A Cross-National Comparison of Abortion and Inequality

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Introduction

Across the globe, countries have adopted different approaches to first-trimester abortions. In some countries, abortion is available on demand or for so many reasons that it is essentially available on request. In other countries, abortions are allowed only to save the life of the pregnant woman. In the latter countries, doctors or judges typically act as gatekeepers, making sure the number of legal abortions is minimal. Unauthorized abortions in these countries are typically defined as a crime. Finally, there are countries where abortions are allowed for a number of specific reasons—such as when pregnancies result from rape or incest, to protect the physical or mental health of the pregnant women, or in cases where fetal impairment is evident. In these countries, abortions are illegal in most but not all cases. Throughout this article, we will refer to these policies as liberal, restrictive, and moderate,[1] respectively.

The law is one important contextual factor affecting pregnancy termination, but it is not the only one. Abortions are also linked to issues of access, such as the number and location of abortion providers and the cost of the procedures for women. Abortion may be legal, but if a woman cannot afford it, it will still be inaccessible to her. Contrariwise, abortions may be illegal, but women with resources may be able to access them, for example, through private physicians or travel outside the jurisdiction. The relationship between law and access is a critical one; this is the focus of our research.

Our paper considers the impact of national-level legal context and individual women's resources on the decision to obtain an abortion. Based on Demographic and Health Survey data from 18 countries, our key contribution is to explain how legal context and household wealth interact in affecting abortion decisions. In other words, we answer the question: Does the impact of household wealth on abortion decisions vary depending on the legal context of abortion and, if so, how?

We find that wealth matters most in those countries with moderate abortion policies. This means that wealth has the greatest effect on abortion access in countries where abortion is neither banned nor available on demand. Such policies may coincide with more public contestation over abortion, leading to less public funding for pregnancy termination, fewer providers, and less

[1] These names are useful for creating clear distinctions. However, while "moderate" implies a policy halfway between liberal and restrictive policies, in fact, this category of policies is actually close to the restrictive end of the continuum.

information on how to obtain an abortion. The results may also reflect how greater resources make it easier to negotiate a complex system of partial legality. In addition to this interaction effect, we also find direct connections between more liberal laws, household wealth, and women's decisions to have abortions.

Background

Liberal abortion laws are associated with more abortions (Levine 2004). Likewise, restrictive laws tend to mean less abortions (Haas-Wilson 1996). This is sometimes true because they signal fewer abortion providers (Medoff 2009) or a lack of public funding (Blank 1996; Boonstra and Sonfield 2000). Laws typically coincide with influential local norms and structures that favor or oppose abortion (see Gober 1997; Meier et al. 1996; Peir et al. 2001; Wasserman 1983), making it difficult to discern their precise independent effect on behavior. Nevertheless, as one attribute of women's environments, laws are important.

Under any legal regime, there will be a gap between the formal law and actual behavior. Figure 1 illustrates this point in the abortion context. While most behavior is likely to fall along the diagonal axis (Boxes A and D), some women will obtain abortions when they are illegal (Box B; see, e.g., Berer 2004) and some women who desire abortions will forego them when they are legal (Box C; see, e.g., Grimes et al. 2006). In these marginal boxes, questions of access come to the fore.

Figure 1. Relationship between legality and accessibility of abortion

		LAW	
		Legal	Illegal
ACCESS	High	A	B
	Low	C	D

The cost of abortions is one important consideration. Meier et al. (1996) found that state laws in the United States influenced abortion rates indirectly through abortion service funding. Blank (1996) similarly showed that abortions among low-income women decreased when public funding was eliminated (see also Boonstra and Sonfield 2000; Haas-Wilson 1996). Other costs besides those of the procedure itself, such as travel and time off work, are also significant (Best 2005; Jewell and Brown 2000; Sethna and Doull 2013). All else being equal, we expect poorer women to have fewer abortions than wealthy women because poorer women will be more sensitive to the cost.

Hypothesis 1: Wealthier women are more likely to have abortions than poorer women.

