Chapter 6. Impact of the Global Gag Rule: New Estimates

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This chapter offers new estimates of how the global gag rule has affected abortion rates across developing countries in four regions: Latin America and the Caribbean, Eastern Europe and Central Asia, South and Southeast Asia, and Sub-Saharan Africa.[1] The chapter uses a statistical approach to assess the relationship between abortion rates and the global gag rule, based on data for individual women across countries in each of these regions. The methodology centers on regression analysis, which allows the researcher to control for other variables that could also affect changes in abortion rates. It also allows the researcher to determine if the association between abortion rates and the global gag rule is statistically significant (that is, not due to chance). By way of a brief summary, the dependent variable (whether or not a woman has an induced abortion) is regressed on a set of independent variables thought to explain the likelihood of having an abortion. The key independent variable of interest is a measure of a country's exposure to the global gag rule, and other independent variables include controls for women's characteristics that influence their decision making around abortion, such as their education and marital status. The regressions also include country-level control variables that influence the incidence of abortions, such as national abortion laws and the prevalence of modern contraceptive use.

[1] As shown in Table 1, the regional category "Eastern Europe and Central Asia" includes countries from several regions in the greater area: Eastern Europe, Central Asia, West Asia, the Middle East, and North Africa. For ease of exposition, I chose "Eastern Europe and Central Asia" as the label.

The regression analysis follows a "difference-in-difference" strategy that is commonly used in statistical analyses to estimate the impact of a policy change or a new program. In such a strategy, the policy impact is identified by looking at a particular indicator and calculating how that indicator differs between a group that experienced the policy (the treatment group) and a group that did not experience the policy (the control group), as well as the difference in the indicator before and after the policy was implemented. In this case, the chapter estimates the impact of the global gag rule by calculating the difference in abortion rates between women in countries that were more vulnerable to USAID funding restrictions versus women in countries that were less vulnerable, and the difference in abortion rates before and after the global gag rule was enacted. This analysis builds on two previous studies that have used statistical methods to examine the impact of the global gag rule on abortion rates in Sub-Saharan Africa: Bendavid *et al*. (2011) and Jones (2015). By examining a broader range of countries, this chapter addresses the important question of how the U.S. funding restrictions impacted abortion rates in regions besides Sub-Saharan Africa.

The main finding is that the global gag rule is associated with a very large increase in abortion rates in Latin America and the Caribbean. In this region, women in countries that were highly exposed to the global gag rule had more than three times the odds of having an abortion after the global gag rule was reinstated in 2001 compared to women in less exposed countries and before the reinstatement of the policy. This effect is even larger than it is for Sub-Saharan Africa, where women in highly exposed countries had about twice the odds of having an abortion after the 2001 reinstatement of the policy compared to women in less exposed countries and before the policy was reinstated. Abortion rates rose in both these regions despite their very restrictive legal regimes around abortion. In contrast, the relative odds of having an abortion

declined for women in the other two regions (in Eastern Europe and Central Asia, and in South and Southeast Asia) in highly exposed countries after the reinstatement of the policy, even though both these regions have more legal grounds upon which women are allowed to obtain abortions. In Eastern Europe and Central Asia the decline was completely offset by the greater odds of getting an abortion due to increased funding from other donor countries. The results point to another interesting finding, and that is the lack of a conclusive and consistent relationship between strict abortion laws and women's likelihood of having an abortion. Overall then, women in Latin America and Sub-Saharan Africa bore relatively more of the burden of the U.S. restrictions on funding for family planning and reproductive health than women in other regions. This result helps to fill a knowledge gap on the global impact of the U.S. funding restrictions.

The regressions used to derive these results are estimated with a comprehensive dataset of about 6.3 million women across 51 countries over the 1994-2008 period. This dataset contains information on women's reproductive health history, as well as relevant characteristics specific to the individual women and the countries where they live. The remainder of this chapter discusses in more detail the dataset construction, the empirical methodology, and the statistical results on how the global gag rule is associated with abortion rates across regions.

Induced Abortion Rates: Data Challenges

The first step in the analysis was to calculate induced abortion rates across countries and over time. Unfortunately, it is difficult to obtain reliable data on abortion rates in developing countries, mostly because the reporting systems are inadequate or because women are reluctant to disclose in surveys that they have had an abortion, or some combination of both of these

factors (Westoff 2008). Moreover, there are no readily-available data on induced abortion rates that have been calculated using comparable methods across countries and covering an extensive time period. To address this problem I followed the approach used in Bendavid *et al.* (2011) and constructed induced abortion rates using household-level data from the Demographic and Health Surveys (DHS). The DHS are large nationally-representative household surveys that provide a wealth of information on population, health, and nutrition in developing countries. The DHS program is administered by a private firm (ICF International) and is funded mostly by USAID, along with contributions from other donors and participating countries. The data are publicly available and are widely used in scholarly research on the well-being of women and their families. To date, there are surveys available for over 90 developing countries, and for many of those countries the DHS program has conducted surveys in multiple years – typically once every five years for a standard survey.

The DHS data are not without their limitations, especially the potential biases resulting from reporting and recall errors among survey respondents. However, previous assessments of the DHS indicate that most information is reasonably well reported (even information about events in the past such as children's birthdates and age at marriage), and that the benefits of using DHS data far outweigh the limitations (Boerma and Sommerfelt 1993). The nationally-representative sampling techniques and well-substantiated methodology have contributed to the DHS's reputation for providing accurate data on a range of population and health topics, including reproductive health, family planning practices, household structures, and birth histories. Moreover, common questionnaire formats and variable coding across countries make the DHS data conducive for engaging in research that covers multiple countries. Because the DHS questionnaires are extensive and contain information on all members of a household, the

DHS data for each country are separated into several "recodes" that are specific to certain categories, including women, men, children, household, and births. For each country examined in this chapter, data construction started with the DHS Individual Recode, which contains observations for women ages 15-49.

The key criterion for including a particular country in the analytic sample for this chapter was whether the DHS for that country included a calendar related to women's reproductive health history in the five to six years leading up to the date of the survey interview. The DHS program began to collect this calendar information in the early 1990s with the third wave of its standard survey in a few countries – including Turkey, Bolivia, and Zimbabwe – and the calendar has since become a standard part of the data collection efforts for many of the DHS program countries but not all. Any country in the DHS program that did not include a calendar on women's reproductive health was excluded from the analytic sample for this chapter, as was any country that did not have calendar information available for the period of analysis.[2] This exclusion restriction resulted in an analytic sample that covers a total of 51 countries: 9 countries in Latin America and the Caribbean; 12 countries in Eastern Europe and Central Asia; 10 countries in South and Southeast Asia; and 20 countries in Sub-Saharan African (see Table 1). The analytic sample was further restricted to women between the ages of 15 and 44 in each year.

A typical calendar for each woman interviewed in the survey includes monthly entries starting with the month of the survey interview and extending back in time for five or six years. Each monthly entry notes one of the following: whether the woman was using birth control and what kind (usually indicated by a single-digit number depending on the type of method and the

[2] Adjustments needed to be made to the year and the century month code (cmc) entries in the DHS data for Ethiopia and Nepal because these countries do not use the Gregorian calendar.

country of the survey), whether the woman was pregnant (P), whether the woman experienced a termination (T), or whether the woman gave birth (B). A sample calendar entry is shown below:

11BPPPPPPPP00555555555555555555555BPPPPPPPP00555555555TPP9999999999

The entry is read from right to left, where the right-most character is the status of a woman's reproductive health in January five years before the survey, and the left-most character is the woman's status during the month she completed the interview for the survey. In this particular example, reading from right to left, the woman was using the withdrawal method (a code of 9 in this sample country) five years before the survey, after which she was pregnant for two months and then experienced a termination. She then switched to a different birth control method (code 5, which represents condom) for almost a year and then stopped using any birth control (0) and became pregnant again. In this case the pregnancy was carried to term and following the birth the woman continued to use condoms for over a year. She then stopped using birth control and became pregnant again and had another child. Following the second child she switched to a different birth control method, in this case the pill (a code of 1), and was using this form of birth control the month she was interviewed for the survey. Each of these monthly entries in the single string was parsed to form separate codes, and then the codes were tabulated to construct a variable for whether or not a woman had experienced a termination (T) in a particular year.

