Appendix for

"Access to The Emergency Contraceptive Pill and Women's Reproductive Health: Evidence from Public Reform in Chile"

Damian Clarke and Viviana Salinas

Online only, not for print.

A Appendix Figures and Tables

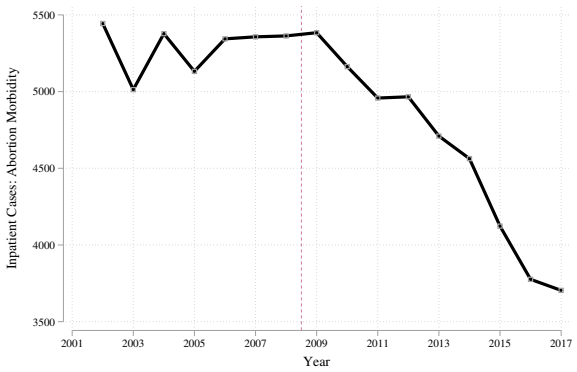
Table A1: Correlation Between Stated Availability of EC Pill and Actual Disbursements

	Unweighted Specifications			Weighted by Municipal Population		
	(1)	(2)	(3)	(4)	(5)	(6)
EC Pill Available	3.847***	0.745***	45.723***	3.380***	0.829***	156.209***
	(0.235)	(0.009)	(2.005)	(0.091)	(0.008)	(3.808)
Constant	0.220	0.095***	1.702	0.134**	0.122***	4.600*
	(0.155)	(0.006)	(1.325)	(0.061)	(0.005)	(2.561)
Observations	5,087	5,087	5,087	5,087	5,087	5,087
Outcome Variable:						
Pills per capita	Y	-	-	Y	-	-
Any pills disbursed	-	Y	-	-	Y	-
Total pills disbursed	-	-	Y	-	-	Y

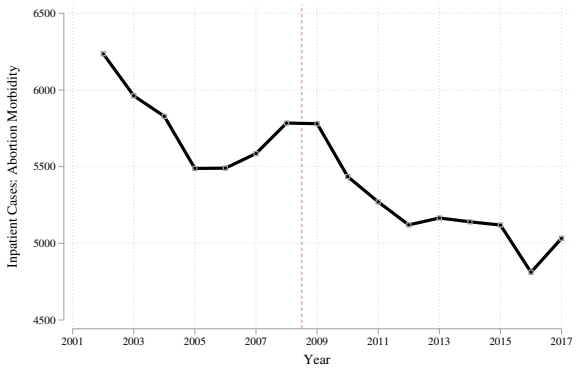
Notes: Each column displays a simple bivariate regression of a measure of EC pill usage from administrative data of EC pill disbursement on an indicator of whether the EC pill is available in the municipality according to municipal authorities. This availability measure was collected in telephone surveys implemented by Dides et al. (2009); Dides C. et al. (2010, 2011). The outcome variable in each case is indicated in the table footer. Weighted and unweighted specifications are shown, where weights are defined based on the number of women aged between 15 and 49 years in each municipality. * p<0.10, ** p<0.05, *** p<0.01.

Figure A1: Descriptive Figures by Quinquennial Age Groups (Abortion)

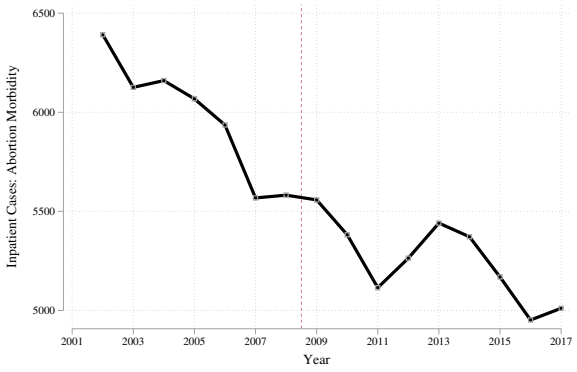
(a) 15-19



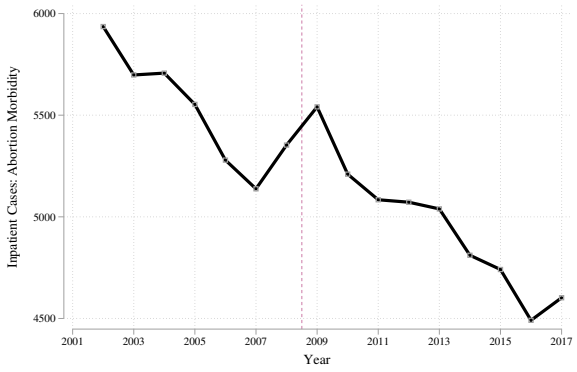
(b) 20-24



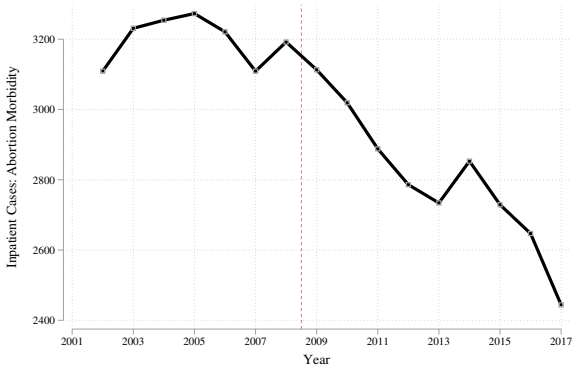
(c) 25-29



(d) 30-34



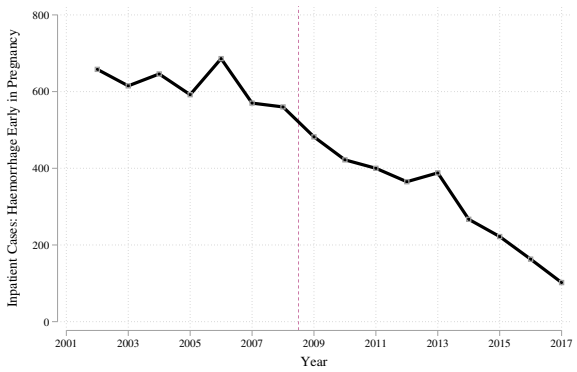
(e) 35-39



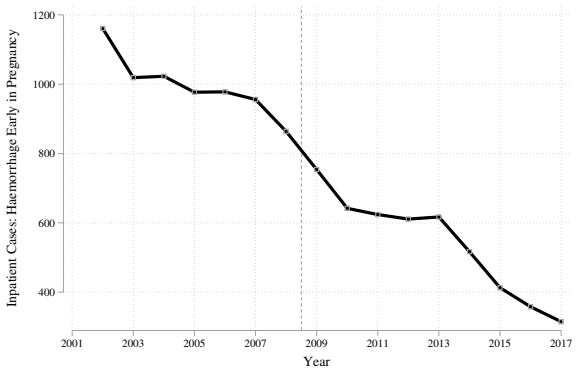
(f) 40-44

Notes: Each panel displays the total number of hospital visits in administrative health data recording pregnancies with abortive outcomes (ICD-10 codes O02-O08). Quantities are calculated for each quinquennial age group.

Figure A2: Descriptive Figures by Quinquennial Age Groups (Haemorrhage)



(a) 15-19

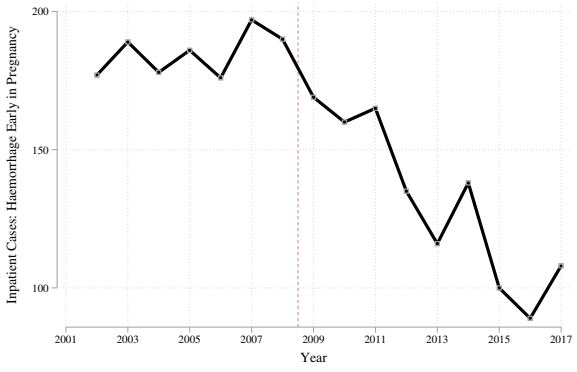


(b) 20-24

(c) 25-29

(d) 30-34

(e) 35-39



(f) 40-44

Notes: Each panel displays the total number of hospital visits in administrative health data recorded as "Haemorrhage early in pregnancy" (ICD-10 code O20). Quantities are calculated for each quinquennial age group.

Table A2: Number of EC Pills Disbursed per Year and Total Population of Fertile-Aged Women

Year	EC Pills	Population	EC Pills/1,000 Women
2009	7,552	4,547,573	1.66
2010	3,219	4,574,965	0.70
2011	6,047	4,598,663	1.31
2012	12,603	4,619,565	2.72
2013	15,847	4,636,571	3.42
2014	22,544	4,649,712	4.85
2015	25,497	4,659,663	5.47
2016	19,653	4,667,215	4.21
Average	14,120.3	4,619,241	3.05

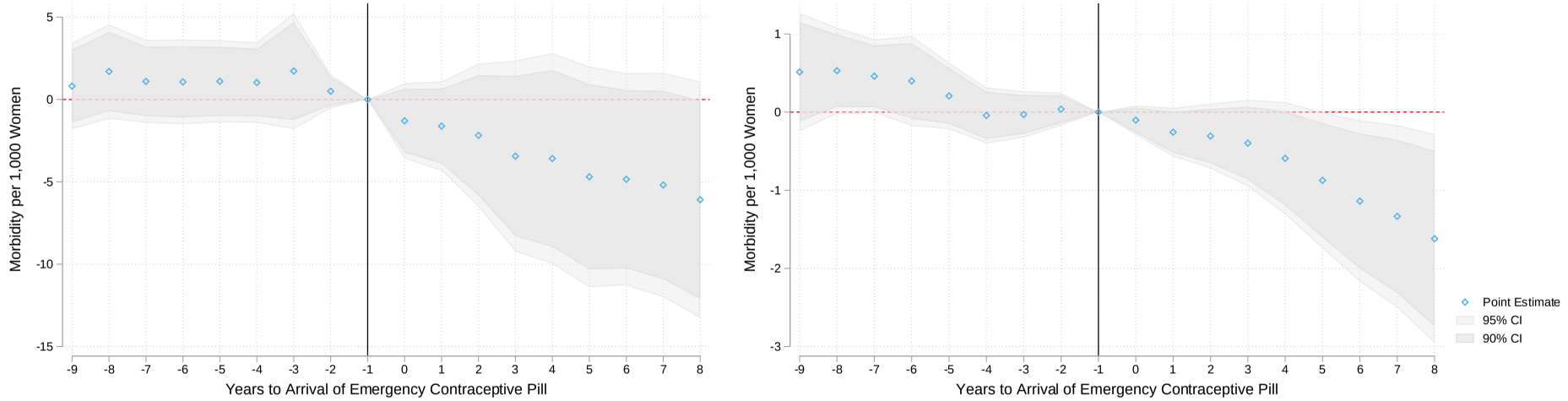
Notes: Number of EC pills disbursed is calculated from administrative data provided by the Ministry of Health. Total population per year is provided by the Chilean National Institute of Statistics (INE).