Some studies have indeed shown that wealthier women are more likely to acquire abortions than poorer women (see, e.g., Pierce 1981). However, the research findings are not entirely consistent. Font-Ribera et al. (2007) found, in the Spanish context of public funding for abortion, that poorer women on average had more abortions than other women because they were more likely to experience unintended pregnancies. Matthews, Ribar, and Wilhelm (1997) found, at the aggregate level, that US states with higher average wages were no different from other states in terms of their rates of abortion, all else being equal. Thus, the relationship between personal resources and abortion is an open question.

Few studies have considered the interaction of legality and personal resources on abortion decisions. One exception is Peir et al. (2001), who conducted a "before and after" study around the decriminalization of abortion in Spain. These researchers found that decriminalization made abortion available locally and thereby reduced inequality in access to the procedure. Prior to decriminalization, many Spanish women traveled to England or the Netherlands to have abortions, but this had not been a viable option for most poor women (compare Best 2005; Jewell and Brown 2000).[2] Our analysis tests this relationship directly. Based on the earlier limited research, we hypothesize:

> Hypothesis 2. The difference between wealthier and poorer women's access to abortion will be largest in countries with restrictive abortion laws.

In addition to the cost, other factors may affect rates of abortion in contexts of legality or illegality. Access to birth control tends to reduce abortion rates (Remennick 1991; Renne 1996). Strict anti-abortion laws may go unenforced or be only partially enforced (see, e.g., Novaes 2000). On the other side, liberal abortion laws may lack widespread normative support (see, e.g., Koster-Oyekan 1998; Lazarus 1997). Some doctors will refuse to perform abortions on ethical grounds even when the procedure is legal (Henshaw 1995; Lazarus 1997). Often, these factors vary across communities within countries. As explained below, to control for these factors, we include dummy variables for every subnational region in our analysis.

Data and Methods

We pool data from the Demographic and Health Surveys (http://dhsprogram.com/data/available-datasets.cfm) for 18 countries to estimate associations between wealth and law on abortion behavior. We selected countries whose surveys include an abortion module. For each country, we include the most recent DHS. The survey years range from 1996 (Uzbekistan) to 2012 (Gabon, Haiti). The DHS samples are representative of women of childbearing age, i.e., women between the ages of 15 and 49. We further limited our pooled sample to women who had been pregnant at any time in the five years preceding the survey.

Some surveys directly ask whether the respondent had an induced abortion in the last five years. Others embed questions of abortion in the respondent's pregnancy history.[3] To maintain consistency across the two types of surveys, if a woman reported having had an induced abortion in the last five years, she was coded as "1." Women who did not report an abortion during that time period were coded as "0."

The data on abortion laws are drawn from two sources: the United Nations (2002, 2006) and the Harvard Annual Review of Population Policy (Harvard Law School 2008). Abortion laws around the world begin with the baseline of prohibition with exceptions for particular reasons. Those reasons include the following: to preserve the life, physical or mental health of the

[2] Of interest, however, decriminalization did not fuel an increase in abortions beyond a trend that had already begun in Spain prior to the law reform (Peir et al. 2001).

[3] In these surveys, women are asked about the outcome (which includes induced abortion) of each pregnancy as well as the year and date of that pregnancy.

pregnant woman, in cases of rape or incest, in cases of fetal impairment, for economic or social reasons, without restrictions or on demand.

In our analyses, we categorize the laws into three groups: restrictive (life exception only), moderate (some additional exceptions), and liberal (on demand). Among countries with moderate laws, Bolivia, Cameroon, Liberia, and Nepal all allowed abortions to protect the pregnant woman's physical or mental health. Bolivia, Cameroon, and Liberia also allowed abortions in cases or rape or incest, and Liberia and Nepal allowed abortions in situations of fetal impairment.

Wealth in this analysis is measured by the DHS-supplied wealth quintile (Rutstein and Johnson 2004). Each woman's household wealth score is determined using a principal components analysis (PCA). The score is a composite of the number and types of durable goods within the household, accounting for differences across urban and rural contexts. For example, livestock ownership is given more weight as a wealth source in rural areas than in urban. The resultant wealth scores from the PCA are categorized in the DHS data into quintiles from poorest (1) to richest (5). The wealth quintile provides women's household wealth relative to others in the same country. It does not designate her economic status across countries.

