 | 0.237 (0.425) 1811 | 0.443 (0.497) 1811 | 0.318 (0.466) 1811 |
| Women | 0.649 (0.477) 3307 | 0.003 (0.057) 2147 | 0.467 (0.499) 2147 | 0.262 (0.440) 2147 | 0.268 (0.443) 2147 |
| <i>Panel C: urban</i> | | | | | |
| Rural | 0.636 (0.481) 740 | 0 471 | 0.361 (0.481) 471 | 0.287 (0.452) 471 | 0.352 (0.478) 471 |
| Urban | 0.659 (0.474) 5294 | 0.003 (0.056) 3487 | 0.362 (0.481) 3487 | 0.352 (0.478) 3487 | 0.283 (0.450) 3487 |
| Total | 0.656 (0.475) 6034 | 0.709 (0.454) 3958 | 0.362 (0.481) 3958 | 0.345 (0.475) 3958 | 0.003 (0.053) 3958 |