Table A3: EC Pills Disbursed per Treatment Lag and Total Population of Fertile-Aged Women

Lag	EC Pills	Population	EC Pills/1,000 Women
0	7,054	4,582,073	1.54
1	9,159	4,604,620	1.99
2	15,024	4,623,828	3.25
3	19,754	4,639,446	4.26
4	22,120	4,651,479	4.76
5	21,517	4,167,534	5.16
6	13,323	2,700,957	4.93
7	5,015	827,689	6.05
Average	14,120.3	3,849,703	3.67

Notes: Number of EC pills disbursed is calculated from administrative data provided by the Ministry of Health. Lags refer to time periods from the moment that the EC pill was first adopted by a municipality. Total population per is provided by the Chilean National Institute of Statistics (INE).

Figure A3: Event Study Tests of the Impact of the EC Pill on Maternal Health Outcomes (Unweighted)



(a) Abortion-Related Morbidity

(b) Haemorrhage Early in Pregnancy

Notes: Event studies are identical to those in Figure 3, however now do not weight by municipal population. Given the large number of small municipalities where small absolute changes in rates of morbidity can have large relative impacts, specifications presented in Figure 3 are our preferred specification, as these give equal weights to each *woman* rather than each *municipality* in the country. Refer to notes to Figure 3 for additional discussion.

Table A4: DID_M Estimates of Pill Disbursements on Haemorrhage and Abortion Related Morbidity

	All Women	Age-Specific Groups						
		15-19	20-24	25-29	30-34	35-39	40-44	45-49
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Abortion Related Morbidity								
EC Pill Available	-0.837**	-1.930**	-0.893	-1.455*	0.032	-0.838	-0.694	0.031
	(0.388)	(0.907)	(0.656)	(0.830)	(0.666)	(0.952)	(0.572)	(0.237)
Observations	5190	5153	5190	5190	5175	5190	5190	5175
Mean of Dependent Variable	5.814	4.358	7.141	7.835	7.886	7.840	4.612	0.642
Panel B: Haemorrhage Early in Pregnancy								
EC Pill Available	0.054	0.136	0.201	-0.256	0.035	0.135	0.118	0.003
	(0.159)	(0.282)	(0.602)	(0.364)	(0.322)	(0.401)	(0.093)	(0.038)
Observations	5190	5153	5190	5190	5175	5190	5190	5175
Mean of Dependent Variable	1.382	1.343	2.315	2.252	1.914	1.286	0.467	0.047

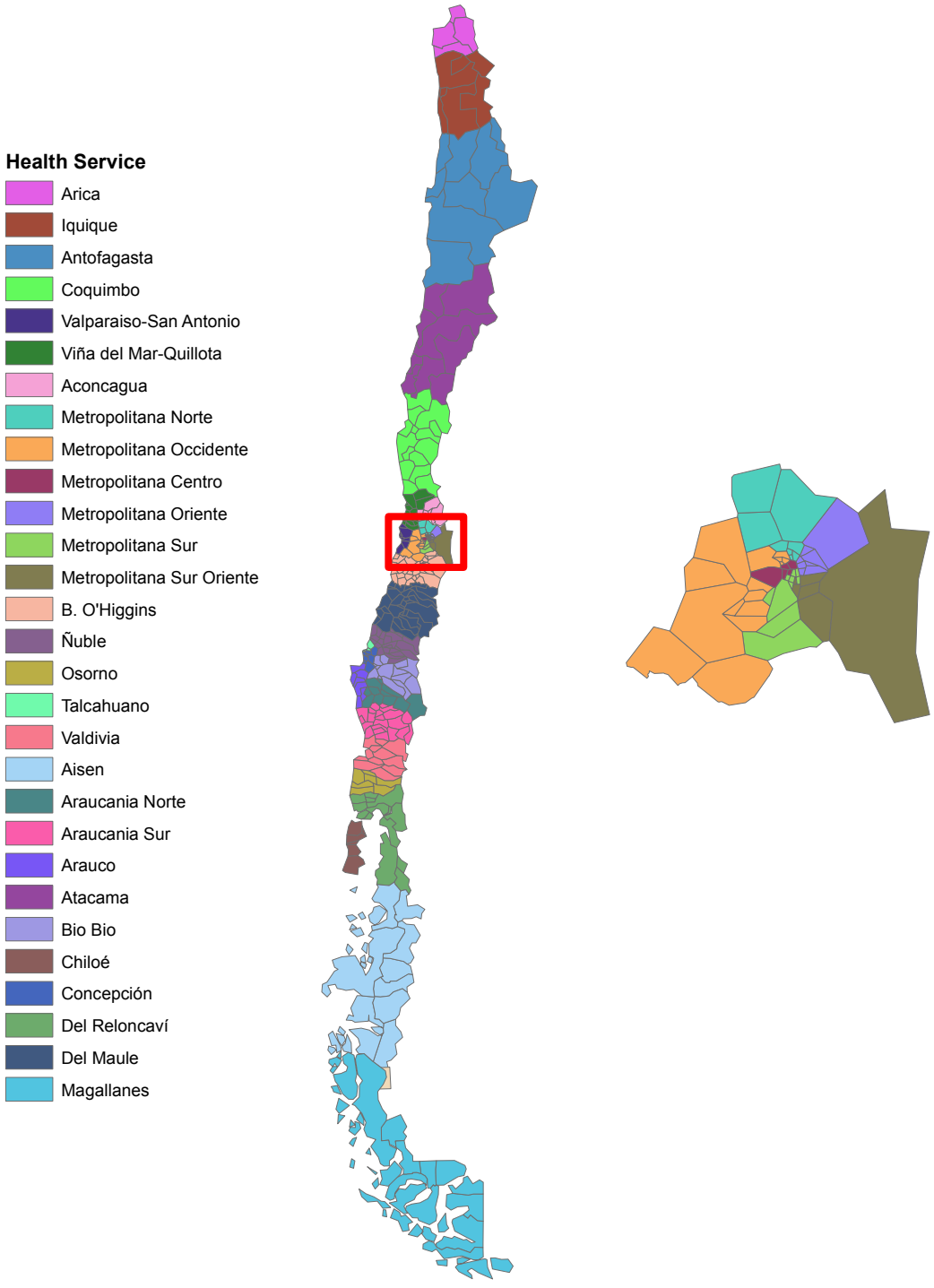
Notes: Each column displays a DID_M estimate of the impact of abortion reform on rates of morbidity (inpatient cases) for morbidity related to abortion (ICD codes O02-O08) and for haemorrhage early in pregnancy (prior to 21 weeks). Each morbidity class is measured as cases per 1,000 fertile-aged women each year, and average levels in the full set of data are available at the foot of the table. All standard errors are clustered at the level of the municipality. Column (1) of this table replicates column (1) of Table 2 (for all ages), with remaining columns focusing on quinquennial age groups.

Table A5: DID_M Estimates with Unweighted Cells

	All Women	Age-Specific Groups						
		15-19	20-24	25-29	30-34	35-39	40-44	45-49
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Abortion-Related Morbidity								
EC Pill Available	-1.491**	-2.704***	-0.750	-0.146	0.204	-0.904	-7.462	-0.016
	(0.701)	(0.878)	(0.708)	(0.843)	(1.087)	(2.229)	(7.738)	(0.194)
Observations	5190	5153	5190	5190	5175	5190	5190	5175
Mean of Dependent Variable	5.814	4.358	7.141	7.835	7.886	7.840	4.612	0.642
Panel B: Haemorrhage Early in Pregnancy								
EC Pill Available	-0.241*	-0.299	-0.469	-0.287	-0.691**	-0.219	-0.032	-0.039
	(0.139)	(0.354)	(0.400)	(0.346)	(0.341)	(0.366)	(0.127)	(0.048)
Observations	5190	5153	5190	5190	5175	5190	5190	5175
Mean of Dependent Variable	1.382	1.343	2.315	2.252	1.914	1.286	0.467	0.047

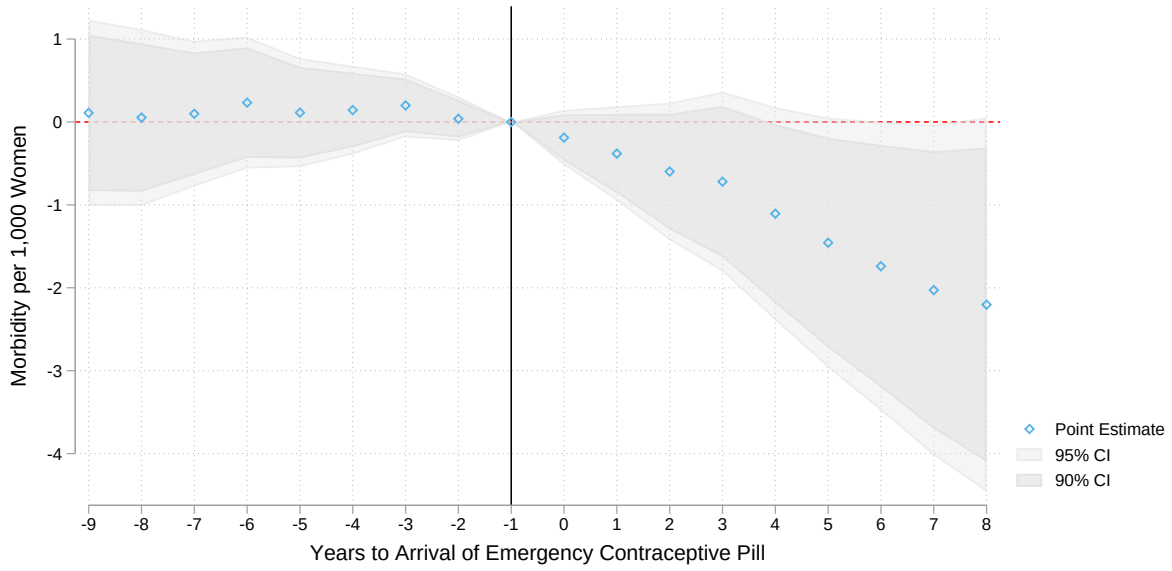
Notes: DID_M results are identical to those in Table A4, however now do not weight by municipality population. Given the large number of small municipalities where small absolute changes in rates of morbidity can have large relative impacts, we strictly prefer weighted specifications presented in Table A4, as these give equal weights to each *woman* rather than each *municipality* in the country. Refer to notes to Table A4 for additional discussion.