We also include a set of individual controls for the respondent's age in single years, years of education, whether the respondent has unmet need for contraceptives, and whether the respondent lives in an urban or rural area. We also include a dummy variable for every DHS subnational region to account for additional heterogeneity that is otherwise unobserved.

Our strategy consists of a series of logistic regressions with the dependent variable measured by whether the respondent reports having an abortion in the last five years.[4]

Results

Table 1 provides a descriptive summary of each country sample. While the wealth quintiles are evenly distributed within a country for full country samples, the analytic sample for our analyses vary due to the inclusion rules of women pregnant in the last 5 years. Thus, in some countries (i.e. Kazakhstan, Kyrgyzstan, and Uzbekistan) wealthier women account for a higher proportion of respondents than poorer women. In one case (Gabon), the poorest women account for over one-third of the country sample. The average age of respondents is fairly consistent across countries, ranging from approximately 28 to 31.[5] The average education for each country varies significantly from an average of 3.9 years in Nepal to 13.5 years in Ukraine. The percentage of women with unmet demand for contraceptives also varies widely from 8 percent in Vietnam and Colombia to over 35 percent in Haiti. As DHS sampling techniques are designed for national

[4] We acknowledge the possibility for selection bias in our models as women's wealth and contraceptive access can impact the likelihood of being pregnant in the past five years. To test whether such bias impacts our estimates, we use a Heckman two-step procedure. The Heckman two-step procedure (1979) treats selection bias as an omitted variable problem, thus we generate an instrument for the likelihood of sample selection. Analyses show that the instrument (inverse Mills ratio or lambda) are not significant in any of our models, thus we do not reject the null hypothesis of no selection bias.

[5] As noted earlier, the Liberia sample only includes women up to 24 years old.

representivity, the percent of respondents who live in urban areas also varies across countries from a low of 20.7 percent in Vietnam to over 70 percent in Colombia and Turkey.

Table 1: Descriptive Statistics
(insert here)

Table 1 also shows the percentage of respondents who report an abortion in the last 5 years. The country with the lowest percentage of abortions is Bolivia at 2 percent whereas Azerbaijan has the highest percentage at 52 percent. It is important to note that these percentages are not meant to represent actual abortion rates for each country as our analytic sample only includes women who were pregnant in the last five years, thus excluding significant numbers of respondents from each country. Figure 1 (below) shows the raw abortion percentages by country and the type of national abortion law. The raw percentages show that abortion, at the time of the DHS surveys, was most frequently reported in the countries that were once part of the Soviet Union. From the 1950s to the fall of the Berlin wall in 1991, abortion was the primary form of birth control in these countries; misleading information concerning the pill and other birth control techniques made other forms of birth control unpopular with women. It is thus not surprising that these countries have higher rates of reported abortion than other countries.

The shading of the bars in Figure 1 represent the three types of law. Red bars are countries with restrictive laws; green bars are countries with moderate laws; and blue bars are countries with liberal laws. Surprisingly, Congo and Gabon (restrictive laws) have higher percentages of abortion than moderate and liberal countries outside of the former Soviet Union. The figure also shows that women in countries with moderately restrictive laws (Bolivia, Liberia, and Cameroon) have the lowest abortion reporting among all country samples. Thus, among women who were pregnant in the last five years, abortion behaviors do not appear to reflect any legal pattern when looking at raw percentages.

Figure 1. Percentage of women pregnant in last five years reporting an induced abortion, by country.