The calendar does not specify if the termination was induced or spontaneous, nor is there other information in the standard DHS datasets across countries that specifically indicate the reason for each termination. Hence additional steps were necessary to calculate induced abortion rates. The methodology used in this chapter followed closely that of Bendavid *et al.* (2011), which in turn is based on a classification scheme developed in Magnani *et al.* (1996). This

scheme uses information on contraceptive use, family planning, pregnancy duration, and the age and marital status of the mother. In sum, a termination (T) in the DHS calendar is categorized as an induced abortion if any one of the following three conditions of the terminated pregnancy hold: (1) the pregnancy happened due to contraceptive failure, or (2) the pregnancy was unwanted (as indicated by answers to questions about the desired number of children and about the previous live birth), or (3) the woman was under the age of 25 and single at the time of the pregnancy. Even if one of those conditions is met, a termination is not considered an induced abortion if: (a) the termination occurred during the third trimester, or (b) the woman indicated she stopped using contraception in order to become pregnant, or (c) the woman had no children at the time of the termination and was either married or in a union. These additional three criteria help to avoid falsely classifying a spontaneous termination as an induced abortion. As discussed in Bendavid *et al.* (2011) and in Magnani *et al.* (1996), this procedure is reliable – as indicated by robustness tests comparing the results from the algorithm with results from direct survey questions – and it is useful because it facilitates the calculation of abortion rates across multiple countries using the same methodology.

Table 1 reports the number of induced abortions calculated from the DHS data for each of the 51 countries in each year, as well as the total number of observations. The data span 1994 to 2008, with the 1994-2000 sub-period covering years in which the global gag rule was not in place and the 2001-2008 sub-period covering years in which the global gag rule was in place. Recall that the global gag rule was rescinded by President Bill Clinton in 1993, reinstated by President George W. Bush in 2001, and rescinded again by President Barack Obama in 2009. The data points are at the level of women per year. Thus, as an example from the table, in 1994 there were a total of 6,593 women in the sample for Bolivia and 16 of them had an induced

abortion in that year. Many countries have missing values for at least one of the years because not all of the DHS surveys included calendars or because the countries did not engage in regular waves of data collection during the entire period of analysis.

Table 1 shows that among the four regions, induced abortions occur more frequently in Eastern Europe and Central Asia, with some of the highest levels and rates found in Armenia, Azerbaijan, and Kazakhstan – each former Soviet Republics where attitudes, norms, and laws around abortion have been relatively less restrictive. In Armenia, almost 60 of every 1000 women in the DHS samples during the mid- to late-1990s had an induced abortion. In contrast, induced abortions are the least common in both absolute and relative terms in Sub-Saharan Africa, corresponding to the region's stronger stigmas and laws surrounding access to abortion. Benin, Burkina Faso, Guinea, Mali, and Niger had particularly low incidences of induced abortions over time, with zero induced abortions in the DHS samples in some of the years. In between these two regions in terms of the incidence of induced abortions are South and Southeast Asia, as well as Latin America and the Caribbean. India and Colombia stand out for their particularly high numbers of induced abortions in absolute terms due to their large populations and sample sizes, and Timor-Leste stands out at the opposite extreme with virtually no induced abortions in the sample.

Measuring Exposure to the Global Gag Rule

The next step in the analysis was to merge into the induced-abortions database a variable that measures exposure to the global gag rule. This country-level variable was constructed from data extracted from the Creditor Reporting System of the Organization for Economic Cooperation and Development (OECD 2017). More specifically, for each country in the sample,

data were extracted on total U.S. commitments of official development assistance in current U.S. dollars for family planning and reproductive health services from 1995 to 2000. In the original source data, family planning is sector 13030 and reproductive health is sector 13020. I added these two items together to calculate assistance for family planning and reproductive health services. The motivation behind the choice of years was to measure the extent to which developing countries depended on U.S. financial support before the global gag rule was reinstated in 2001. The year 1995 is the earliest year for which the OECD reports this data, and the year 2000 is the final year during the Clinton administration when the global gag rule was not in place. Moreover, this OECD database is the only readily-available database on detailed indicators of public financial assistance for global health across all developing countries going back historically to the mid-1990s. USAID and non-profit organizations such as the Kaiser Family Foundation provide a number of published summary reports on U.S. government assistance for family planning and reproductive health services, but these reports do not included data that is disaggregated by recipient country and their scope in terms of historical coverage is limited.

The annual U.S. financial assistance for each country was then converted into per capita terms by dividing the annual dollar amounts by that country's total population in the corresponding years using data from the World Bank's World Development Indicators (World Bank 2017). Following the approach in Bendavid *et al.* (2011), the next step in constructing the exposure variable was to calculate the average per capita financial assistance over the 1995-2000 period for each country. That step resulted in 51 average financial assistance figures (one for each country) spread across four regions. For each region I then computed the median amount for these average assistance figures. The final step was to create a dichotomous variable (a

variable that takes on only two possible values) in which countries with average per capita financial assistance from the U.S. that ranked above the median for their region are considered to have high exposure to the global gag rule, and countries with average per capita financial assistance from the U.S. that ranked below the median for their region are considered to have low exposure to the global gag rule. Countries above the median were assigned the value of 1, and countries below the median were assigned the value of 0, resulting in a "dummy variable" for whether or not a country was highly exposed to the global gag rule.

Figure 1 illustrates the ranking of countries according to their average per capita assistance for family planning and reproductive health services from the U.S. for the 1995 to 2000 period, by region. In each of the four charts, a vertical line at the center divides the countries categorized as high exposure (those to the left of the line) from the countries categorized as low exposure (those to the right of the line). Note that each chart uses the same range of values for the vertical axes, so one can readily see which countries around the world received the most and the least per capita assistance from the U.S. That said, both Jordan and Bolivia stand out for having per capita financial assistance that far exceeds all the other sample countries. One can speculate that these two countries are such outliers in terms of assistance from the U.S. due to political reasons, but there is no readily available source of information to substantiate this conjecture. Cambodia and Nicaragua also have fairly high levels of per capita assistance from the U.S. These four countries thus had the highest relative exposure to the reinstatement of the global gag rule in 2001. At the other extreme, several countries in each region received zero official development assistance for family planning and reproductive health services from the U.S. during the period.

Other Determinants of Abortion Rates

The regression analysis includes several additional independent variables that also influence women's abortion rates. Four of these variables represent characteristics of individual women in each year during the 1994-2008 period and they were constructed with data from the DHS. The individual characteristics include the following: a woman's age in each year, a dummy variable for whether or not a woman has formal schooling, a dummy variable for whether or not a woman has been married, and a dummy variable for whether or not she lives in an urban area. Table 2 reports the sample averages for each of these variables.[3] Across the four regions, women's averages ages range from about 27 to 29. The regions exhibit greater variation in the other indicators, with less than 60 percent of women in Sub-Saharan Africa having any kind of formal schooling compared to at least 70 percent in the other regions. Women in Sub-Saharan Africa also stand out for their relatively low tendency to live in urban areas (28 percent) compared to the other regions. In contrast, Latin America and the Caribbean as a region stands apart for its high incidence of women who never married – 25 percent, at least double that in the other regions.

Four additional independent variables are included in the model to control for country-level characteristics for each year in the 1994-2008 period that may influence abortion decisions. Note that each of these indicators were merged in as panel data – that is, the indicators for each country were merged in for each year of the 1994-2008 period. The alternative would have been to assume that the country indicators did not change over time and could be represented by a period average or by a particular year of data. Because the regression models include country fixed effects, any country-level indicator needs to vary over time or else it gets dropped from the regression estimations due to multicollinearity. The first control variable measures a country's

[3] Sample means in Table 2 are weighted using the DHS sampling weights.

total life expectancy at birth in every year from 1994 to 2008 and was constructed using data from the World Development Indicators (World Bank 2017). This variable is included as an indicator of a country's overall well-being as well as fertility patterns. The second country-level variable is the prevalence of modern contraceptives in each country, constructed with data from the Estimates and Projections of Family Planning Indicators Database of the United Nations Department of Economic and Social Affairs (UNDESA 2017). These data indicate the percent of married or in-union women of reproductive age who report that they use a modern method of contraception. Modern methods include sterilization, birth control pills, intra-uterine devices, condoms, injectables, implants, vaginal barrier methods, and emergency contraceptives.