Figure A4: Health Services and Municipalities



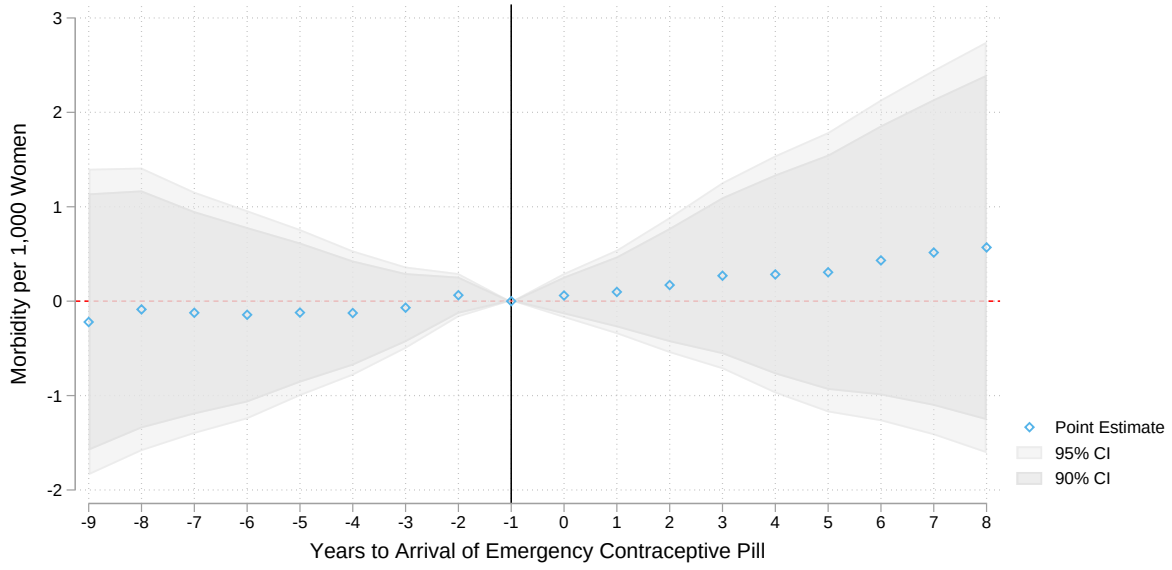
Notes to Figure A4: Municipalities are indicated by municipal boundaries, and health services are indicated by colours. Each of Chile's 346 municipalities belongs to one of 29 Health Services. The entire country is displayed at right, and the densely populated Metropolitan Region of Santiago is displayed at left. This figure is recreated from Online Appendix Figures from Clarke et al. (2020).

Figure A5: Baseline Event Studies – Abortion Morbidity and the Emergency Contraceptive Pill



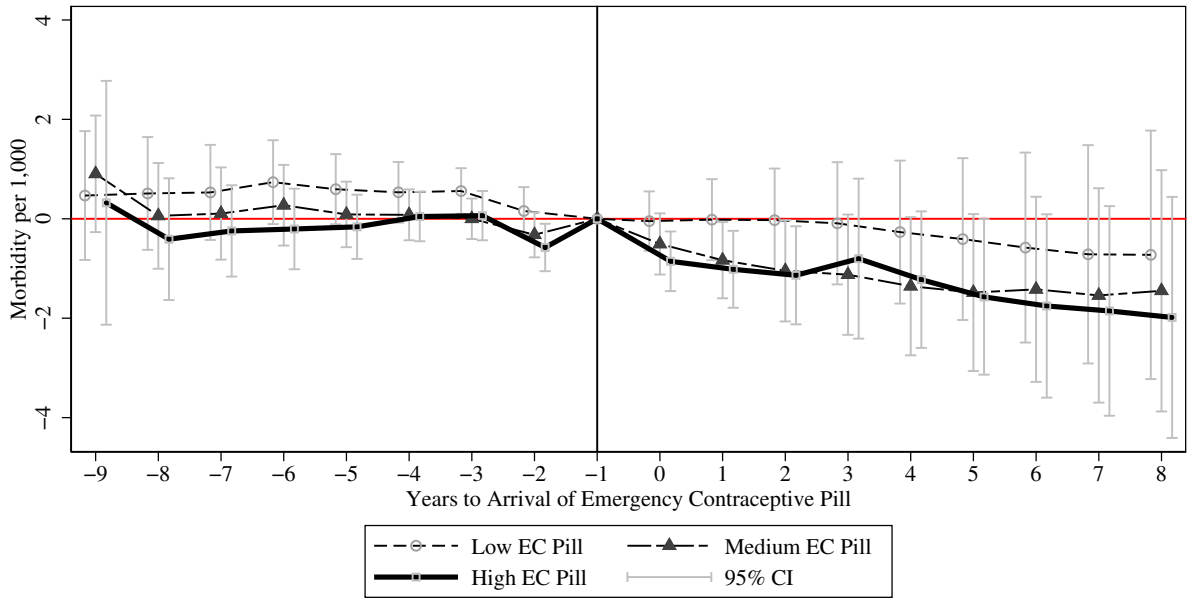
Notes: Event studies follow specification 1, however without time-varying controls, where the outcome variable is cases of abortion related morbidity per 1,000 fertile-aged women. Specifications are weighted using the number of fertile-aged women in each municipality, and standard errors are clustered by municipality.

Figure A6: Baseline Event Studies – Haemorrhage Early in Pregnancy and the Emergency Contraceptive Pill



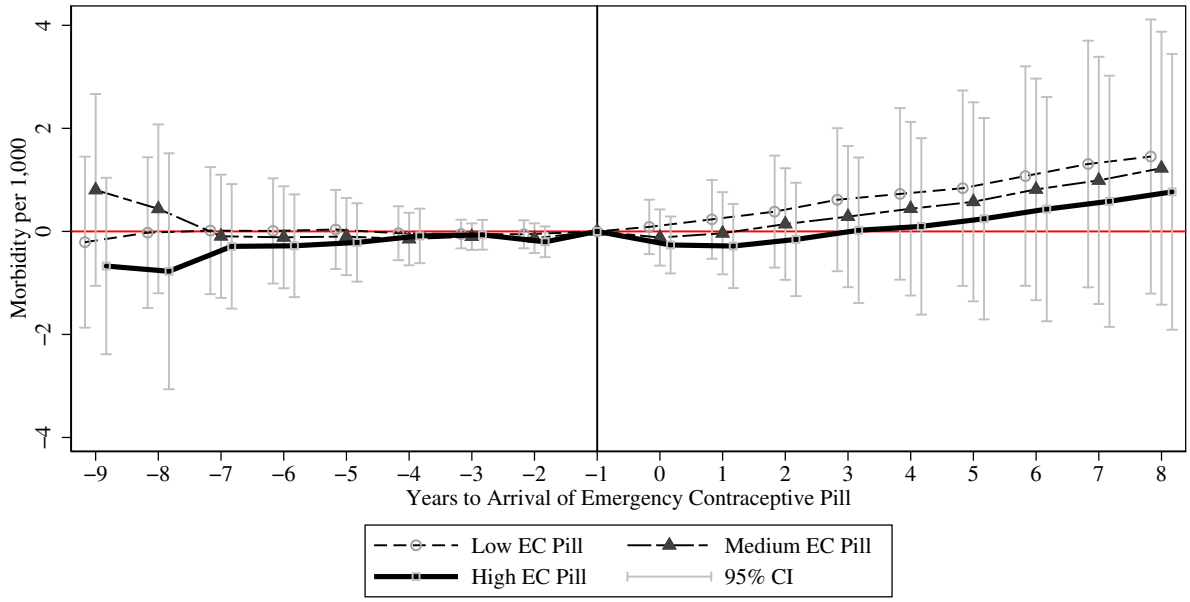
Notes: Refer to notes to Figure A5. An identical specification is estimated, however now with rates of haemorrhage early in pregnancy (<21 weeks) per 1,000 fertile-aged women as the dependent variable.

Figure A7: Baseline Event Studies – Intensity of EC Pill and Abortion



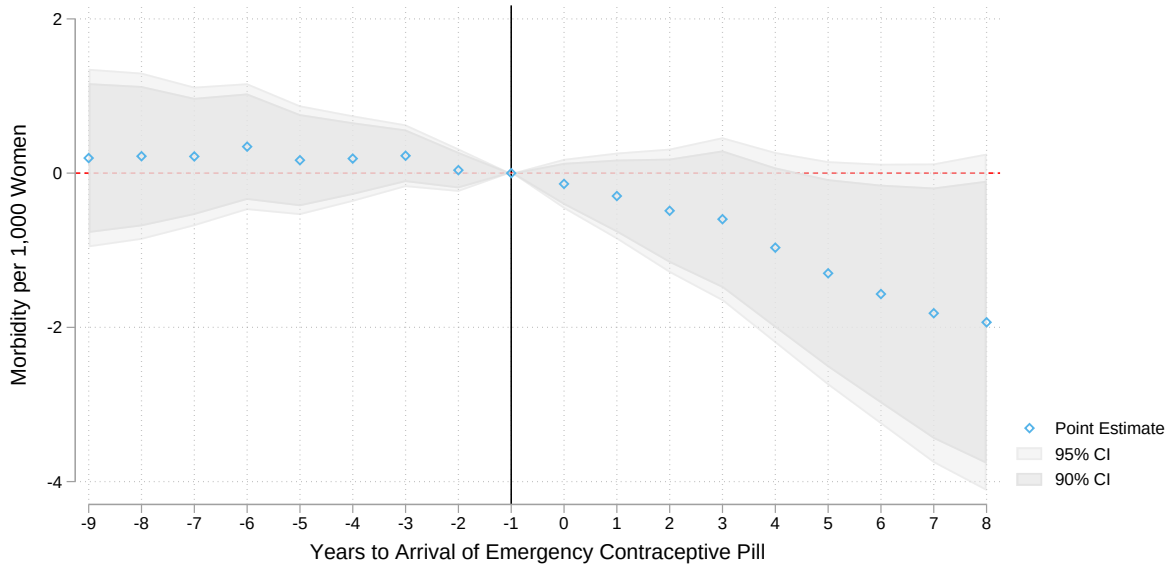
Notes: Each set of point estimates and 95% confidence intervals refer to the EC pill roll-out leads and lags for municipalities with low, medium, and high rates of pill disbursements, without the inclusion of time-varying controls. These definitions are created based on the rate of pill disbursement per municipality, with splits into three evenly sized groups. Coefficients are slightly shifted around the yearly lags and leads to visualise each estimate separately.