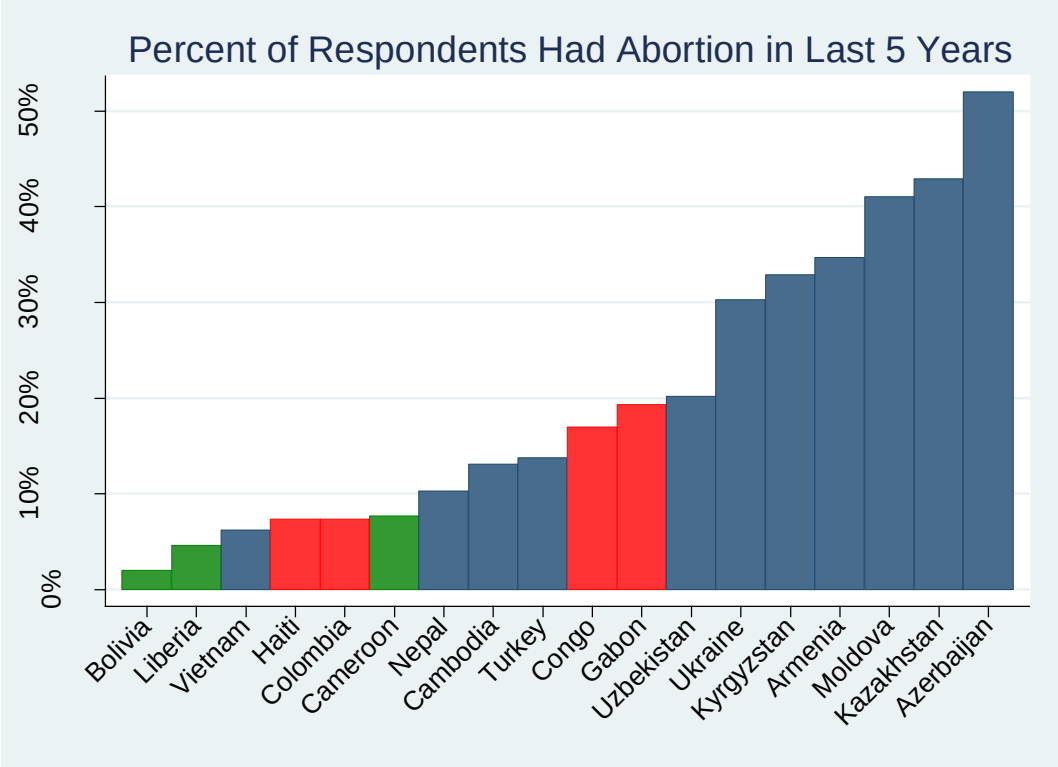
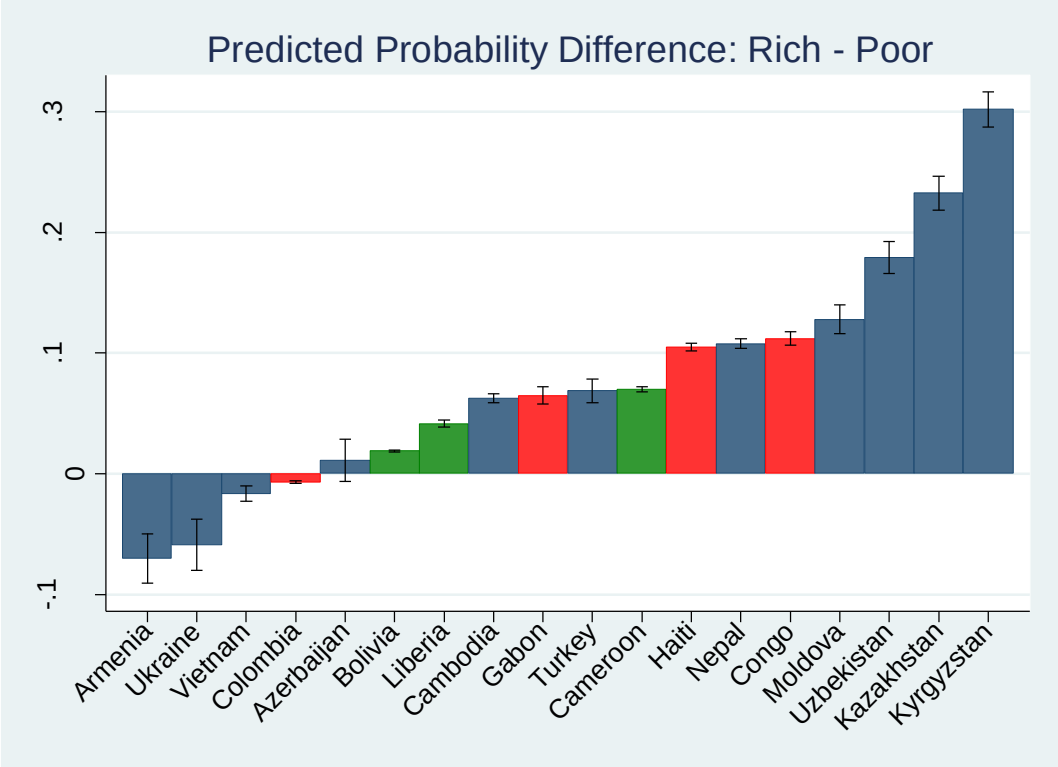


