

NBER WORKING PAPER SERIES

ECONOMIC DEVELOPMENT AND THE REGULATION OF MORALLY CONTENTIOUS
ACTIVITIES

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Working Paper 23214
<http://www.nber.org/papers/w23214>

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
March 2017

We gratefully acknowledge the financial support of the Johns Hopkins University Catalyst Award. Laura Janss and Namrah Mirza provided excellent research assistance. We also benefited from input from Kaitlin Newman who contributed in the initial stages of this paper while working on an independent study at the Johns Hopkins Carey Business School. We thank Melissa Kearney, Michel Fafchamps and participants of the ASSA 2017 Meetings session on Institutions, Morals and Markets for their comments. The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

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NBER Working Paper No. 23214
March 2017
JEL No. D02,I18,K42,O17,O43,O57,Z12,Z18

ABSTRACT

The regulation of many activities depends on whether societies consider them morally controversial or “repugnant”. Not only have regulation and related ethical concerns changed over time, but there is also heterogeneity across countries at a given time. We provide evidence of this heterogeneity for three morally contentious activities: abortion, prostitution and gestational surrogacy, and explore the relationship between a country’s economic conditions and how these activities are regulated. We propose a conceptual framework to identify mechanisms that can explain our findings (including the role of non-economic factors), and indicate directions for future research.

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Introduction

Countries restrict or prohibit many activities and transactions on moral grounds under the assumption that most people consider these activities ethically unacceptable or repugnant (Roth 2007). Examples include such activities as abortion, same-sex marriage, prostitution, payments for blood and organs, gestational surrogacy, child labor, and indentured servitude. The ethical issues associated with these activities include the concern that the individuals engaging in the transaction are exploited or coerced into participating, that the transaction implies the objectification of the human body, or that the activity violates human dignity, the sanctity of life or traditional institutions such as marriage. These concerns may be among those “sacred” values that, since at least Durkheim (1893), have been thought as important to define common identities and tie societies together. However, prohibitions also imply costs for the parties who would otherwise engage in a given trade and for society more generally. Prohibiting payments to organ donors, for example, creates supply shortages and results in many patients waiting years for a life-saving organ and even dying without obtaining one (Becker and Elias 2007; Lacetera, Macis and Slonim 2013; Elias, Lacetera and Macis 2015a-b). Moreover, prohibition typically increases the underground performance of certain activities, potentially compromising the safety of the participants, often leading to crime and thus requiring resources for law enforcement.¹

Moreover, countries differ in whether and how they regulate morally controversial activities, and in many countries the legislation changes over time. For example, payments to plasma donors are legal in the United States but not in neighboring Canada; Germany prohibited prostitution until 2002 when the country passed legislation to allow it, whereas in Austria the exchange of sex for money has been legal since the 1970s; commercial surrogacy is permitted in countries as different as Armenia and the United States, and is illegal in equally heterogeneous jurisdictions such as Albania, Canada and Italy.

In this paper we explore the relationship between economic development and the regulation of three morally contentious activities: abortion, prostitution and gestational surrogacy. Studies in different disciplines have addressed legal, ethical and sociological questions related to these

¹ Grimes et al. (2006) study the consequences of illegal abortions on maternal mortality (before *Roe vs. Wade*, abortion was “one of the most common forms of illegal activity practiced in the United States” [Howell Lee, 1972]). See also WHO (2011). Miron and Zweibel (1995) discuss how prohibition of drug and alcohol consumption increases crime and violence. Becker and Elias (2007) describe how prohibiting payments to organ donors leads to black markets. Cunningham and Shah (2015) show that criminalizing prostitution increases violence and transmission of sexually transmitted infections.

activities.² However, these issues have received less attention from economists. In particular, there is still a limited understanding of what explains the heterogeneity in the regulation of morally contentious or “taboo” activities across countries and over time. We provide a systematic documentation of the regulation of abortion, prostitution and surrogacy around the world, as a first step toward categorizing the regulation of a greater number of ethically controversial activities, and analyze some of the factors related to the different approaches over time and across countries.