Figure A8: Baseline Event Studies – Intensity of EC Pill and Haemorrhage



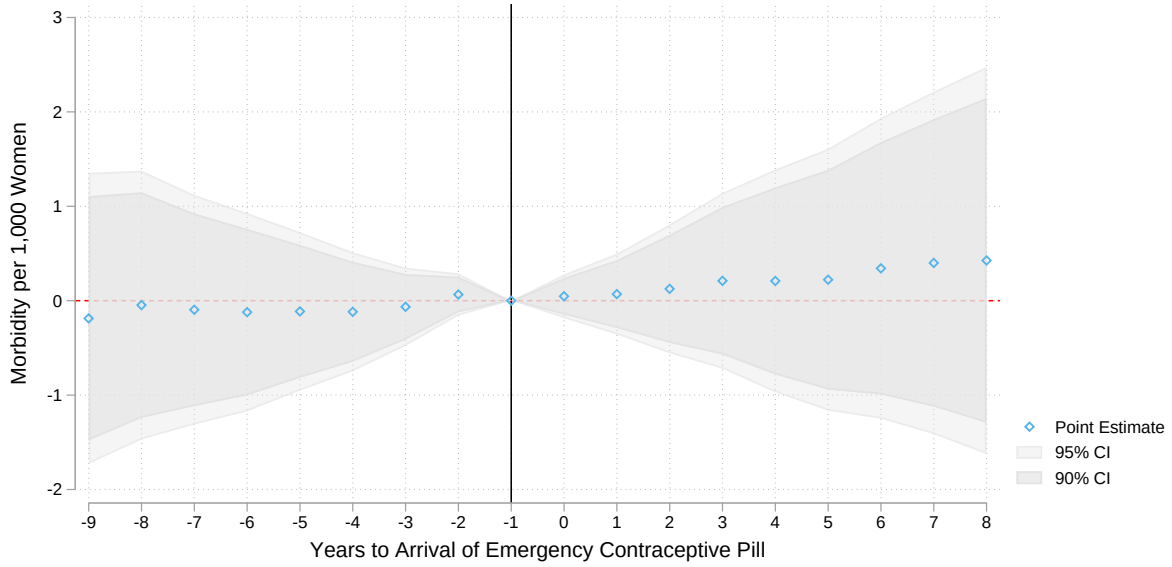
Notes: Refer to notes to Figure A7. An identical specification is estimated, however now with rates of haemorrhage early in pregnancy (<21 weeks) per 1,000 fertile-aged women as the dependent variable.

Figure A9: Event Studies with Political Controls: Abortion Morbidity and the Emergency Contraceptive Pill



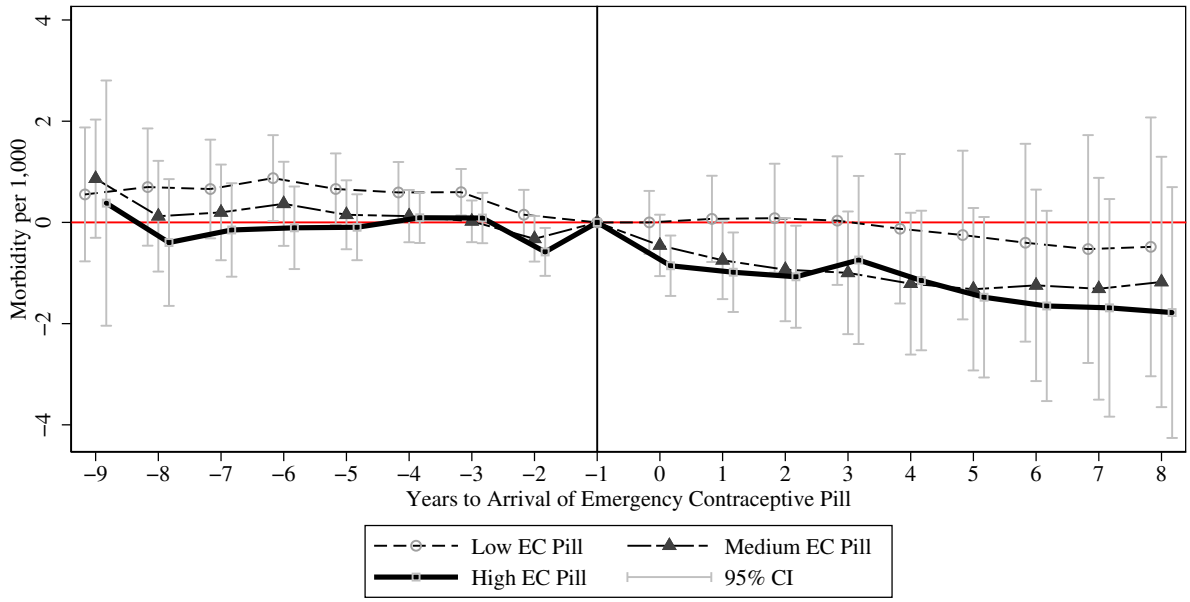
Notes: Event studies follow specification 1, where the outcome variable is cases of abortion related morbidity per 1,000 fertile-aged women. Specifications are weighted using the number of fertile-aged women in each municipality, and standard errors are clustered by municipality.

Figure A10: Event Studies with Political Controls: Haemorrhage Early in Pregnancy and the Emergency Contraceptive Pill



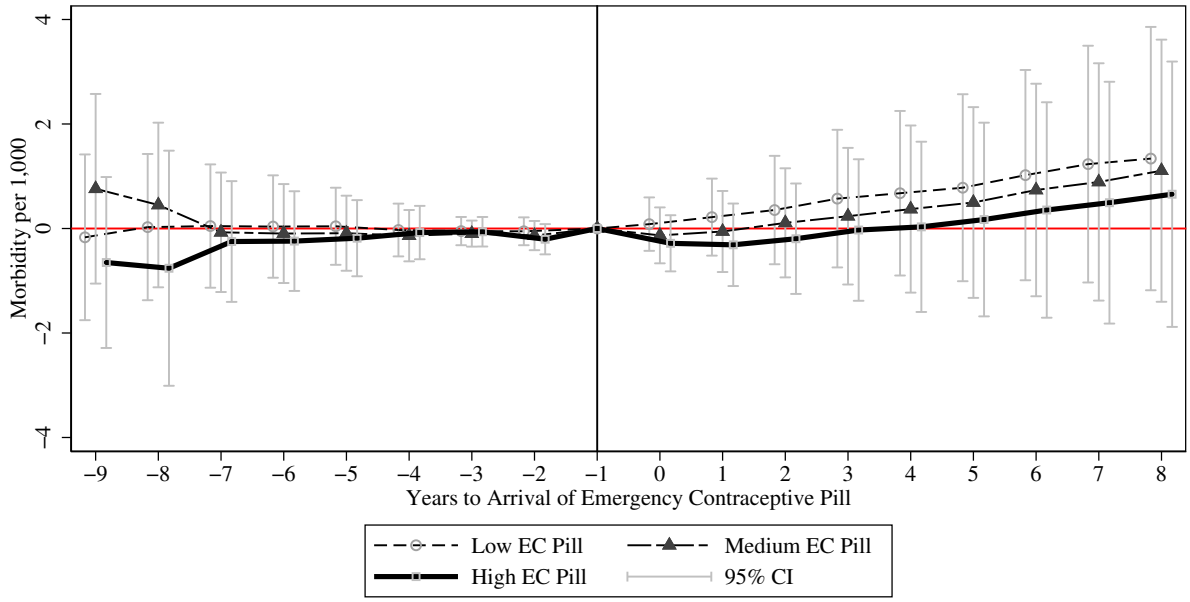
Notes: Refer to notes to Figure A9. An identical specification is estimated, however now with rates of haemorrhage early in pregnancy (<21 weeks) per 1,000 women as the dependent variable.

Figure A11: Event Studies with Political Controls: Intensity of EC Pill and Abortion



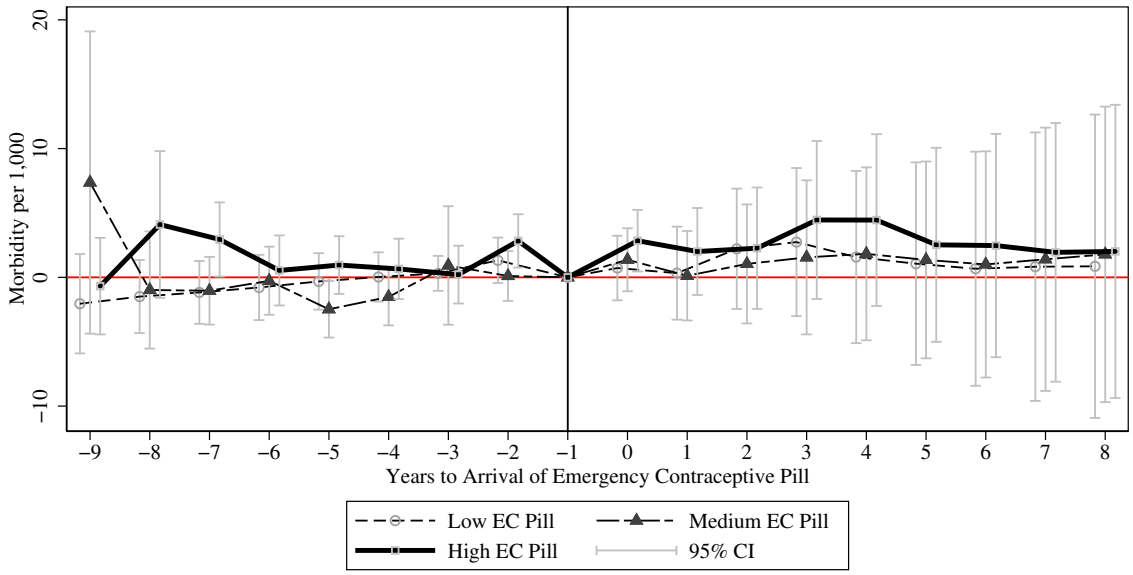
Notes: Each set of point estimates and 95% confidence intervals refer to the EC pill roll-out leads and lags for municipalities with low, medium, and high rates of pill disbursements. These definitions are created based on the rate of pill disbursement per municipality, with splits into three evenly sized groups. Coefficients are slightly shifted around the yearly lags and leads to visualise each estimate separately.