Figure 2 shows the relative impact of wealth when all other factors are controlled. Each bar represents a country and shows differences in average probability between the wealthiest two quintiles and the bottom three quintiles. Each country's probability difference is based on separate logistic regressions of abortion on covariates: age in single years, education in single years, whether a respondent has unmet demand for contraceptives, urban dwelling, household wealth, and the total number of children born. In 13 of the countries, women from wealthier households have a significantly higher probability of reporting abortion than women from middle, poor, and poorest wealth households. In four countries (Armenia, Ukraine, Vietnam, and Colombia), the data show a negative difference, meaning that women from the wealthier households have a significantly lower probability of reporting abortion than women from middle and poorer households. No significant wealth difference in probability is observed in Azerbaijan.

Figure 2. Difference in probability of abortion among women in wealthiest versus poorest quintiles; logistic regression for each country.



The figure above suggests that generally, wealthier women are more likely to report an abortion than poorer women. These probability differences also suggest that wealthier women in countries with the most abortion restrictions (Congo, Haiti and Gabon) have a relatively higher probability of abortion than poorer women in contrast to countries with moderate restrictions (Bolivia, Liberia, and Cameroon). The data show that wealth has a particularly strong influence on abortion behaviors in Central Asian countries (Uzbekistan, Kazakhstan, and Kyrgyzstan) at the time of the survey. However, among the most liberal countries, the probability differences along wealth categories tends to be more mixed than is observed for restrictive and moderate countries.

Our first hypothesis expects that higher levels of wealth increase the probability of abortion among women who were pregnant in the last five years. The data provides partial support for this expectation when looking at probability differences within country. Table 2 presents the logistic regression estimates for the pooled data of all 18 country samples. Model 1 shows the regression estimates of abortion on wealth quintiles and types of abortion law. We include all controls used in the logistic regression estimates for each country while including a control for the country's per capita GDP (logged) at the time of the survey. The models also include controls for DHS sub-national regions but are not shown in both models 1 and 2 and the coefficients are presented as odds ratios for ease of interpretation.

Table 1: Pooled Logistic Regression Predicting Self-Reported Abortion in the Last Five Years

	Model 1	Model 2

Controls		
Per capita GDP (logged)	0.559***	0.559***
	(0.470 - 0.665)	(0.470 - 0.665)
Age (single year)	1.071***	1.071***
	(1.065 - 1.076)	(1.065 - 1.076)
Education (single year)	1.011	1.011
	(0.999 - 1.023)	(0.999 - 1.023)
Urban resident	1.226***	1.214***
	(1.131 - 1.329)	(1.120 - 1.316)
Unmet demand for contraceptive	1.018	1.018
	(0.943 - 1.100)	(0.943 - 1.100)
Number of children born	0.825***	0.825***
	(0.806 - 0.846)	(0.805 - 0.845)
College attainment	0.690***	0.692***
	(0.618 - 0.772)	(0.619 - 0.773)
Wealth Quintiles (ordinal)	1.117***	1.074**
	(1.084 - 1.151)	(1.017 - 1.135)
Type of Abortion Law		
Restrictive (omitted)		
Moderate	0.175***	
	(0.0902 - 0.340)	
Liberal	3.882***	
	(1.653 - 9.120)	
Interactions		
Restrictive X Wealth (omitted)		
Moderate X Wealth		1.165***
		(1.056 - 1.286)
Liberal X Wealth		1.047
		(0.988 - 1.110)
Constant	0.769	2.919
	(0.226 - 2.620)	(0.603 - 14.13)
Observations	69,627	69,627