We focus on abortion, prostitution and surrogacy for three main reasons. First, unlike other transactions that are nearly universally illegal (e.g., organ sales or indentured servitude), there is large variation across countries and over time in whether and how abortion, prostitution and surrogacy are regulated. Second, this set of activities include a non-monetary one (abortion), an essentially monetary transaction (prostitution), and an activity that may or may not involve monetary compensation (altruistic vs. commercial surrogacy). Third, in spite of the differences, all of these activities principally concern women and their bodies; this implies some commonalities in the underlying ethical and economic factors involved.

A first set of moral issues about abortion, prostitution and surrogacy regard the potential exploitation or coercion of the participants. Concerns include whether women who sell sex or make their womb available to carry somebody else’s child make a truly voluntary choice, or whether a woman should be forced to have a baby when she does not want it. Moreover, these activities may violate some sacred values, such as the sanctity of life, the belief that sex should be performed only to procreate, or that the only moral way to conceive a child is through sex within marriage. In the case of prostitution and surrogacy, a further concern is that the presence of a monetary exchange contaminates an activity otherwise not repugnant (having sex or having a baby). Finally, the debate about these activities and transactions involves deep questions regarding women’s rights to decide in full autonomy what to do with their bodies.

There are several channels through which economic development could impact the legislation about these activities. The impossibility of terminating an undesired pregnancy is arguably a higher economic burden to women and couples in higher-income countries, due to the

² See, among others, Alexander (1997), Bell, H., Sloan, L. and Strickling, C. (1998), Bullough and Bullough (1987), Cook and Dickens (2003), Cook, Dickens and Fathalla (2003), Kingsley (1937), Jackson and Scott (1996), Lee (1969), Luker (1984), Goodwin (2010, 2013), Kraviec (2009, 2010a, 2010b), Marquis (1989), Medoff (2002), Posner (1989, 1994), Ragoné (1994), Sanders (2013), Thomson (1976), Tietze (1983), Van Niekerk and Van Zyl (1995) Warren (1973), and references therein.

possible consequences in terms of missed education and labor market opportunities (Becker 1960).³ Similarly, improved health care makes abortion procedures safer, and this would increase demand for legal abortions. On the other hand, improved contraception methods and access might reduce the demand for abortion.⁴ Turning to surrogacy, by overcoming biological constraints, women and couples can delay having a child to pursue their careers (Lee 2009); this could lead to more acceptance and liberal legislation on gestational surrogacy as a country's economy grows. Economic development could also impact the regulation of prostitution. In particular, improvements in communication technologies can create safer conditions for the exchange of sex for money (for example facilitating identification and allowing demand and supply to meet at pre-specified indoors locations rather than on the street in red-light districts). Better health care systems also make it possible for the health authorities to periodically monitor the health of sex workers, which increases the desirability of legalized sex transactions. Additional mechanisms might also provide a link between development and the regulation of these activities and transactions. Economic development often comes with an expansion of individual rights, in particular for previously marginalized groups, including women (Duflo 2012, Jayachandran 2015). This could in turn produce more permissive regulations of abortion, gestational surrogacy and prostitution insofar as these activities are viewed as an expression of women's autonomy. In some cases, the expansion of certain rights could induce changes in other areas. For example, as more jurisdictions allow same-sex marriage, the demand for gestational surrogacy increases, potentially leading to changes in its regulation. On the other hand, an increased attention toward preventing undue coercion or exploitation might instead lead to restricting such activities as prostitution or commercial surrogacy if there is a belief that women engaging in these transactions do not do it in full freedom. Moreover, these activities may be seen as a threat to human dignity, which in turn may be a more relevant concern in countries with better economic conditions.

³ Finer et al. (2005) report that 73% of women who had an abortion in the US mention "Can't afford a baby now" as (on of) the reason(s); 38 percent mention "it would interfere with education" and 39% that "it would interfere with job/employment/career".