Figure A12: Event Studies with Political Controls: Intensity of EC Pill and Haemorrhage

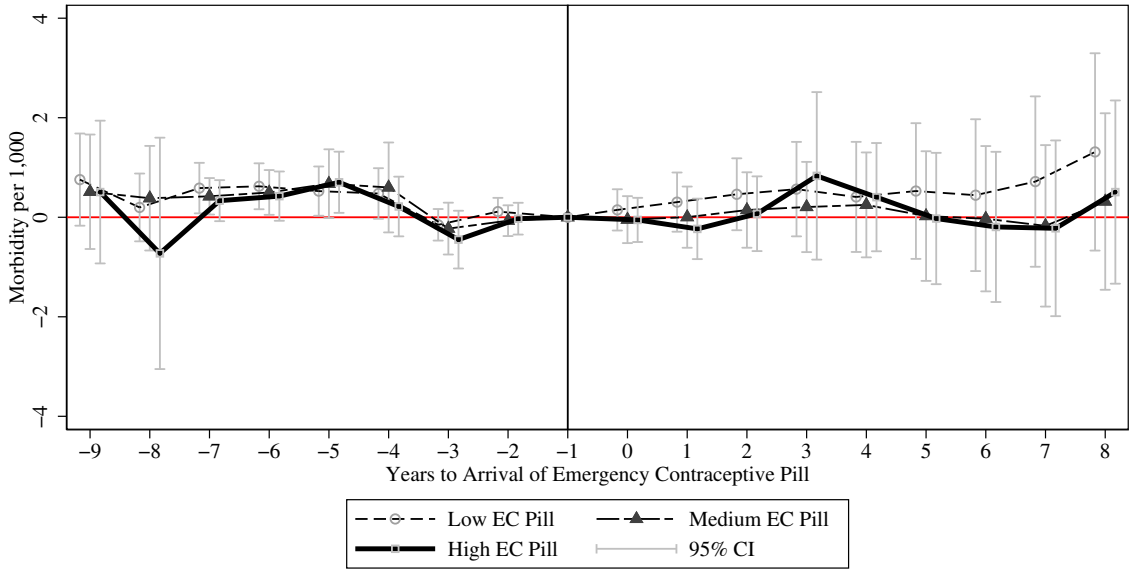


Notes: Refer to notes to Figure A11. Identical models are estimated, however with the depedent variable as haemorrhage early in pregnancy.

Figure A13: Placebo Tests using Male Morbidity and Puerperium Health Outcomes by Pill Intensity



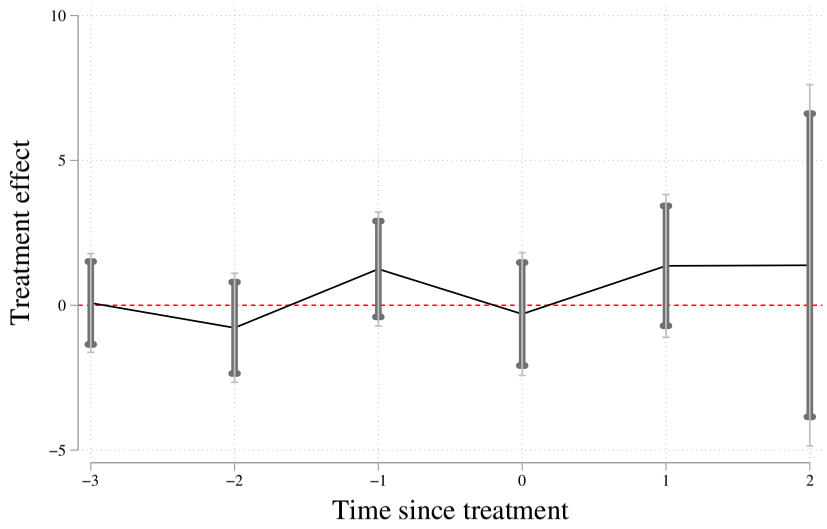
(a) Male Morbidity



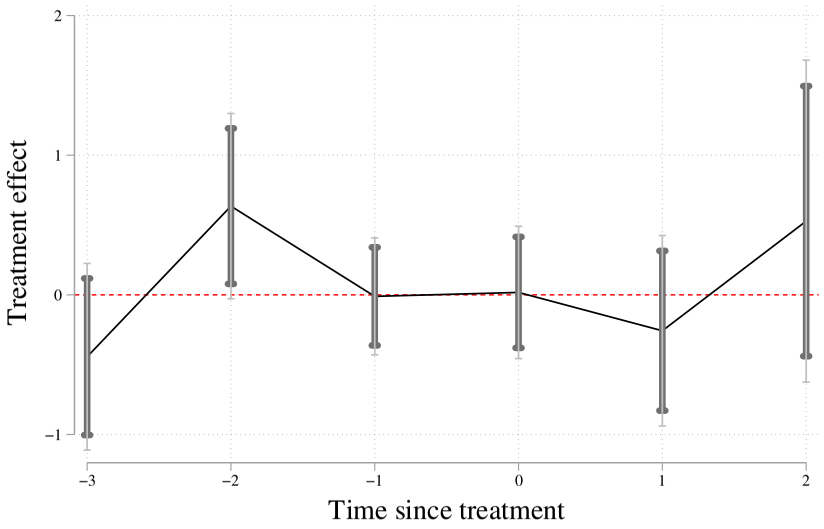
(b) Puerperium

Notes: Each set of point estimates and 95% confidence intervals refer to the EC pill roll-out leads and lags for municipalities with low, medium, and high rates of pill disbursements. These definitions are created based on the rate of pill disbursement per municipality, with splits the sample into three evenly sized groups. Coefficients are slightly shifted around the yearly lags and leads to visualise each estimate separately. All additional details follow Figure 7.

Figure A14: Placebo Tests using Full Morbidity Records and Puerperium Health Outcomes (DID_M)



(a) Male Morbidity



(b) Puerperium

Notes: Identical placebo outcomes are considered as those documented in Figure 7 of the paper, however rather than event study models, DID_M estimates are presented. DID_M models follow those described in Figure 4 based on availability of the EC pill.

Table A6: DID_M Estimates of Pill Disbursements on Placebo Outcomes

	All Women	Age-Specific Groups						
		15-19	20-24	25-29	30-34	35-39	40-44	45-49
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Morbidity During the Puerperium								
EC Pill Available	0.070	0.513	0.497	0.780	0.377	0.414	0.553	0.609
	(0.277)	(1.794)	(1.928)	(2.032)	(2.063)	(1.936)	(1.965)	(2.033)
Observations	5170	5135	5170	5170	5155	5170	5170	5155
Mean of Dependent Variable	2.997	19.313	20.545	21.367	21.834	21.634	21.743	23.273
Panel B: Male Morbidity								
EC Pill Available	0.715	4.965	3.945	9.340	6.606	5.165	5.565	3.845
	(1.298)	(9.069)	(9.128)	(10.279)	(9.774)	(9.778)	(8.779)	(8.607)
Observations	5170	5155	5170	5170	5170	5170	5170	5170
Mean of Dependent Variable	30.382	201.796	212.577	223.749	224.579	217.900	214.973	229.662

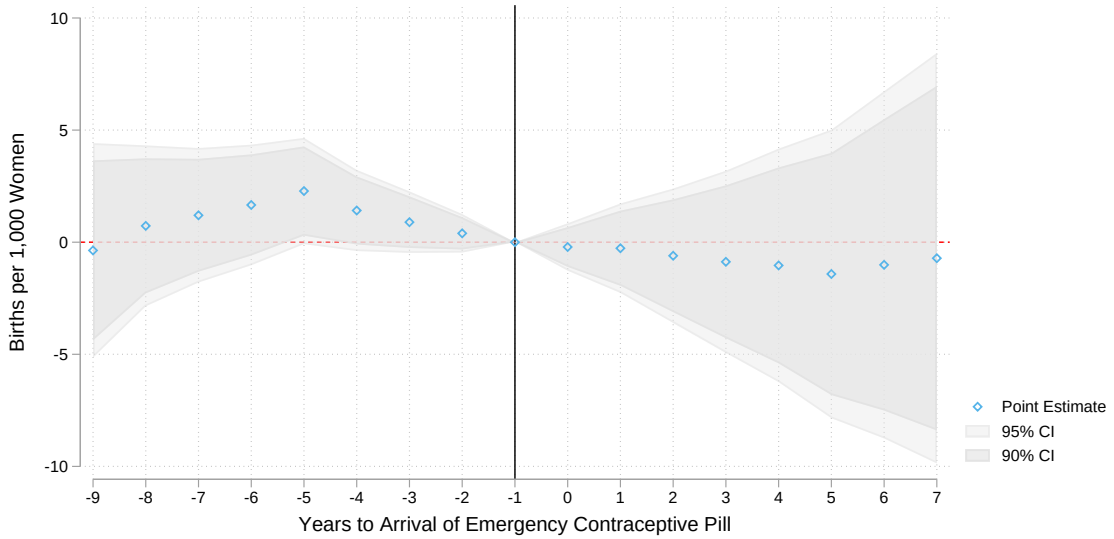
Notes: Each column displays a DID_M estimate of the impact of abortion reform on rates of placebo outcomes displayed in Figure 7. Effects are documented for the entire population of fertile-aged women (column 1), and by quinquennial age groups (columns 2–8). All other details follow those in Table A4.