The third country-level indicator is an index that measures legal restrictions on access to abortions across countries. This data is obtained from the World Population Policies Database of the United Nations Department of Economic and Social Affairs (UNDESA 2015b). For each country, this database indicates the legal grounds on which abortion is allowed. These grounds are, from most restrictive to least restrictive: (1) to save a woman's life, (2) to safeguard a woman's physical health, (3) to protect a woman's mental health, (4) when pregnancy is the result of rape or incest, (5) for reasons of fetal impairment, (6) for economic or social reasons, and (7) on request. Following the procedure described in Bloom *et al.* (2009), rather than specify these legal grounds as separate measures, they are combined into an aggregate index that gives equal weight to each measure. Each of the legal grounds is assigned a value of 1 and then these values are simply added together, resulting in an index that ranges from 0 to 7. A score of 0 indicates that a country bans abortions entirely and a score of 7 indicates that a country allows abortions for all the legal grounds given above. Note that the population polices in the original UNDESA source are not provided for every year of the period of analysis. Rather, the policy

data are provided for the years 1996, 2001, 2003, 2005, and 2007. To construct annual series for each country, I worked forward from each year of the published policies. Thus the 1996 reported policies were assumed to apply to the years 1996-2000, the 2001 reported policies were assumed to apply to the years 2001-2002, the 2003 reported policies were assumed to apply to the years 2003-2004, and similarly for the 2005 and 2007 policies.

The fourth country-level indicator is the level of financial assistance for family planning and reproductive health services from all other OECD donor countries besides the United States, given that other countries also committed substantial amounts of aid during the period. These data come from the Creditor Reporting System of the Organization for Economic Cooperation and Development (OECD 2017). For each country in the sample, data was extracted on total non-U.S. commitments of official development assistance in current U.S. dollars for family planning and reproductive health services from 1995 to 2008. Because the OECD source does not report foreign aid flows prior to 1995, to complete the analytic sample, data for the year 1994 were constructed using a simple linear interpolation. As before, the total non-U.S. financial assistance for family planning and reproductive health services to each country was converted into per capita terms using population data from the World Bank (2017).

Sample means for these country-level indicators are also found in Table 2. Notably, average life expectancy at birth is substantially lower in Sub-Saharan Africa (52) than in the other regions, where it ranges from 66 to 70. Driving down the average in Sub-Saharan Africa are very low life expectancies in countries that that have been particularly hard hit by genocide, civil war, and the HIV/AIDS epidemic. Examples include Rwanda with an extremely low life expectancy of 29 in 1994, the year of the Rwandan genocide, and Sierra Leone with a life expectancy that did not surpass 40 until the year 2002 when the country's civil war ended.

Zambia and Malawi have also had extremely low life expectances – below 50 for most of the period – due to the HIV/AIDS crisis. The relatively low life expectancy in Sub-Saharan Africa corresponds with the region's relatively low real per capita GDP, which averaged $1,754 during the period. This average is considerably less than that of South and Southeast Asia ($3,881), Latin America and the Caribbean ($6,979), and Eastern Europe and Central Asia ($7,189).[4]

Sub-Saharan African countries also have lower rates of contraceptive usage than other countries. On average in Sub-Saharan Africa, just 18 percent of married or in-union women of reproductive age reported that they used a modern contraceptive method, compared to at least 42 percent in the other regions. Benin, Guinea, Sierra Leone, and Mali had particularly low usage rates (7 percent or less) for most of the period. Latin America and the Caribbean as a region has the highest usage (54 percent) of modern contraceptive methods, with some of the highest rates found in Brazil, Colombia, and the Dominican Republic.

Although Sub-Saharan Africa has the lowest average life expectancy and modern contraceptive usage in the region, it does not have the lowest abortion law index. Table 2 shows that Latin America and the Caribbean has the lowest ranking for the average number of legal grounds upon which abortion is allowed. In fact, during this period four of the countries in the Latin American sample (Dominican Republic, Guatemala, Honduras, and Nicaragua) only allowed abortion on the grounds of saving the life of the woman. Nicaragua actually removed this allowance in 2007 so that abortion was completely prohibited. The only other sample

[4] These averages are constructed using World Bank (2017) data on real GDP per capita (in 2011 purchasing-power-parity-converted international US$) for each of the sample countries. Regression results were very similar when real GDP per capita was added to the regressions as a control variable instead of life expectancy.

country to criminalize all abortions during the period of analysis was Timor-Leste.[5] At the other extreme, the highest average abortion law index is found in Eastern Europe and Central Asia, where the average country permits abortions on four legal grounds (typically, but not always, to save a woman's life, safeguard her physical health, protect her mental health, and when pregnancy is the result of rape or incest). Interestingly, of the twelve countries in this region, nine permit abortions on all the legal grounds. The exceptions are Egypt, Jordan, and Morocco, each of which is substantially more restrictive in their abortion policies. The final control variable, total non-U.S. per capita financial assistance for family planning and reproductive health services, also varies considerably across regions, with the highest average value of non-U.S. per capita assistance going to Sub-Saharan Africa. This value exceeds that of Eastern Europe and Central Asia, the lowest ranking region, by more than a factor of five.

Table 2 also reports sample means by region for the dependent variable (whether or not the woman had an abortion) and the key independent variable (whether or not the woman lives in a high exposure country). Consistent with the conclusions drawn earlier from the individual-country numbers in Table 1, women in Eastern Europe and Central Asia were more likely than women in other regions to have had an induced abortion during the period, with women in Sub-Saharan Africa the least likely. Also of note, Latin America and the Caribbean stands out for having the lowest percentage of women (26.3 percent) living in high-exposure countries, which is about half that of the next lowest region. This relatively low rate reflects the DHS sample composition and the fact that the countries with the largest samples (Colombia, Dominican Republic, and Peru) are each low-exposure countries.

[5] Timor-Leste was also the only sample country for which the UNDESA (2015b) source had incomplete data. The information on Timor-Leste's criminalization of all abortions is from Belton *et al.* (2009).

Methodology

The methodology tests whether the reinstatement of the global gag rule by President George W. Bush in 2001 is associated with a change in induced abortion rates in countries that had relatively high exposure to the U.S. policy compared to countries with relatively low exposure and compared to before the policy was reinstated. A country's exposure to the policy is determined by its relative dependence on U.S. assistance for family planning and reproductive health compared to other developing countries. The period of analysis is 1994 to 2008, with 1994-2000 considered the "before" period and 2001-2008 considered the "after" period, and the analysis examines women between the ages of 15 and 44.

The empirical analysis is based on a logistic regression that relates the odds of having an induced abortion to a measure of the global gag rule as well as a set of individual and country characteristics. The determinants of having an induced abortion are expressed as follows:

$$A_{ist} = a + \beta_1 PolEff_t + \beta_2 HiExp_s + \beta_3 PolEff_t * HiExp_s + \beta_4 X_{ist} + \vartheta_{ist} \quad \text{---} \quad (1)$$

where the subscript *i* denotes a woman, *s* denotes a country, and *t* denotes time. The dependent variable A_{ist} represents whether or not a woman *i* in country *s* and year *t* has an induced abortion. The notation $PolEff_t$ is a dummy variable for the years in which the global gag rule is in effect (so that it equals 0 for the years 1994-2000 and it equals 1 for the years 2001-2008). $HiExp_s$ is a dummy variable for countries with high exposure to the global gag rule (so that it equals 0 for countries with below-average aid flows from the U.S., and it equals 1 for countries with above-average aid flows from the U.S.). The interaction between these two variables, $PolEff_t * HiExp_s$ is the key variable of interest and when it equals 1, it identifies the combined effect of living in a high-exposure country in the years when the global gag rule was in effect.