⁴ Better technology also improves the detection of abnormalities in the fetus, which could increase the demand for abortion. On the other hand, improved medical care and social programs might make it easier to care for children who are born with physical or mental deficiencies. However, fetal defects motivate a relatively small share of abortions (Finer et al. report that only 13% of women who had an abortion in the US mention "possible problems affecting the health of the fetus").

More generally beyond these three specific cases, different economic conditions might affect the costs and benefits of the activities, and therefore the desirability of prohibition (Elias et al. 2016). For example, medical advances make kidney transplantation safer, thus increasing the social cost of organ shortages. Economic development also has income effects that can modify social values, transforming transactions that were morally unacceptable into acceptable, or vice versa.⁵ Also, if income effects increase the demand for safety, societies will be more likely to legalize activities and transactions that would occur nonetheless, only in (often) less safe conditions. Moreover, economic development typically implies an increasing role of markets in society (Baumol 2002), possibly leading to greater acceptance of economic transactions in areas where they were previously unacceptable.

In the next section we describe the data that we assembled on the regulation of abortion, prostitution and gestational surrogacy in a large number of countries for the period 1960-2015. In Sections II and III we present our analyses of the relationship between these regulations and economic development, which we measure with GDP per capita; we also explore whether and how cultural and historical features of a country such as the prevailing religion, the legal origin, the type of political regime, and the recognition of women's economic and political rights contribute to explaining the variation in regulations and their relationship with economic development. Although we make no claims of causality, we identify several suggestive patterns, and, based on these findings, we propose in Section IV a conceptual framework to organize our thinking and identify possible mechanisms. In the concluding section we discuss directions for future research, including our ongoing efforts to build, and make publicly available, a comprehensive dataset on the legislation of several other morally contentious activities.

I. Data

We collected information on the legislation regarding abortion, prostitution, and surrogacy for a large number of countries from 1960 to 2015. Building this dataset required combining different sources as well as different methodologies – from merging existing datasets to hand-collecting and codifying primary sources such as legislative texts. We are making the dataset available and hope that it will be useful for future research.⁶

⁵ For example, Zelizer (1979) considers the case of life insurance contracts in the United States.

⁶ The Data Appendix provides details about the data and our classifications.

We compiled information on abortion laws mostly based on information from the Population Policy Data Bank maintained by the Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat; however in some cases we completed the data using country-specific legislation sources (see the Data Appendix for more detail). For each country and year, our dataset reports whether a law regulating abortion exists, whether the existing law allows termination of a pregnancy at all (beyond to save the mother's life), and, if so, under what conditions. We organized the various reasons for the termination of pregnancy into five categories: 1) to protect the mother's health (physical and/or mental), 2) if the fetus presents serious genetic, mental, or physical defects, 3) in case the pregnancy is the result of rape or incest, 4) in consideration of socio-economic reasons (e.g., the mother's poverty or her young age), and 5) upon request by the pregnant woman.⁷ In most of our analyses we group conditions 2 and 3 together in one category, and we do the same for 4 and 5.

Regarding prostitution, we relied mainly on information from the *Country Reports on Human Rights Practices* (U.S. Department of State, 2008); in several cases we integrated this information with country-specific searches for national legislation. We determined whether a law regulating the exchange of sex for money was in place in a given country-year, and, for the countries where a law existed, we classified countries into three groups: 1) prostitution is illegal, 2) prostitution is not illegal but brothels and pimping are prohibited, and 3) prostitution, brothels and/or pimping are not illegal.

Finally, to obtain information on the regulation of gestational surrogacy, we assembled data from various sources, including a comparative study on the regime of surrogacy in EU Member States by the European Parliament (Brunet et al. 2013), a book by Trimmings and Beaumont (2013), the *IFFS Surveillance Report of 2013* (IFFS 2013) and, in most of the cases, we used country-specific legislation and references. By combining information from these sources, we determined whether in each country, in a given year, there was a law governing surrogacy arrangements or not, and if a law exists, whether it prohibits all forms of surrogacy, allows only altruistic surrogacy, or legalizes both altruistic and commercial surrogacy.⁸ Commercial

⁷ In countries where abortion is allowed for reasons 5) and/or 6), regulations establish time limits by which the abortion can be legally performed, typically setting the limit around week 12 of the pregnancy. We did not consider these legislative details in our analyses.