Table A7: DID_M Estimates of Pill Disbursements on Births

	All Women	Age-Specific Groups						
		15-19	20-24	25-29	30-34	35-39	40-44	45-49
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
EC Pill Available	-1.013	-1.353	-3.397	-5.254**	1.944	-0.330	-0.106	-0.096
	(1.283)	(3.103)	(2.486)	(2.570)	(2.611)	(2.031)	(0.933)	(0.130)
Observations	5142	5117	5142	5142	5127	5142	5142	5127
Mean of Dependent Variable	53.504	55.754	89.917	87.206	74.131	45.915	13.738	0.742

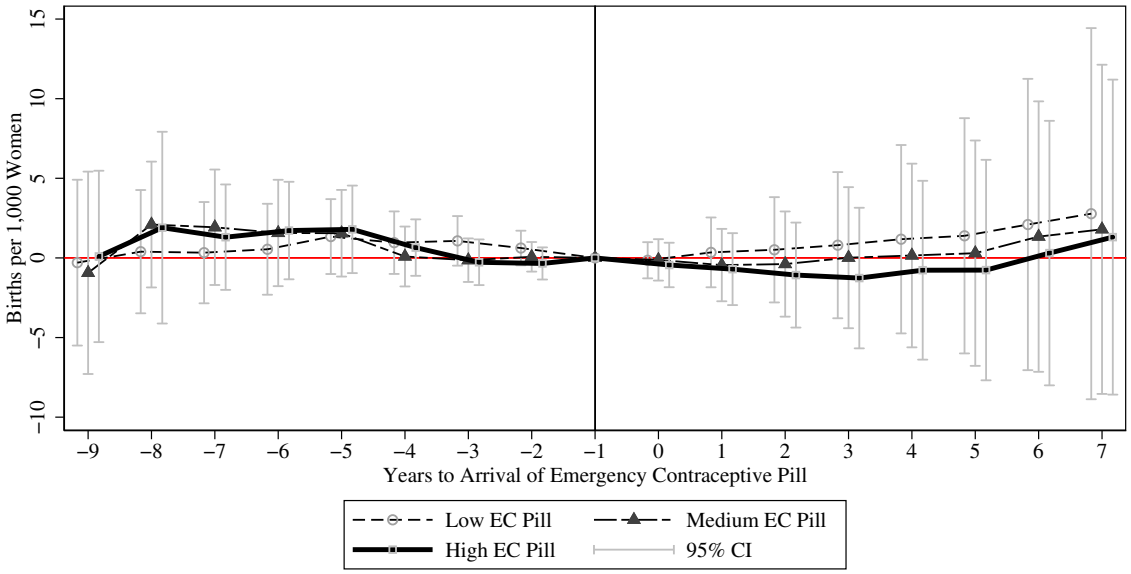
Notes: Each column displays a DID_M estimate of the impact of abortion reform on rates of birth in each municipality. Birth rates are measured as the number of births occurring per 1,000 fertile-aged women each year, and average levels in the full set of data are available at the foot of the table. All standard errors are clustered at the level of the municipality, calculated based on a block bootstrap clustering by municipality. All details follow those discussed in Table A4. * p<0.10, ** p<0.05, *** p<0.01.

Figure A15: Event Study Tests of the Impact of the EC Pill on Birth Rates



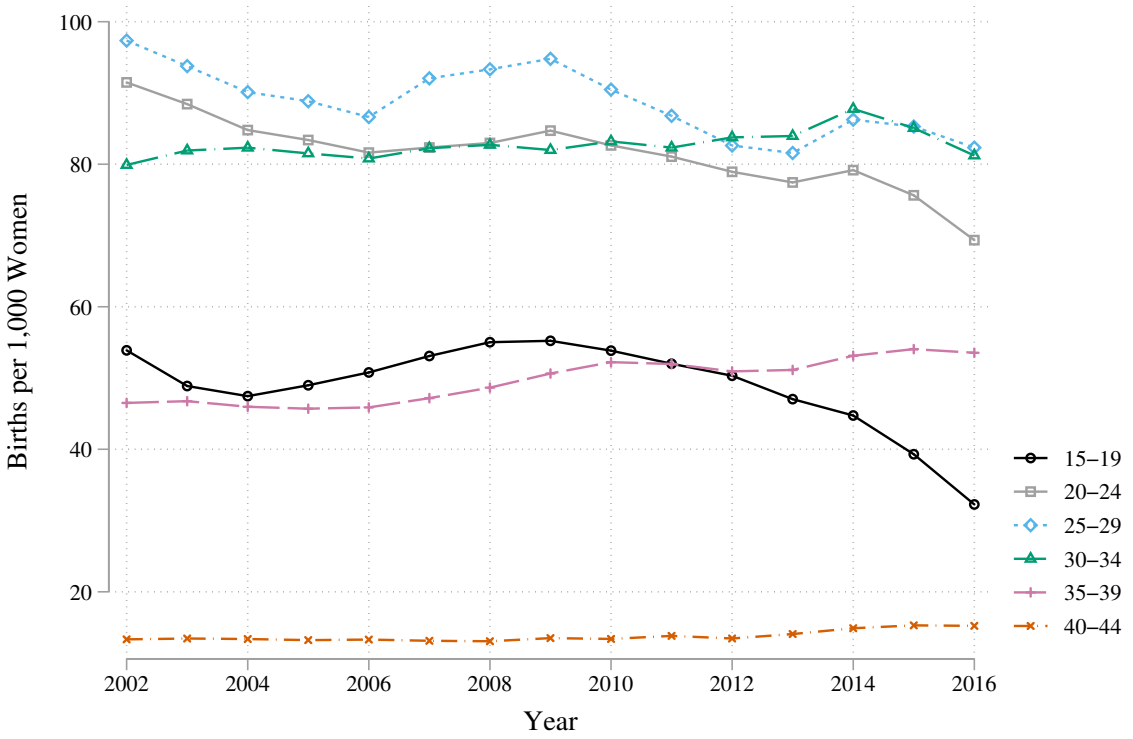
Notes: Event studies follow specification 1, where the outcome variable is the number of births occurring per 1,000 fertile-aged women (15-49 year-olds). Specifications are weighted using the number of fertile-aged women in each municipality, and standard errors are clustered by municipality. The vertical solid line indicates 1 year prior to the first year in which a municipality disburses the EC pill.

Figure A16: Event Study Tests of the Intensity of the EC Pill on Birth Rates



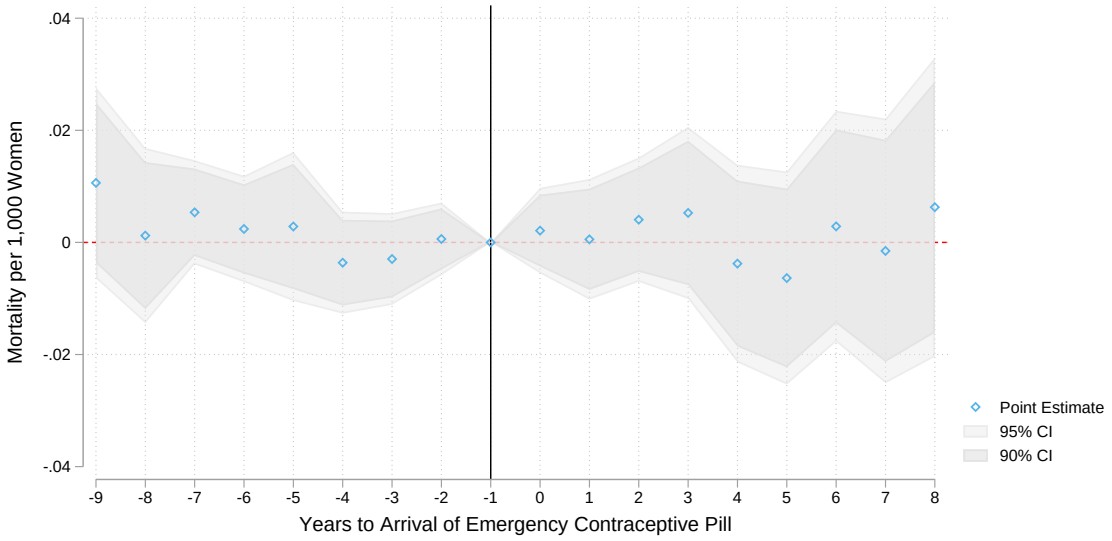
Notes: Refer to notes to Figure 5. Identical results are documented, where the outcome is now the total number of births per 1,000 fertile-aged women.

Figure A17: Birth Rates in Chile, 2002-2016



Notes: Fertility rates are calculated from full microdata on births released by the Chilean Ministry of Health, and population records calculated by the National Institute of Statistics.

Figure A18: Event Study Tests of the Impact of the EC Pill on Maternal Mortality



Notes: Event studies follow specification 1, where the outcome variable is the number of maternal deaths per 1,000 fertile-aged women and each municipal×year cell is given identical weights. The vertical solid line indicates 1 year prior to the first year in which a municipality disburses the EC pill.

Table A8: DID_M Estimates of Pill Disbursements on the Maternal Mortality Ratio

	All Women	Age-Specific Groups						
		15-19	20-24	25-29	30-34	35-39	40-44	45-49
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Maternal Mortality Rate								
EC Pill Available	0.003	0.011*	0.018**	-0.011	-0.002	0.009	-0.003	-0.006
	(0.003)	(0.006)	(0.008)	(0.015)	(0.012)	(0.010)	(0.006)	(0.006)
Observations	5190	5153	5190	5190	5175	5190	5190	5175
Mean of Dependent Variable	0.011	0.006	0.013	0.016	0.017	0.016	0.007	0.001
Panel B: Maternal Mortality Ratio								
EC Pill Available	6.576	18.793*	23.465**	-6.914	-6.338	17.515	0.185	–
	(6.207)	(11.352)	(10.012)	(16.148)	(16.512)	(22.979)	(44.887)	(–)
Observations	5141	5017	5067	5084	5064	5024	4812	–
Mean of Dependent Variable	20.780	13.074	15.460	18.440	22.233	36.153	70.097	–

Notes: Each column displays a DID_M estimate of the impact of abortion reform on maternal mortality outcomes. The maternal mortality rate is the number of deaths per 1,000 women. The maternal mortality ratio is defined as the number of maternal deaths per 100,000 live births. Given few births in the 45–49 age cell and hence a large proportion of missings, this group is not included to ensure consistency of the DID_M procedure in all displayed groups. Each other municipal×year cell is given identical weight. All other details follow those in Table A4.