The notation X_{ist} is a set of individual and country characteristics that influence abortion decisions. The individual characteristics include the woman's age, educational attainment, marital status, and whether or not she lives in an urban area. The country-level characteristics include life expectancy, the rate of modern contraceptive usage, an index for national abortion laws, and the level of total official development assistance for family planning and reproductive health from all donors except the United States. Finally, ϑ_{ist} is an individual-specific idiosyncratic error term.

All regressions contain time-invariant country-specific dummy variables that are common to all women in each country, as well as country-invariant year-specific dummy variables that are common to all women in each year. The country fixed effects control for unobservable factors that influence a particular country's incidence of abortions but do not vary over time. For example, more egalitarian countries may be more likely to attract U.S. foreign assistance and also have higher abortion rates. The year fixed effects control for other unobservable factors that may influence abortion rates, change contemporaneously from year to year, and are common across countries. For example, if abortion rates trended upward over time due to the availability of safer methods across regions, this upward trend would be captured by the year fixed effects. More comprehensive information about the estimation procedure is found in the technical appendix to this chapter.

The estimation is performed separately for each of the four regions. The main reason for taking this approach is to examine how the effect of living in a high-exposure country after the reinstatement of the global gag rule differs across regions. Moreover, there is no reason to expect that the association between abortion rates and the control variables is the same across regions. That is, constraining the regression coefficients on all the independent variables to be

the same across regions will most likely lead to misleading results given that each region differs in many ways with respect to societal norms, religions, legal structures, traditions, institutions, and so forth.

Regression Results

The full dataset was used to estimate a logistic regression model that relates a woman's decision to have an induced abortion to her country's exposure to the global gag rule. The regression results, found in Table 3, are presented as odds ratios, with standard errors in parentheses. A detailed discussion of how to interpret an odds ratio is provided in the technical appendix, but as a rule of thumb, the odds ratio allows the researcher to determine how the likelihood of an event changes as a particular variable or condition changes. When the odds ratio equals 1, then the likelihood of the event occurring does not change. When the odds ratio is greater than one, then the likelihood of the event happening increases, and when the odds ratio is less than one, then the likelihood of the event happening decreases. Odds ratios are always positive numbers. So for any of the variables shown in Table 3, if the odds ratio equals one, then the likelihood of a woman having an induced abortion does not change as a result of a change in that variable. When the odds ratio is greater than one, a woman is more likely to have an induced abortion as a result of a change in that particular variable, and when the odds ratio is less than one, a woman's likelihood of getting an induced abortion is reduced.

To be confident that the effects are systematic and not due to random chance, the result needs to be statistically significant, which in the table is indicated by stars next to the odds ratios. The notation *** indicates that the probability of the result occurring by random chance is less than 1 percent, ** indicates less than 5 percent, and * indicates less than 10 percent. Note that

the results in Table 3 are presented separately for each of the four regions. For each region, the table reports three models: the first model includes only the measure of the global gag rule, the second adds the women's individual characteristics, and the third adds both the individual and the country characteristics. All three models include the country and year fixed effects.

Some of the strongest effects of the global gag rule among the four regions are found in Latin America and the Caribbean, the first region presented in Table 3. Results across models 1 to 3 show a steady increase in the interaction effect for living in a high exposure country while the policy was in place. In the basic model (model 1), the result for the interaction term indicates that women in highly exposed countries in Latin America and the Caribbean had 1.60 times the odds of having an induced abortion after the reinstatement of the policy compared to before the policy and compared to women in less exposed countries. This effect increases slightly to 1.71 in the model that adds controls for women's characteristics, and in the full model (model 3), the odds ratio for the interaction term is 3.29. One can interpret this result as women in highly exposed countries having more than three times the odds of getting an abortion while the global gag rule was in effect compared to when it was not in effect and compared to women in less exposed countries. A likely explanation for this result is that women in the region had insufficient access to reproductive healthcare facilities as a result of the global gag rule, thus increasing unintended pregnancies and abortion rates. This interaction effect for the global gag rule is considerably larger than it is in the other regions, implying that all else equal, the U.S. funding restrictions affected women's decision making about abortion more in Latin America and the Caribbean than anywhere else.

The large change in the odds ratio across the models for Latin America and the Caribbean implies that the individual-level and especially the country-level characteristics play an

important role in explaining variations in abortion rates across countries. Examining first the women's individual characteristics, it is clear that all four measures play a statistically significant and substantively meaningful role in explaining women's abortion decisions in the region. Women who have formal schooling have greater odds (by a factor of 1.33) of getting an induced abortion compared to their counterparts who do not have formal schooling. Similarly, women who live in urban areas have greater odds (by a factor of 1.52) of getting an induced abortion compared to women in rural areas. In the opposite direction, women who were never married have far lower odds (by a factor of 0.29) of getting an induced abortion compared to women who are married now or have been married in the past. As for women's age, the odds ratio of 0.97 implies that with each additional year of age, a woman's likelihood of getting an abortion is virtually the same as the year before.

Looking more closely at the full set of results in model (3) for Latin America and the Caribbean, a country's life expectancy is not a statistically significant predictor of abortion rates. In contrast, a country's modern contraceptive usage, abortion law index, and total family planning and reproductive health assistance from all other OECD countries are each statistically significant and substantively important. In particular, the 0.89 result for contraceptives indicates that when a country's usage of modern contraceptive methods rises by one percentage point, the relative odds of a woman having an induced abortion decrease. This result makes intuitive sense if one presumes that the use of modern contraceptives effectively helps to reduce unintended pregnancies and the need to seek an abortion. Moreover, an odds ratio for 0.92 for the abortion law index indicates that increasing the abortion law index by a value of one (which corresponds with increasing by one the legal grounds upon which a woman may obtain an abortion) actually reduces the relative odds of a woman having an induced abortion. The same conclusion applies

in the reverse direction: reducing the abortion law index by a value of one (which corresponds with removing by one the legal grounds upon which women can get an abortion) will increase the relative odds of a woman seeking to have an abortion. Hence more restrictive abortion laws are associated with higher rates of induced abortion in Latin America and the Caribbean.

Interestingly, the odds ratio of 0.54 for a country's total non-U.S. financial assistance per capita for family planning and reproductive health means that if this aid were to increase by $1 per person in an average Latin American country, the odds of women having an induced abortion would fall by about half. Combined with the finding for the measure of the global gag rule, this result suggests that women's abortion decisions are quite sensitive to the availability of facilities funded by foreign assistance. When U.S. funds are restricted by the global gag rule, abortion rates rise substantially, and when other governments provide more money for family planning and reproductive health services, abortion rates fall.

Results for Eastern Europe and Central Asia differ substantially from those of Latin America and the Caribbean. Notably, the interaction term is substantially below one (0.51 to 0.60 depending on the model) and it is statistically significant. The interpretation of this result is that women in highly exposed countries had about half the odds of getting an abortion after the reinstatement of the global gag rule compared to before the policy and compared to women in less exposed countries. The global gag rule thus appears to have reduced the availability of abortion services in this region, which was relatively high compared to other regions before the policy went into effect. Countering this effect, though, is a large increase in the odds of having an abortion (1.96) as the level of total non-U.S. family planning and reproductive health assistance rises: an increase of $1 in non-U.S. foreign aid per capita almost doubles the odds of a woman having an induced abortion. Hence the reduction in abortion rates associated with the

U.S. funding cuts is completely offset by the increase in abortion rates associated with non-U.S. financial assistance for family planning and reproductive health services.

Pertaining to the other control variables, the odds ratio estimates for women's characteristics are comparable to those of Latin America and the Caribbean: the odds of getting an abortion are higher for women with formal schooling compared to women without schooling; the odds of having an abortion are considerably lower for women who have never been married compared to women who are currently or have been married; and the odds of having an abortion remain roughly the same with each year of age. The main difference between the two regions in the effects of women's characteristics is that living in an urban area no longer has a statistically significant association with abortion decisions. Countries in Eastern Europe and Central Asia also differ from those in Latin America and the Caribbean when it comes to the association between some of the other country-level indicators and abortion decisions. In this case there is no statistically significant relationship between modern contraceptive prevalence and abortion, while adding additional legal grounds upon which women may obtain an abortion does increase the relative odds of women actually getting an abortion by a factor of 1.57 for each single increase in the permissible grounds for abortion.