⁸ Where commercial surrogacy is allowed, the activity is strictly regulated. In most countries, there are age limits for the surrogate mother, she is required to have had at least one child of her own, and there is a maximum number of times that she can serve as a surrogate (for more detailed information refer to the Data Appendix).

surrogacy includes the possibility to compensate the surrogate mother in addition to reimbursing for medical expenses, whereas a regime of altruistic surrogacy prohibits such additional compensation.

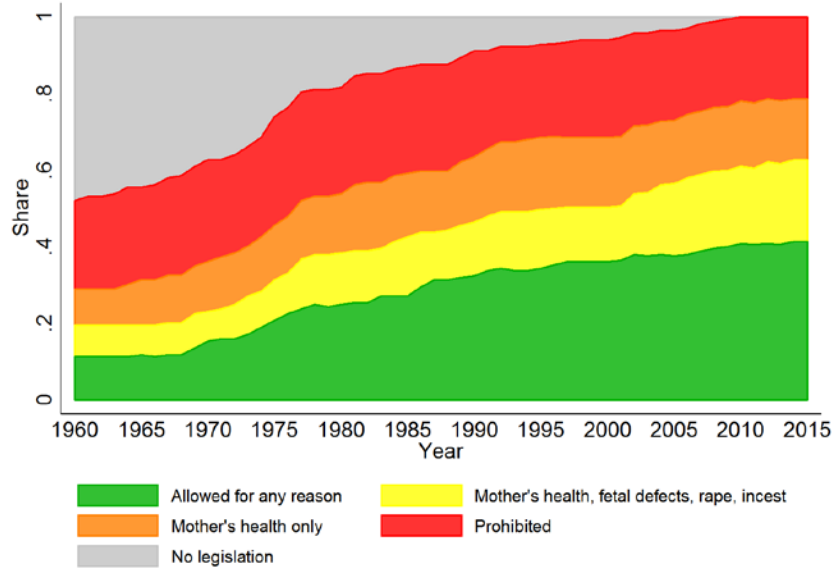
Figure 1a reports the share of countries, between 1960 and 2015, which belong to one of the categories above in terms of abortion regulation. In 1960, about half of the countries did not have any regulation regarding abortion; by 2015, a law existed in virtually every country. Of the countries with legislation, about half prohibited abortion (or allowed it only to save the mother's life) in 1960, and less than 20% allowed pregnancies to be terminated on request or for socio-economic reasons. In 2015, by contrast, abortion was illegal in only a quarter of the countries, whereas about 40% of the countries allowed it upon request or for socio-economic reasons.

In 1960 only about 10% of countries had legislation regulating prostitution (Figure 1b), against almost 60% in 2015. Among countries with legislation, the proportions of countries prohibiting or allowing prostitution is similar at the two ends of the time period that we consider, with about 60% having formal legislation prohibiting the exchange of sex for money, about 30% allowing it but prohibiting brothels and pimping, and about 10% of the countries allowing also the exercise of brothels and pimping.