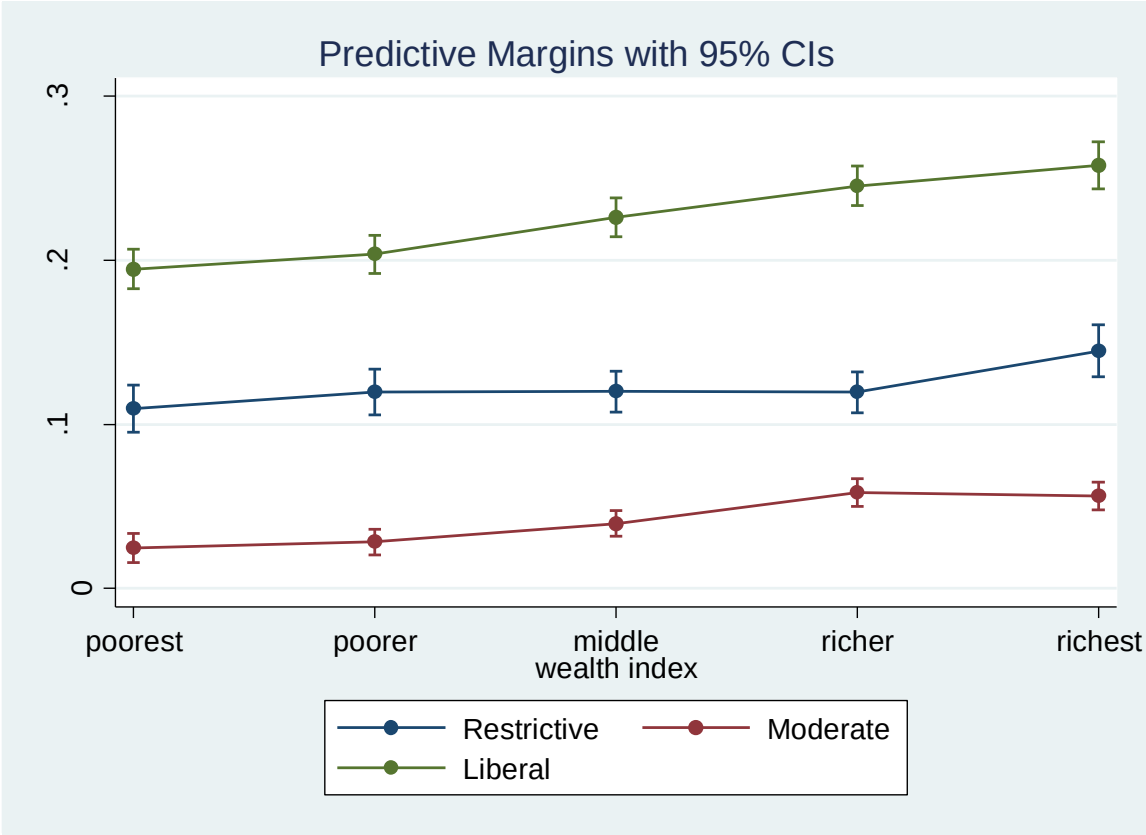
95% CI in parentheses
*** p<0.01, ** p<0.05

As expected, the pooled data show that wealthier women have higher probabilities of abortion. The data in model 1 show that for each increase in the wealth quintile, there is 0.117 higher odds of having an abortion in the last five years. Each additional year of age and living in an urban area are associated with a 0.07 and 0.23 higher odds of reporting abortion, respectively. Single years of education and having unmet demand for contraceptives are not significantly related to abortion probability while each additional child born is negatively associated with abortion reporting. Overall, controlling for other factors which can shape abortion decisions, including the type of national abortion law, the pooled analysis from model 1 supports our first hypothesis that higher wealth increases the probability of abortion across countries.