The second half of Table 3 reports the regression results for South and Southeast Asia and for Sub-Saharan Africa. The key result for the effect of the global gag rule in Asia is similar to that of Eastern Europe and Central Asia: namely, an odds ratio of 0.24 for the interaction effect in the full model implies that women in highly exposed countries had about one quarter the odds of getting an abortion after the global gag rule was put back into place compared to before the policy and compared to women in less exposed countries. This result suggests that the global gag rule did work to reduce women's access to abortion services. Regarding the other indicators

for women's characteristics, the results are similar to either or both of the regions just discussed: women with formal schooling and women in urban areas have considerably higher odds than their respective counterparts of getting an induced abortion, while women who were never married are much less likely to have an abortion. Interestingly, none of the country-level control variables are statistically significant.

In Sub-Saharan Africa, the result for the key interaction term is similar to that of Latin America and the Caribbean, but smaller in magnitude. That is, an odds ratio of 2.08 for the interaction term in model (3) indicates that women in highly exposed countries had more than double the odds of getting an induced abortion after the reinstatement of the policy compared to before the policy and compared to women in less exposed countries. This result is consistent with the argument that the global gag rule restricted women's access to family planning and reproductive health services, thus contributing to unmet needs for contraception and a higher incidence of abortion. The estimate is slightly smaller but still comparable to the estimate of 2.55 for Sub-Saharan Africa in Bendavid *et al.* (2011). The main reasons for the difference are the subsequent updates to the earlier DHS datasets for the sample countries, the addition of new waves of the DHS, and some small changes to the estimation procedure.

As with the results for Asia, none of the country-level characteristics have a statistically significant association with abortion rates in Sub-Saharan Africa. The variables for women's characteristics do, however, appear to matter in influencing abortion decisions. Similar to the other regions, the likelihood of seeking an abortion does not change with an additional year of age. Also, women with formal schooling have more than double the odds of getting an abortion compared to women with no schooling, and women in urban areas also have higher odds of

getting an abortion compared to their rural counterparts. In the opposite direction, never-married women have about half the odds of getting an abortion compared to their married counterparts.

Conclusion

This chapter has used logistic regression analysis to estimate the effect of the global gag rule on abortion rates across developing regions. The analysis was conducted with a very large dataset of approximately 6.3 million women in 51 countries between the years 1994 and 2008. The key identification strategy of the regressions centered on a "difference-in-difference" approach that calculates the difference in abortion rates in countries with high and low exposure to the global gag rule, and how that difference compares before and after the 2001 reinstatement of the global gag rule.

Interestingly, the reinstatement of the global gag rule is associated with different responses in abortion rates across developing regions. In Latin America and the Caribbean and in Sub-Saharan Africa, women in highly exposed countries had at least two times the odds of having an abortion after the reinstatement of the global gag rule compared to before the gag rule was put into place and compared to women in less exposed countries. This association between the gag rule and abortion rates was particularly large in Latin America and the Caribbean, where results from the full model with a complete set of individual- and country-level control variables indicate that women in countries with high exposure to the policy had more than three times the odds of having an abortion after the policy was in effect compared to women in countries with less exposure and before the policy was in effect. In contrast, the global gag rule worked in the opposite direction for women living in Eastern Europe and Central Asia, and for women in South and Southeast Asia. In these regions, the global gag rule is associated with lower odds of women

having an induced abortion. However, in Eastern Europe and Central Asia, the lower odds of women seeking an abortion in high exposure countries after the global gag rule was reinstated are counterbalanced by the increased odds of getting an abortion associated with financial assistance from other donor countries.

On net then, if the intent of the global gag rule was to discourage women from getting an abortion in the developing world, this policy failed to achieve its objective in the large majority of countries. The U.S. policy is associated with a substantial increase in the likelihood of women having an abortion in Sub-Saharan Africa and especially in Latin America and the Caribbean, and the negative effect of the U.S. policy on abortion rates in Eastern Europe and Central Asia is completely offset by the positive effect of financial assistance from other donor countries. Only in South and Southeast Asia is the global gag rule associated with a reduction in the likelihood of women having an induced abortion that is not counteracted by other economy-wide forces. The reduction in abortions is presumably caused by clinic closures due to U.S. funding cuts and fewer health professionals who are willing or able to provide abortions. That said, South and Southeast Asia as a region has some of the world's most densely populated countries with pockets of extreme poverty, growing rates of HIV infection, and deeply entrenched biases against gender equality. Proponents of the U.S. policy need to seriously consider whether women in these countries can afford to see reduced access to comprehensive reproductive healthcare services when the U.S. restricts its financial assistance.

The analysis uncovered some strong similarities across developing regions when it comes to other determinants of women's abortion decisions. Consistently, women with formal schooling and women living in urban areas have greater odds of getting an induced abortion compared to their counterparts with no formal schooling and those living in rural areas. Another

common pattern is that never-married women have considerably lower odds of having an induced abortion compared to women who are currently married or have been married in the past. However, the results point to fewer consistent patterns across regions when it came to the importance of country-level characteristics in explaining abortion rates. The prevalence of modern contraceptives has a statistically significant association with abortion rates in just one region: Latin America and the Caribbean. As expected, higher usage rates of modern contraception are associated with lower abortion rates. This region also stands out for its relatively restrictive abortion laws. Ironically, the regression results suggest that the restrictiveness of the region's laws has done nothing to reduce abortion rates. More generally, across the four regions there is no definitive relationship between stricter abortion laws and women's likelihood of having an abortion. In one region stricter laws are associated with a greater likelihood of women having an abortion, in another region stricter laws reduce the likelihood of women seeking an abortion, and in the other two regions the association is not statistically significant. Legislative efforts and financial resources may be better spent on enhancing the quality and supply of reproductive healthcare services rather than trying to restrict access and institute laws that have unintended consequences.

Technical Appendix

The study estimates a fixed-effects logistic regression, which is a non-linear regression model, that conditions out country-level and year-level heterogeneity. Each estimated coefficient (β) for a particular independent variable (X) in a logistic regression represents the change in the natural logarithm of the relative odds of the dependent variable associated with a one-unit change in the variable X. That is, β=ln(relative odds), where odds are defined as a ratio of probabilities $p/(1-p)$. Hence, the coefficients communicate direction of association – for example, which group of women have higher ($\beta>0$) or lower ($\beta<0$) chances of having an induced abortion. Note that the coefficients from a logistic regression capture the size of the association only relative to one another. Although the researcher can assess which factors have larger or smaller effects on the dependent variable, the size is not interpretable in an intuitively meaningful way. As a consequence, the effect estimates from a logistic regression are conventionally expressed in terms of odds ratios for each independent variable, which are easily interpretable in multiples or percentage changes in the odds of the outcome (UCLA 2017; Long and Freese 2014). The odds ratio for a particular variable is calculated by taking the exponential of the coefficient (odds ratio=e^{β}). For example, in a logistic regression of whether or not a woman has an induced abortion, an odds ratio of 2.0 for the variable "lives in urban area" is interpreted as follows: urban residents have twice the odds of having an induced abortion compared to their rural counterparts.

The odds ratios are computed using the logit command in Stata and the following coding:

```
xi: logit abort PolEff##HiExp i.country i.year, or cluster(country)
```

In this baseline regression (which does not include the additional control variables for individual and country characteristics), the command "xi" tells Stata to expand the variables for year and country into a set of dummy variables for individual years and countries (the country and year fixed effects). The command "logit" tells Stata to run a logistic regression, and the dependent variable is coded as "abort" (a dummy variable for whether or not a woman had an induced abortion in a particular year). The notation "PolEff##HiExp" signals to Stata what the first three independent variables are: a dummy variable for the years in which the global gag rule is in effect (2001-2008), a dummy variable for countries with high exposure to the global gag rule, and the interaction term in which these two variables are multiplied together. After the country and year fixed effects, the notation "or" tells Stata to report the odds ratios, and the notation "cluster(country)" tells Stata to cluster the standard errors by country. Standard errors are clustered by country to reduce potential bias that results from serial correlation in the independent variables. The cluster command produces the same coefficients as running a regression without the cluster option, but it yields different standard errors that account for arbitrary correlations within each country.