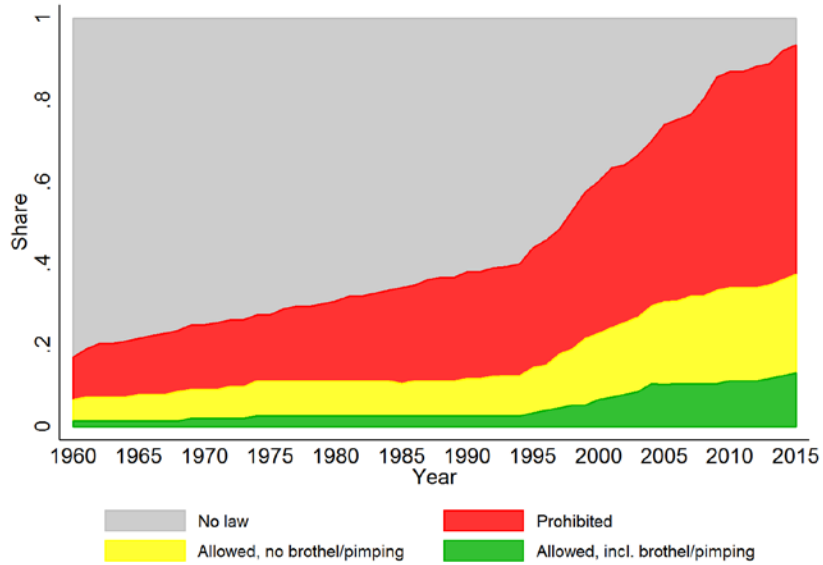
Figure 1c shows that legislation on surrogacy was first adopted in some countries only in the mid-1980s; in fact, non-traditional forms of gestational surrogacy have become possible only recently, thanks to innovations such as in-vitro fertilization. According to our data, in 2015, legislation was present in 35 countries. Of these, 15 currently prohibit any kind of surrogacy, 10 allow only altruistic surrogacy, and 10 allow both altruistic and commercial surrogacy.

Figure 1: Abortion, prostitution and gestational surrogacy legislation, 1960-2015.

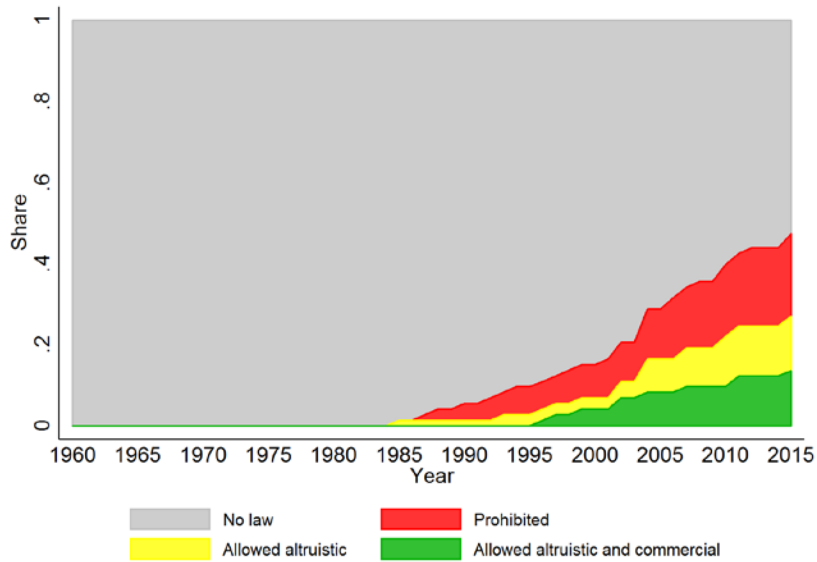
1a. Abortion



1b. Prostitution



1c. Surrogacy



Note: See the Appendix for details about the data and the sample.

A common trend for all three activities is therefore that more countries, over time, explicitly legislated about these issues. However, if in the case of abortion the adoption of legislation became in general more permissive over time, for prostitution and surrogacy often countries introduced legislation to explicitly prohibit these activities. At the other extreme and to a lesser extent, more recent legislation on prostitution and surrogacy has also allowed the most permissive approaches, by permitting the operating of brothels and commercial surrogacy. These patterns are consistent with a “bimodal” nature of preferences on these issues. Particularly in the case of abortion, where individuals typically hold a strong view on the issue – either one favors or opposes it - we observe that in the majority of cases the countries either prohibit abortion outright, or allow it upon request (Medoff, Dennis and Bishin 1995).⁹

We now explore whether economic development correlates with these legislations, after controlling for the overall time trends just discussed and for other relevant historical, cultural and political factors.