Our second hypothesis states an expectation that the impact of wealth differs across legal contexts. Model 2 tests that hypothesis by including the interaction of wealth and moderate and liberal abortion laws, relative to the impact of wealth in the most restrictive countries. For ease of interpretation, we code the wealth quintiles in a continuous scale for the interactions while plotting the margins as ordinal categories in Figure 3. When including the interaction terms in model 2, we observe that the effect of each additional increase in wealth is positively associated with abortion probabilities, though the odds in model 2 are slightly lower (0.074) than in model 1 (0.117). The interaction of wealth and law type is significant and positive for women in countries with moderate abortion restriction compared to the most restrictive. That interaction effect is not significant for women in the most liberal countries compared to the most restrictive. In other words, the data show that increasing wealth has a higher impact for women in moderately restrictive countries, thus providing partial support for our second hypothesis that the wealth effect is higher in countries with more restrictive abortion policies.

Figure 3 plots the marginal effect of increasing wealth on abortion for each abortion law type. As was shown in previous tables, the overall probability of abortion is lowest in countries with moderate legal restrictions and highest in countries with the fewest legal restrictions. The plot below shows that while the probability abortion generally increases for each successive level of wealth, the observed differences the marginal effect of wealth is relatively small in the most restrictive countries. Comparatively, each successive increase in the wealth quintile for moderately restrictive countries increases more rapidly in contrast to the most restrictive countries. While the marginal impact of increased wealth is larger for women in the most liberal countries (relative to the most restrictive), the interaction term itself is non-significant in the model.

Figure 3. Abortion probability by type of law



Overall, these data do support the expectation that wealth is generally associated with higher abortion probabilities but wealth increases appear to be stronger in countries with moderately restrictive laws. In other words, wealth has a stronger effect on abortion probabilities where the national law has fewer restrictions.

Discussion

This paper focuses on individual abortion outcomes for women along wealth and law dimensions. While there were some exceptions, the data generally showed that wealthier women were more likely to report abortion within all legal typologies. Previous research supports these findings as a person's wealth can provide access to abortion services within one's community or provides opportunities to circumvent restrictions. While higher wealth can also increase women's access to effective substitutes to abortion (e.g. contraception, birth control) having unmet need for contraception was not shown to be significant in our models. Rather, the wealthiest women most often have the highest probability of abortion net of other potential influences on abortion decisions.

Surprisingly, women in countries with moderate restrictions have the lowest overall proportion of women reporting an abortion within five years. One possible explanation is moderate laws may signal greater contestation and hence ambivalence about abortion. Thus, countries that provide some exceptions to abortion restrictions may also experience greater civil society efforts to reduce abortions among individuals. However, the data also show that the disparities between

rich and poor are more pronounced in countries with moderate levels of abortion restrictions. In this case, women with more resources may be in a better position to leverage a legal right to abortion in the absence of public funding for such services. Furthermore, countries with additional exceptions to abortion restrictions could require more professional help in navigating a more complex legal system.

It is important to note some limitations to this study. Self-reported abortion data is often questioned as biased, due to being a socially or legally sensitive topic. Moreover, we caution that the data we analyze is not meant to represent total abortion rates for all countries nor do we have sufficient evidence that the wealth effect is generalizable to countries not included in our analysis. Lastly, we acknowledge that there are socio-cultural factors that can influence individual abortion decisions that we do not account for due to data limitations. It is for these reasons that we emphasize the wealth and abortion relationships rather than absolute levels of abortion. We also argue that controlling for sub-national regions, while imperfect, do account for important social, structural and economic contexts that shape abortion decisions.

Generally, the data show that wealth can be an important factor in women's abortion behavior and access, particularly in countries where abortion laws are more ambiguous. These findings highlight some intriguing implications for future research on abortion access as it relates to legal contexts. Do partial liberalizations of abortion restrictions heighten or exacerbate existing inequalities in women's reproductive choice? While our paper provides some evidence to that effect, more research is needed to clarify the impact of abortion laws on the social, service and class contexts that influence women's access to abortion.

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