This first line of code generates the results presented in Table 3 in the columns for Model (1). The columns for Model (2) report results generated by the same line of code plus the four variables for women's characteristics. Similarly, the columns for Model (3) report results that add in not only the women's characteristics but also the four variables for country characteristics. To see how the effect of the global gag rule differs across developing regions, these models are estimated separately for each of the four regions. Hence Table 3 presents a series of odds ratios from twelve separate logistic regressions (3 models times 4 regions).

Note that the terms "logistic" and "logit" are often used interchangeably in the literature. Technically, a logistic regression estimates a maximum likelihood logit model. The logit model is linear in terms of the natural log of the odds (the logit), but non-linear in the metric of probabilities. In particular, a predicted probability from the model varies as the value of an independent variable changes and it depends on the values of all the variables in the model (UCLA 2017; Long and Freese 2014). Interaction terms, the standard "difference-in-difference" estimators in most models, are notoriously difficult to interpret in non-linear models. With logistic regressions, the difference-in-difference results can be presented in terms of log odds (the β coefficients), odds ratios (e^{β}), or probability (p). The fact that these metrics can yield different conclusions adds to the difficulty in modeling and interpreting interaction effects. This chapter uses the odds ratio metric because the interaction effects are easier to interpret than log odds, and the computation for the interaction effect remains the same regardless of the values assigned to the other control variables.

The results for each independent variable in Table 3 are thus odds ratios, and the result for each interaction effect is a ratio of odds ratios, which means that the difference-in-difference effect is multiplicative in nature rather than additive as it would be in other models or estimation procedures. Specifically, the reported result for each interaction term in Table 3 is interpreted as the ratio of two odds ratios (OR) as follows:

$$Interaction\ effect = \frac{Odds\ (HiExp = 1,\ PolEff = 1)/Odds\ (HiExp = 0, PolEff = 1)}{Odds\ (HiExp = 1,\ PolEff = 0)/Odds\ (HiExp = 0, PolEff = 0)}$$

Intuitively, the result for the interaction term compares the effect on abortion rates after the policy was reinstated in high exposure countries and low exposure countries, relative to the effect on abortion rates before the policy was reinstated in high exposure and low exposure

countries. So, for example, if $Odds(HiExp = 1,\ PolEff = 1)/Odds(HiExp = 0, PolEff = 1)$ equals 3, this means that the odds of women having an abortion are 3 times greater for high exposure countries than low exposure countries while the policy was in effect. Moreover, if $Odds(HiExp = 1,\ PolEff = 0)/Odds(HiExp = 0, PolEff = 0)$ equals 2, this means that the odds of women having an abortion are 2 times greater for high exposure countries than low exposure countries before the policy was in effect. The overall interaction effect is 3/2=1.5, so women in highly exposed countries had 1.5 times the odds of having an abortion after the reinstatement of the policy compared to before the policy and compared to women in less exposed countries.

Table 1. Number of Induced Abortions and Observations in the DHS Samples by Country, 1994-2008

	1994	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
Latin America and the Caribbean															
Bolivia (BO: 1994, 2003, 2008 DHS)															
Abortions	16	.	.	11	9	16	46	35	46	88	88	97	126	179	37
Obs	6,593	.	.	2,227	4,587	6,539	7,461	8,257	8,432	21,937	15,009	14,344	14,787	15,161	15,111
Brazil (BR: 1996 DHS)															
Abortions	72	87	36	.	.	.	.	.	.	.	.	.	.	.	.
Obs	10,951	11,269	11,278	.	.	.	.	.	.	.	.	.	.	.	.
Colombia (CO: 1995, 2000, 2005, 2010 DHS)															
Abortions	88	86	78	74	112	267	245	221	307	334	462	265	200	241	277
Obs	10,009	19,462	9,713	9,976	10,216	41,008	41,609	31,839	32,404	32,998	72,906	66,340	40,984	41,741	42,368
Dominican Republic (DR: 1996, 1999, 2002 DHS)															
Abortions	55	77	86	39	102	104	156	189	179	.	.	.	.	.	.
Obs	8,349	8,570	8,819	19,698	20,301	20,806	20,186	20,712	21,106	.	.	.	.	.	.
Guatemala (GU: 1995, 1998-99 DHS)															
Abortions	29	53	8	8	13	4	.	.	.	.	.	.	.	.	.
Obs	15,736	16,186	5,074	5,280	5,467	4,340	.	.	.	.	.	.	.	.	.
Guyana (GY: 2009 DHS)															
Abortions	.	.	.	.	.	.	.	.	.	.	3	14	17	23	43
Obs	.	.	.	.	.	.	.	.	.	.	4,050	4,110	4,191	4,283	4,383
Honduras (HN: 2005-06, 2011-12 DHS)															
Abortions	.	.	.	.	.	.	15	30	38	61	65	91	36	59	55
Obs	.	.	.	.	.	.	15,130	15,720	16,237	16,859	17,484	18,142	31,230	17,916	18,600
Nicaragua (NC: 1998, 2001 DHS)															
Abortions	39	47	42	63	20	9	10	15	.	.	.	.	.	.	.
Obs	10,984	13,035	14,987	16,829	14,684	5,779	5,900	5,890	.	.	.	.	.	.	.
Peru (PE: 1996, 2000, 2007-08, 2009 DHS)															
Abortions	191	297	262	123	146	150	113	55	87	182	247	287	304	312	262
Obs	25,259	48,113	49,290	23,383	24,072	29,839	35,410	15,838	21,420	35,174	54,847	50,390	45,641	40,681	35,470
Eastern Europe and Central Asia															
Albania (AL: 2008-09 DHS)															
Abortions	.	.	.	.	.	.	.	.	.	18	22	24	17	16	14
Obs	.	.	.	.	.	.	.	.	.	6,026	6,077	6,126	6,227	6,395	6,480
Armenia (AM: 2000, 2005, 2010 DHS)															
Abortions	.	210	289	312	322	327	303	102	123	148	167	142	66	83	68
Obs	.	5,252	5,334	5,397	5,469	5,539	11,006	5,504	5,501	5,498	5,524	10,568	5,092	5,092	5,047

	1994	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
Azerbaijan (AZ: 2006 DHS)															
Abortions	.	.	.	.	.	.	.	66	154	174	222	250	156	.	.
Obs	.	.	.	.	.	.	.	6,932	7,068	7,221	7,334	7,395	7,330	.	.
Egypt (EG: 1995, 2000, 2005, 2008 DHS)															
Abortions	98	269	50	64	97	74	62	56	81	103	136	139	75	85	59
Obs	13,451	27,672	15,068	14,303	14,018	13,386	31,469	18,305	18,055	33,448	32,676	31,761	14,932	14,438	13,962
Jordan (JO: 1997, 2002, 2007, 2012 DHS)															
Abortions	91	84	117	83	50	76	75	83	90	74	99	100	153	118	109
Obs	5,262	5,190	5,090	10,736	5,747	5,677	5,562	5,447	15,869	10,401	10,204	10,005	9,792	20,518	10,891
Kazakhstan (KK: 1999 DHS)															
Abortions	86	107	120	124	117	91	.	.	.	.	.	.	.	.	.
Obs	4,027	4,069	4,128	4,176	4,236	4,218	.	.	.	.	.	.	.	.	.
Kyrgyz Republic (KY: 2012 DHS)															
Abortions	.	.	.	.	.	.	.	.	.	.	.	.	.	18	28
Obs	.	.	.	.	.	.	.	.	.	.	.	.	.	6,586	6,655
Moldova (MB: 2005 DHS)															
Abortions	.	.	.	.	.	.	108	120	149	158	166	81	.	.	.
Obs	.	.	.	.	.	.	6,019	6,087	6,168	6,199	6,251	6,186	.	.	.
Morocco (MA: 2003-04 DHS)															
Abortions	.	.	.	.	27	43	46	60	64	88	1	.	.	.	.
Obs	.	.	.	.	13,259	13,558	13,947	14,316	14,734	15,001	4,157	.	.	.	.
Tajikistan (TJ: 2012 DHS)															
Abortions	.	.	.	.	.	.	.	.	.	.	.	.	.	8	19
Obs	.	.	.	.	.	.	.	.	.	.	.	.	.	7,692	7,919
Turkey (TR: 1998, 2003 DHS)															
Abortions	116	107	135	149	184	124	132	140	127	173	21	.	.	.	.
Obs	7,032	7,265	7,517	7,732	15,603	7,771	7,640	7,477	7,306	7,050	4,277	.	.	.	.
Ukraine (UA: 2007 DHS)															
Abortions	.	.	.	.	.	.	.	.	58	77	85	84	65	28	.
Obs	.	.	.	.	.	.	.	.	5,985	5,947	5,901	5,862	5,826	5,703	.
South and Southeast Asia															
Bangladesh (BD: 1996-97, 1999-2000, 2004, 2007, 2011 DHS)															
Abortions	41	95	134	67	89	132	80	64	111	139	90	57	105	136	88
Obs	16,979	17,285	17,539	13,602	19,097	19,370	15,060	10,134	19,807	19,945	20,003	9,901	25,712	25,765	16,186
Cambodia (KH: 2010 DHS)															
Abortions	.	.	.	.	.	.	.	.	.	.	.	16	44	66	94
Obs	.	.	.	.	.	.	.	.	.	.	.	14,829	15,137	15,529	15,951