B Additional Background on The EC Pill and its Rollout in Chile

The EC pill is a hormonal treatment that women can use within up to five days of unprotected sex to reduce the probability of conception, although it is most most effective when taken within 12 hours (von Hertzen et al., 2002). It is composed of the progestin levonorgestrel, or a combination of oestrogen and progestin. Typically EC is taken either as a single pill or two pills in a 12 hours period (von Hertzen et al., 2002), even though the high dose of hormones these pills contain can be obtained by combining large amounts of normal birth control pills (Ellerson et al., 1998).[1] The effectiveness of the EC pill, based on typical usage, is estimated to be 75-90 percent, depending on the method used. Even though EC has been of clinical interest since the late 1960s, the EC pill is still not available worldwide.[2] The first countries that made the EC pill available did so in the mid-1980s and many countries made it available only in this millennium (Bentancor and Clarke, 2017).

Previous evaluations of the EC pill have been conducted mainly in the U.S. and in the United Kingdom (Gross et al., 2014; Durrance, 2013; Girma, 2006, 2011; Mulligan, 2015). These studies focus nearly exclusively on fertility outcomes, the prevalence of sexually transmitted infections, unprotected sex and changes in contraceptive use, either in the total population or only in adolescents. They generally conclude that EC is not associated with more unprotected intercourse or less condom or hormonal contraceptive use (Gold et al., 2004). There have also been studies of the impact of the EC pill on pregnancy and abortion rates, most of which find no effects at a population level (Durrance, 2013; Gross et al., 2014; Raymond et al., 2007). All of these studies are in countries in which abortion is legal. On the contrary, a study conducted in Chile in a period in which all forms of abortion were still illegal concluded that the EC pill reduced the general fertility rate by (a somewhat noisy) 1.6 percent and that it reduced fetal death (which may in part reflect illegal abortions) by 40 percent among adolescents (Bentancor and Clarke, 2017). A recent study by Nuevo-Chiquero and Pino (2019) additionally finds an impact of the rollout of the EC pill in Chile on other methods of contraceptive use. These results are consistent with EC potentially having a significant effect in contexts in which access to abortion is restricted.

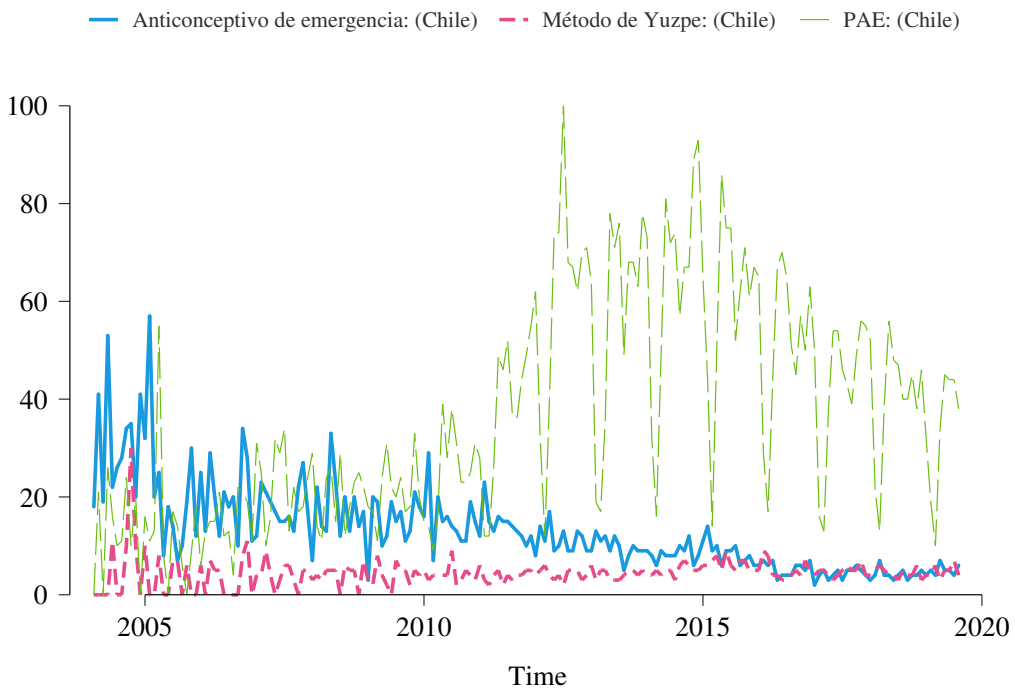
In Chile the introduction of the EC pill was complex, with an extended period in which the EC pill was available in only certain municipalities. As with a number of historical legislative initiatives in the country related to either reproductive health or marriage, more conservative sectors blocked the action of more progressive sectors resulting in piecemeal reforms. In the particular case of the EC pill, the first discussions and administrative inquires took place in 2001, but only in 2005 the Supreme Court determined that it was constitutionally valid for the EC drug to be included in the national pharmaceutical register. Detractors quickly challenged this decision, presenting cases both before ordinary and Constitutional Tribunal (Casas Becerra, 2008; Dides Castillo, 2006). Between 2005 and 2008, a number of legislative findings meant that the EC pill was sporadically available, either for purchase in private pharmacies or disbursement in state run clinics, however these periods

[1] This method is known as the Yuzpe regime. There is clear evidence showing that the Yuzpe regime is less effective than the levonorgestrel treatment available in the EC pill (Task Force on Postovulatory Methods of Fertility Regulation, 1998). Randomised Control Trial estimates suggest levonorgestrel drugs have 87% effectiveness, while the Yuzpe method has only 57% effectiveness in preventing pregnancy. Nevertheless, the Yuzpe method can always be followed provided the oral contraceptive pill is available, even in the absence of legal availability of the EC pill. In general, data based on google searches provided in Appendix Figure B1 suggests no substantial change in rates of search for this method in the country around the time of the roll-out of the EC pill.

[2] The International Consortium for Emergency Contraception (2019) currently lists 47 countries with no EC pill availability, spanning Africa, Asia, South America and Europe.

were typically short-lived, with restrictions on availability, or with inconsistent stocks available. For example, until February 2007, the EC pill was only available from the public health service in the case of rape (Nuevo-Chiquero and Pino, 2019). A more complete description of this period from 2005 to 2008, including a brief period of legality, is available in Nuevo-Chiquero and Pino (2019) and in Bentancor and Clarke (2017, Appendix B).

Figure B1: Frequency of Search on Google for Certain Terms, Chile 2004-2019



Notes: Each line documents the intensity of search based on google trends data for 3 terms. These are (a) "Anticonceptive de emergencia" (blue solid line) which is "emergency contraceptive" in English, (b) "Método de Yuzpe" (dashed pink line) which is Yuzpe Method in English, and (c) "PAE" (thin green line) which refers to "Pildora Anticonceptivo de Emergencia" the common term for the Emergency Contraceptive Pill in Chile. Note that the first two terms are grouped by google as a "topic" capturing any related terms, while PAE is simply a "term" which will capture any search including this term. Data is publicly available from google trends, and was consulted August 2, 2019. This graph can be replicated including future dates at the following address: `https://trends.google.com/trends/explore?date=all&geo=CL&q=%2Fm%2F04sc1,%2Fm%2F046lns,PAE`

A key event occurred in 2008, where the country's Constitutional Tribunal made it expressly illegal for the centralized public health system to distribute the EC pill, however did not expressly limit municipal health centres, run by local councils in nearly each of the country's 346 municipalities, from providing the EC pill. This began a period in which each municipality, under the guidance of the municipal mayor, controlled whether the EC pill was freely available upon request from local primary care clinics (Dides et al., 2009; Dides C. et al., 2010, 2011). In practice, about half of the Chilean municipalities distributed the EC pill freely and the other half refused to distribute it or distribute it under very restrictive conditions. As we document in the body of this paper, in general usage of the EC pill has increased over time, however there was a reduction in 2010 owing to an additional finding of the government auditor (*Contraloría*) suggesting that the EC pill could not be prescribed in municipal

health centres. Nevertheless, there was confusion surrounding this finding, and certain municipalities continued to prescribe the EC pill (Dides C. et al., 2011). This situation of municipal variation in availability lasted for around three years, ending due to the passage of two laws. The first of these laws (Law 20.418) was approved in January of 2010, and makes explicit that the State is obliged to provide the EC pill. However, this law was only eventually made operational in May of 2013 (Nuevo-Chiquero and Pino, 2019). The second of these laws which was made operational in September of 2011 (Law 20.533) ensures that midwifes can provide the EC pill, theoretically putting an end to the municipal variation in the EC pill in Chile from this time onwards.[3] As we discuss in section 2 of this paper, the 2011 reform was key given that midwives are the public health professionals which provide consultations and access to the EC pill in all public health clinics with the country. Indeed, this 2011 date is the access date highlighted in the Chilean Ministry of Health's (MoH) official National Norms of Fertility (Ministerio de Salud, 2018, §A.2).

There are a number of studies examining the use of the EC pill in Chile, though with the exception of the two aforementioned papers, these are descriptive, and written in Spanish. These studies indicate that the main users of this contraceptive method are young women, most of whom are single, have no children, are students and have only had one or two sexual partners (Escobar et al., 2008). Two studies report that about a third of the EC pills disbursed in state-clinic are given to adolescents (Schiappacasse et al., 2014; Morán Faúndes, 2013). In the same vein, the number of visits to state-clinics requesting EC pills increased 11.5 times between 2009 and 2010 among women younger than 20 years old, but it only increased 0.3 times among older women (Lavanderos et al., 2016). There is also some evidence that the request of EC pills is higher in rural areas (Morán Faúndes, 2013). Recent work by Nuevo-Chiquero and Pino (2019) finds that the availability of the EC pill has no significant impact on the age of sexual debut or more unprotected intercourse, which is consistent with the U.S. based literature, but it is significantly related to an increase in the use of modern contraceptive methods and to a decrease in the use of traditional contraceptive methods. The authors find that this is driven by an 'information channel' with health care providers advising on the use of alternative methods in the future when women visit to request the pill. All of these effects are stronger among adolescents (Nuevo-Chiquero and Pino, 2019).

C Additional Information Related to DID_M Estimators

Consider health outcomes $Health_{ct}$ where c indexes municipalities and t indexes time. In what follows, we will use the notation of $P_{c,t} = 1$ to signify that municipality c provides the EC pill in time period t, otherwise $P_{c,t} = 0$ indicates that the EC pill is not provided.