	1994	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
India (IA: 2005-06 DHS)															
Abortions	.	.	.	.	.	.	38	111	234	286	323	465	184	.	.
Obs	.	.	.	.	.	.	50,843	102,178	105,469	108,647	111,596	113,681	105,830	.	.
Indonesia (ID: 1997, 2002-03, 2007, 2012 DHS)															
Abortions	42	50	46	100	42	49	52	52	110	60	59	53	86	99	65
Obs	27,127	26,639	26,107	53,671	28,159	27,546	26,960	26,346	57,198	41,838	30,732	29,919	29,212	66,597	38,868
Maldives (MV: 2009 DHS)															
Abortions	.	.	.	.	.	.	.	.	.	3	6	14	14	17	33
Obs	.	.	.	.	.	.	.	.	.	6,930	6,984	6,905	6,761	6,590	6,444
Nepal (NP: 2006, 2011 DHS)															
Abortions	.	.	.	.	.	.	6	12	9	24	16	28	39	28	37
Obs	.	.	.	.	.	.	8,174	8,509	8,781	9,109	9,415	19,481	19,882	10,531	10,950
Pakistan (PK: 2012-13 DHS)															
Abortions	.	.	.	.	.	.	.	.	.	.	.	.	.	21	35
Obs	.	.	.	.	.	.	.	.	.	.	.	.	.	12,926	12,850
Philippines (PH: 1998, 2003 DHS)															
Abortions	47	56	57	80	36	25	38	45	45	39	.	.	.	.	.
Obs	11,461	11,794	12,228	12,609	23,602	11,196	11,466	11,744	12,068	12,156	.	.	.	.	.
Timor-Leste (TL: 2009-10 DHS)															
Abortions	.	.	.	.	.	.	.	.	.	.	0	0	2	2	3
Obs	.	.	.	.	.	.	.	.	.	.	9,861	10,178	10,603	11,052	11,477
Vietnam (VN: 1997, 2002 DHS)															
Abortions	51	74	107	128	109	93	103	111	107	.	.	.	.	.	.
Obs	5,380	5,247	5,151	10,557	5,487	5,334	5,163	5,004	4,817	.	.	.	.	.	.
Sub-Saharan Africa															
Benin (BJ: 2006, 2011-12 DHS)															
Abortions	.	.	.	.	.	.	0	0	0	0	1	3	6	1	4
Obs	.	.	.	.	.	.	2,473	6,224	9,213	10,394	11,402	11,450	24,849	13,923	14,285
Burkina Faso (BF: 2003, 2010 DHS)															
Abortions	.	.	0	0	0	1	0	2	1	1	.	0	4	6	1
Obs	.	.	149	1,773	4,421	6,497	7,248	7,842	7,841	7,710	.	13,651	14,022	14,425	14,847
Ethiopia (ET: 2005, 2011 DHS)															
Abortions	.	.	.	.	.	1	12	15	16	15	19	13	11	9	17
Obs	.	.	.	.	.	10,201	10,893	11,319	11,947	12,374	12,739	25,279	12,985	13,563	14,151
Ghana (GH: 2003, 2008 DHS)															
Abortions	.	.	0	0	0	1	4	3	3	5	6	6	7	23	23
Obs	.	.	10	728	1,668	2,412	2,780	3,089	3,113	6,947	4,019	4,167	4,295	4,408	4,469

	1994	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
Guinea (GN: 2005 DHS)															
Abortions	.	.	.	.	0	0	0	0	1	1	0	2	.	.	.
Obs	.	.	.	.	682	1,497	3,164	3,929	4,427	4,802	4,799	4,747	.	.	.
Kenya (KE: 1998, 2003, 2008 DHS)															
Abortions	4	12	12	11	10	13	9	16	20	16	5	6	6	21	38
Obs	6,440	6,714	6,943	7,208	13,765	6,805	7,074	7,340	7,550	14,185	6,832	7,073	7,286	7,562	7,738
Madagascar (MD: 2003-04, 2008-09 DHS)															
Abortions	.	.	.	0	0	1	2	2	1	11	19	20	20	36	66
Obs	.	.	.	625	1,862	3,104	3,643	4,148	4,320	17,481	16,510	14,214	14,763	15,342	15,825
Malawi (MW: 2000, 2004, 2010 DHS)															
Abortions	0	1	1	7	4	18	12	9	15	17	48	3	16	15	33
Obs	1,640	4,263	6,454	7,538	8,455	17,791	18,132	10,015	10,310	10,610	10,907	20,703	18,598	19,174	19,814
Mali (ML: 2001, 2006, 2012-13 DHS)															
Abortions	0	0	0	1	1	1	2	4	2	3	0	2	1	1	1
Obs	1,229	3,075	6,125	7,444	8,291	9,187	10,970	14,211	7,742	8,719	9,497	9,570	9,529	8,464	8,731
Mozambique (MZ: 2003, 2011 DHS)															
Abortions	.	.	.	0	0	1	0	4	6	4	0	.	1	5	6
Obs	.	.	.	1,442	3,828	5,871	6,786	7,617	7,773	7,755	73	.	10,735	11,061	11,347
Niger (NI: 2006, 2012 DHS)															
Abortions	.	.	.	.	.	0	0	0	0	1	1	1	0	0	5
Obs	.	.	.	.	.	816	2,123	4,279	5,215	5,808	6,138	6,099	6,050	9,344	9,589
Nigeria (NG: 2008 DHS)															
Abortions	.	.	.	.	.	.	.	.	.	9	17	26	48	45	35
Obs	.	.	.	.	.	.	.	.	.	26,817	27,338	28,307	29,102	29,898	30,382
Rwanda (RW: 2000, 2005, 2010 DHS)															
Abortions	0	1	1	6	6	5	5	3	4	5	10	15	8	5	14
Obs	1,282	3,144	4,455	4,912	6,133	7,052	9,129	4,865	5,346	5,642	5,582	16,094	10,909	11,276	11,575
Senegal (SN: 2005, 2010-11 DHS)															
Abortions	.	.	.	.	0	0	0	3	3	2	2	3	3	6	10
Obs	.	.	.	.	1,056	2,454	5,047	6,398	7,226	7,777	7,770	19,660	12,421	13,129	13,720
Sierra Leone (SL: 2008 DHS)															
Abortions	.	.	.	.	.	.	.	.	.	2	2	1	5	10	5
Obs	.	.	.	.	.	.	.	.	.	6,176	6,337	6,586	6,711	6,840	6,824
Swaziland (SZ: 2006-07 DHS)															
Abortions	.	.	.	.	.	.	.	0	0	0	1	3	10	0	.
Obs	.	.	.	.	.	.	.	3,721	3,917	4,086	4,262	4,422	4,580	1,074	.

	1994	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*
Tanzania (TZ: 2004-05, 2010 DHS)															
Abortions	.	.	.	.	.	8	12	8	18	27	62	8	9	11	10
Obs	.	.	.	.	.	7,986	8,272	8,621	8,916	9,298	9,524	11,060	8,310	8,611	8,919
Uganda (UG: 2000-01, 2006, 2011 DHS)															
Abortions	0	0	1	3	9	15	8	9	10	13	24	38	22	14	17
Obs	652	2,165	3,547	4,113	4,537	4,668	4,640	9,006	6,851	7,139	7,372	7,670	14,578	6,944	7,228
Zambia (ZM: 2007, 2013-14 DHS)															
Abortions	.	.	.	.	.	.	.	.	3	5	9	13	19	11	3
Obs	.	.	.	.	.	.	.	.	5,606	5,826	6,044	6,240	6,506	6,635	12,650
Zimbabwe (ZW: 1994, 1999, 2005-06, 2010-11 DHS)															
Abortions	13	11	9	17	20	30	9	17	17	16	28	26	8	7	9
Obs	10,134	4,671	4,889	5,119	5,360	5,507	6,788	7,112	7,451	7,707	8,048	15,391	9,326	7,689	7,916

Note: All samples are constructed using the Individual Recodes of the Demographic and Health Surveys (DHS). Observations are at the level of women per year. The notation "." indicates not available.

Table 2. Sample Means by Region, 1994-2008

	Latin America and the Caribbean				Eastern Europe and Central Asia			
	Mean	*SD*	*Min*	*Max*	*Mean*	*SD*	*Min*	*Max*
Had induced abortion	0.006	(0.074)	0	1	0.011	(0.106)	0	1
Lives in high exposure country	0.263	(0.440)	0	1	0.768	(0.422)	0	1
Woman's characteristics								
Age (years)	27.747	(8.384)	15	44	29.231	(8.194)	15	44
Has formal schooling	0.948	(0.222)	0	1	0.772	(0.420)	0	1
Never Married	0.251	(0.434)	0	1	0.118	(0.323)	0	1
Lives in urban area	0.694	(0.461)	0	1	0.566	(0.496)	0	1
Country characteristics								
Life expectancy (years)	69.985	(2.972)	57	73	69.600	(2.391)	64	77
Modern contraceptive usage (%)	53.619	(12.442)	18.9	70.5	42.407	(12.793)	14.6	57.6
Abortion law index	2.020	(1.319)	1	7	3.996	(2.664)	1	7
Total non-U.S. aid ($/person)	0.147	(0.293)	0	3.1	0.065	(0.104)	0	0.8
Observations	1,662,006				905,875			

	South and Southeast Asia				Sub-Saharan Africa			
	Mean	*SD*	*Min*	*Max*	*Mean*	*SD*	*Min*	*Max*
Had induced abortion	0.003	(0.051)	0	1	0.001	(0.032)	0	1
Lives in high exposure country	0.559	(0.497)	0	1	0.486	(0.500)	0	1
Woman's characteristics								
Age (years)	28.159	(8.168)	15	44	26.624	(7.795)	15	44
Has formal schooling	0.720	(0.449)	0	1	0.588	(0.492)	0	1
Never married	0.096	(0.294)	0	1	0.124	(0.330)	0	1
Lives in urban area	0.343	(0.475)	0	1	0.276	(0.447)	0	1
Country characteristics								
Life expectancy (years)	65.503	(2.239)	61	76	51.979	(5.458)	29	63
Modern contraceptive usage (%)	44.988	(9.574)	11.3	56.7	18.427	(13.108)	3.2	59.4
Abortion law index	3.365	(2.597)	0	7	2.587	(1.432)	1	5
Total non-U.S. aid ($/person)	0.179	(0.283)	0	1.4	0.349	(0.581)	0	4.6
Observations	1,876,798				1,839,833			

Note: Observations are at the level of women per year. The total sample has 6,284,512 observations. Standard deviations (SD) in parentheses. Weighted to national levels with DHS sample weights.

Table 3. Odds Ratios from Logistic Regressions of Induced Abortion, by Region, 1994-2008

	Latin America and the Caribbean			Eastern Europe and Central Asia		
	(1)	*(2)*	*(3)*	*(1)*	*(2)*	*(3)*
Policy in effect (2001-08)	0.880	0.922	4.111**	0.879	0.857	0.826
	(0.107)	(0.131)	(2.789)	(0.147)	(0.123)	(0.541)
High exposure	0.663***	0.581***	0.102**	0.498***	0.485***	2.135
	(0.082)	(0.079)	(0.094)	(0.101)	(0.080)	(1.231)
Policy in effect * High exposure	1.595***	1.713***	3.293***	0.549***	0.596***	0.506***
	(0.232)	(0.281)	(0.688)	(0.102)	(0.096)	(0.079)
Woman's age		0.969***	0.968***		0.988**	0.987**
		(0.007)	(0.007)		(0.006)	(0.006)
Woman has formal schooling		1.326**	1.325**		1.265***	1.204***
		(0.174)	(0.175)		(0.093)	(0.072)
Woman never married		0.290***	0.286***		0.034***	0.034***
		(0.046)	(0.044)		(0.020)	(0.020)
Woman lives in urban area		1.524***	1.516***		1.015	1.030
		(0.149)	(0.147)		(0.118)	(0.115)
Country's life expectancy			1.024			0.939
			(0.070)			(0.092)
Country's modern contraceptive usage			0.893**			1.029
			(0.047)			(0.022)
Country's abortion law index			0.916***			1.573*
			(0.028)			(0.430)
Country's total non-U.S. aid			0.538***			1.955**
			(0.083)			(0.557)
Intercept	0.007***	0.012***	0.234	0.012***	0.017***	0.013
	(0.001)	(0.004)	(0.993)	(0.001)	(0.003)	(0.097)
Observations	1,662,006	1,662,006	1,662,006	905,875	905,875	905,875

Note: Standard errors, in parentheses, are clustered by country. The notation *** is p <0.01, ** is p <0.05, * is p <0.10. All regressions include country and year fixed effects. Observations are at the level of women per year.

Table 3 Continued. Odds Ratios from Logistic Regressions of Induced Abortion, by Region, 1994-2008

	South and Southeast Asia			Sub-Saharan Africa		
	(1)	*(2)*	*(3)*	*(1)*	*(2)*	*(3)*
Policy in effect (2001-08)	6.215***	6.895***	6.127***	3.063***	2.895***	4.293**
	(1.752)	(1.837)	(2.049)	(1.059)	(1.032)	(2.803)
High exposure	0.449***	0.513***	1.010	3.832***	2.271***	3.405
	(0.031)	(0.048)	(0.243)	(0.938)	(0.649)	(2.944)
Policy in effect * High exposure	0.279***	0.244***	0.235***	1.891**	1.941**	2.077**
	(0.041)	(0.044)	(0.041)	(0.540)	(0.568)	(0.665)
Woman's age		0.994	0.994		1.024***	1.024**
		(0.009)	(0.009)		(0.009)	(0.009)
Woman has formal schooling		1.711***	1.705***		2.127***	2.130***
		(0.137)	(0.132)		(0.401)	(0.402)
Woman never married		0.012***	0.012***		0.550***	0.549***
		(0.003)	(0.003)		(0.116)	(0.115)
Woman lives in urban area		1.430***	1.430***		1.478***	1.470***
		(0.082)	(0.082)		(0.092)	(0.094)
Country's life expectancy			1.021			1.000
			(0.092)			(0.034)
Country's modern contraceptive usage			1.003			0.973
			(0.073)			(0.038)
Country's abortion law index			1.083			1.083
			(0.059)			(0.179)
Country's total non-U.S. aid			0.997			0.905
			(0.131)			(0.121)
Intercept	0.009***	0.006***	0.001**	0.000***	0.000***	0.000***
	(0.001)	(0.002)	(0.002)	(0.000)	(0.000)	(0.000)
Observations	1,876,798	1,876,798	1,876,798	1,839,833	1,839,833	1,839,833

Note: Standard errors, in parentheses, are clustered by country. The notation *** is p <0.01, ** is p <0.05, * is p <0.10. All regressions include country and year fixed effects. Observations are at the level of women per year.

Figure 1. U.S. Per Capita Assistance for Family Planning and Reproductive Health Services, 1995-2000 Period Average