Following de Chaisemartin and D'Haultfœuille (2020), we define a time-specific estimand $DID_{+,t}$ as:

$$DID_{+,t} = \sum_{c:P_{c,t}=1,P_{c,t-1}=0} \frac{N_{c,t}}{N_{1,0,t}} \left(Health_{c,t} - Health_{c,t-1}\right) - \sum_{c:P_{c,t}=P_{c,t-1}=0} \frac{N_{c,t}}{N_{0,0,t}} \left(Health_{c,t} - Health_{c,t-1}\right).$$

Here $N_{c,t}$ refers to the number of observations for a particular municipality and time-period, $N_{1,0,t}$ refers to the number of observations which move from untreated to treated at time period t, and $N_{0,0,t}$

[3] In the period under study, abortion was completely illegal in Chile. In 2017 a law was passed allowing abortion in cases of severe risk to the mother's life, when the fetus is inviable, that is to say, it will not survive the pregnancy, or in cases of rape, but only during the first 12 weeks of pregnancy. EC was then, and to a certain extent still is, the only legal way to avoid an unwanted pregnancy after unprotected intercourse.

refer to the number of observations that remain untreated at both time $t-1$ and t. Note that in our setting of a staggered adoption design, municipalities do not switch out of treatment once they begin to disburse the EC pill. In words, this $DID_{+,t}$ estimand compares changes in health outcomes between period t and $t-1$ in areas which adopt the EC Pill and those which remain without the EC pill in both periods. If rates of morbidity decrease more between period $t-1$ and t in areas which adopt the EC pill than they decrease in areas which do not adopt the EC pill in this time period, this quantity will be negative.

The above estimand is presented for a single time period t. In order to arrive at a single global estimate, define:

$$DID_M = \sum_{t=2}^{T} \left(\frac{N_{1,0,t}}{N} DID_{+,t} \right).$$

The DID_M estimate is presented in the paper, which is a weighted average of the $DID_{+,t}$ estimands defined above. Note that this estimand captures the immediate impact of EC pill provision in the first period of adoption. We can additionally estimate dynamic effects, following the implementation of de Chaisemartin et al. (2019), where instead of considering changes between period $t-1$ and t, we consider changes between period $t-1$ and $t+1$ (lead 1) and $t-1$ and $t+2$ (lead 2).[4] In the case of these dynamic estimates, the 'control' group consists of individuals whose status $P_{c,t-1} = P_{c,t} = P_{c,t+1} = 0$ (for lead 1), for example at time period $t = 2010$ all municipalities who did not provide the EC pill in 2009, 2010 and 2011. To the degree that all municipalities adopt the EC pill at some point between 2009 and 2012, this limits the number of dynamic impacts estimable to those displayed in Figure 4 (in the case of binary models). Similar estimates can be proposed for the entire pre-treatment period which are treated as placebos. Specifically, consider comparing changes in rates of municipalities who adopted the EC pill at a particular moment t, between periods $t-2$ and $t-1$, and comparing those with municipalities which did not change their status at period t between the same period $t-2$ and $t-1$. This is a placebo test insofar as changes should not yet be observed given that no policy is (yet) implemented between $t-2$ and $t-1$. Thus, we additionally include the full set of estimable placebo impacts (lead 3, 2 and 1) in dynamic models.

While our principal DID_M models are based on binary EC pill provision (and rejection) measures as described in section 3.2 of the paper, we additionally consider 'continuous' models, based on changes in rates of EC pill disbursements in each municipality. This is an extension of de Chaisemartin and D'Haultfœuille (2018) where changes in rates of health are calculated for each group which changes from some level of pill disbursement to some other level of pill disbursement at time period t, compared to changes in health of units which did not change their level of pill disbursement at both points in time. This effect is then scaled by the degree to which the level of pill disbursements changes over time in line with a standard Wald estimator. Note that in this case, given that the dynamic estimates discussed above rely on the level of treatment (among treated units) remaining fixed, we can only estimate a single post-treatment effect as levels of pill disbursements vary over time in each treatment group once treatment is available. We can, however, follow the same procedure as described previously for estimating placebo tests, where rather than focusing on the precise moment of treatment change, we apply the same estimator to the pre-treatment time period only. In all of these implementations we follow de Chaisemartin et al. (2019).

[4] In particular, this implies that $P_{c,t-1} = 0$, and $P_{c,t} = P_{c,t+1} = 1$ in the case of lead 1, or $P_{c,t-1} = 0$, and $P_{c,t} = P_{c,t+1} = P_{c,t+2} = 1$ in the case of lead 2.

References

Bentancor, A. and D. Clarke (2017): "Assessing Plan B: The Effect of the Morning After Pill on Children and Women," *The Economic Journal*, 127, 2525–2552.

Casas Becerra, L. (2008): "La Saga de la anticoncepción de emergencia en Chile: avances y desafíos," Serie documentos electrónicos no. 2, FLACSO-Chile Programa Género y Equidad.

Clarke, D., G. C. Méndez, and D. V. Sepúlveda (2020): "Growing together: assessing equity and efficiency in a prenatal health program," *Journal of Population Economics*, 33, 883–956.

de Chaisemartin, C. and X. D'Haultfœuille (2018): "Fuzzy Differences-in-Differences," *The Review of Economic Studies*, 85, 999–1028.

de Chaisemartin, C., X. D'Haultfoeuille, and Y. Guyonvarch (2019): "DID_MULTIPLEGT: Stata module to estimate sharp Difference-in-Difference designs with multiple groups and periods," Statistical Software Components, Boston College Department of Economics.

de Chaisemartin, C. and X. D'Haultfœuille (2020): "Two-Way Fixed Effects Estimators with Heterogeneous Treatment Effects," *American Economic Review*, 110, 2964–96.

Dides, C., M. C. Benavente, and J. Manuel Moran (2009): "Entrega de la Píldora Anticonceptiva de Emergencia en el Sistema de Salud Municipal, Chile: Estado de Situación," Documento de trabajo, FLACSO-Chile. Programa Género y Equidad.

Dides C., C., C. Benavente R., and I. Sáez A. (2010): "Entrega de la Píldora Anticonceptiva de Emergencia en el Sistema de Salud Municipal de Chile," Estado de situación, FLACSO-Chile / CLAE, Consorcio Latinoamericano de Concepción de Emergencia.

Dides C., C., C. Benavente R., I. Sáez A., L. Nicholls S., and T. Correa D. (2011): "Provisión de Anticoncepción de Emergencia en el Sistema de Salud Municipal de Chile: Estado de Situación," Serie de documents, no. 2, Universidad Central de Chile.

Dides Castillo, C. (2006): *Voces en emergencia: el discurso conservador y la píldora del día despúes*, Chile: FLACSO.

Durrance, C. P. (2013): "The Effects of Increased Access to Emergency Contraception on Sexually Transmitted Disease and Abortion Rates," *Economic Inquiry*, 51, 1282–1695.

Ellerson, C., K. Blanchard, A. Webb, A. Bigrigg, and S. Haskell (1998): "Emergency Contraception," *The Lancet*, 352, 1477.

Escobar, B., C. Román, C. Muñoz, and F. López (2008): "Perfil biosocial de las usuarias que demandan la píldora de anticoncepción de emergencia en un centro de salud de Santiago, 2006-2007," *Revista Chilena de Obstetricia y Ginecología*, 73, 223–227.

Girma, S.and Paton, D. (2006): "Matching estimates of the impact of over-the-counter emergency birth control on teenage pregnancy," *Health Economics*, 15, 1021–1032.

——— (2011): "The impact of emergency birth control on teen pregnancy and STIs," *Journal of Health Economics*, 30, 373–380.

Gold, M. A., J. E. Wolford, K. A. Smith, and A. M. Parker (2004): "The effects of advance provision of emergency contraception on adolescent women's sexual and contraceptive behaviors," *Journal of Pediatric and Adolescent Gynecology*, 17, 87–96.

Gross, T., J. Lafortune, and C. Low (2014): "What Happens the Morning After? The Costs and Benefits of Expanding Access to Emergency Contraception," *Journal of Policy Analysis and Management*, 33, 70–93.

International Consortium for Emergency Contraception (2019): "EC Status and Availability: Countries with no EC pill brands registered," Available at: `https://www.cecinfo.org/country-by-country-information/status-availability-database/countries-with-no-ec-pill-brands-registered/`. Accessed 26 August, 2019.

Lavanderos, S., C. Riquelme, J. Haase, and A. Morales (2016): "Perfil sociodemográfico y factores asociados a consultas por anticoncepción de emergencia," *Revista Médica de Chile*, 144, 1134–1143.

Ministerio de Salud (2018): "Normas Nacionales Sobre Regulación de Fertilidad," ISBN 978-956-348-151-8, Government of Chile.

Morán Faúndes, J. (2013): "La anticoncepción de emergencia en Chile: Estructuración de su demanda en función de variables socioeconómicas," *Revista Brasileira de Estudos de População*, 30, 125–144.

Mulligan, K. (2015): "Contraception Use, Abortions, and Births: The Effect of Insurance Mandates," *Demography*, 52, pp. 1195–217.

Nuevo-Chiquero, A. and F. J. Pino (2019): "To Pill or not to Pill? Access to Emergency Contraception and Contraceptive Behaviour," Working Papers wp477, University of Chile, Department of Economics.

Raymond, E., J. Trussell, and C. Polis (2007): "Population Effect of Increased Access to Emergency Contraceptive Pills A Systematic Review," *Obstetrics & Ginecology*, 109, 181–188.

Schiappacasse, V., T. Bascuñan, K. Frez, and I. Cortés (2014): "Píldora anticonceptiva de emergencia: características de la demanda en una organización no gubernamental en Chile," *Revista Chilena de Obstetricia y Ginecología*, 79, 378–383.

Task Force on Postovulatory Methods of Fertility Regulation (1998): "Randomised controlled trial of levonorgestrel versus the Yuzpe regimen of combined oral contraceptives for emergency contraception," *The Lancet*, 352, 428–433.

von Hertzen, H., G. Piaggio, A. Peregoudov, J. Ding, J. Chen, S. Song, G. Bártfai, E. Ng, K. Gemzell-Danielsson, A. Oyunbileg, S. Wu, W. Cheng, F. Lüdicke, A. Pretnar-Darovec, R. Kirkman, S. Mittal, A. Khomassuridze, D. Apter, and WHO Research Group on Post-ovulatory Methods of Fertility Regulation (2002): "Low dose mifepristone and two regimens of levonorgestrel for emergency contraception: a WHO multicentre randomised trial," *The Lancet*, 360, 1803–1810.