⁹ We do not have information regarding a country’s stance on abortion in the absence of formal legislation.

II. Regulations and Economic development

To explore the link between regulations and economic development we examine the relationship between the legislation for an activity and GDP per capita. In spite of some limitations, GDP per capita is widely used as an indicator for the broader construct of “economic development” (Fleurbaey 2009). Moreover, in our context this indicator of a country’s “standard of living” appropriately measures some of the mechanisms that, as we discussed above, could lead economic development to be associated with the regulation of repugnant activities.

For abortion and prostitution, we present an econometric analysis where we estimate functions that can be expressed as $Legislation^a_{jt} = f(GDP_{jt}, X_{jt}, \lambda_t, \varepsilon_{jt})$, where the dependent variable $Legislation^a_{jt}$ represents the regulatory status for activity a in country j in year t . X_{jt} includes other variables of interest, described below. We also include time effects λ_t to control for possible aggregate trends (Figure 1 above shows the presence of these trends). Because of the categorical (and not straightforward to rank-order) nature of the outcome variables, we estimate the relationships within a pooled multinomial logit framework. We then use the estimated parameters to compute predicted probabilities for each country-year observations to belong to one of the possible categories. Unfortunately, this analysis is difficult to perform for gestational surrogacy because, as seen above, to date only a limited set of countries have legislation in place regulating this activity. Therefore, for surrogacy we will present a more descriptive analysis.

On the right-hand side of our regression equation our measure of economic development is the natural logarithm of GDP per capita for country j in time t . We collected this information for the World Development Indicators (World Bank 2012).¹⁰ The other variables that we include in the model, in addition to the year dummies, include a set of country-year characteristics that are likely to affect the regulatory choices discussed here: the predominant religion in a country at a given time, a country’s legal origin, the presence of a democratic regime, as well as measures of women’s economic and political rights in a particular society and period.¹¹ All major religions condemn abortion as immoral because they view it as the taking of an innocent life. Some religions (and denominations within religions) make exceptions when the mother’s life is in danger or in the presence of other special circumstances (e.g., in the presence of severe fetal defects, or when the conception was the result of incest), but abortion “on request” is nearly

¹⁰ GDP per capita is in constant 2010 US dollars; the variable code is: NY.GDP.PCAP.KD.

¹¹ These variables were taken from the Quality of Government Standard Database 2016 (Teorell et al. 2016). More details are given below.

universally condemned by all major religions. Most faiths, including Christianity and Islam, view sex as a sacred act intended for procreation and that should be reserved to married couples, and therefore consider prostitution as immoral. Similarly, surrogacy is considered immoral on the grounds that a child should be the outcome of marital love, and that gestational surrogacy violates the dignity of the surrogate and the child (the Catholic Church's 2008 instruction *Dignitas Personae* establishes that techniques that represent an “aid to the conjugal act” to achieve fertility are permitted, whereas all techniques of heterologous artificial fertilization (including surrogacy) are not permitted; as for Islam, the Turkish Religious Council, for example, equated surrogacy to adultery, see Dogan News Agency, 2015). In the analysis we separate observations in three groups: countries-years where more than 50% of the population are Catholics, countries where more than 50% are Muslim, and all the others. The first two groups include countries where the absolute majority of the population profess religions that strongly condemn the three activities that we consider in our paper, whereas the third group includes countries with more religious diversity where it is less likely that regulations will be affected by religious values.

Our “legal origin” variable classifies countries into five groups: English Common Law, French Commercial Code, Socialist/Communist Laws, German Commercial Code, and Scandinavian Commercial Code. Previous studies identified that a country’s legal origin influences regulations, policies and economic outcomes (La Porta et al. 2008), and that it is a construct separate from cultural (including religion), political or historical factors. Indeed, the two major legal origin groups, the English and French, each include a large and heterogeneous set of countries. The German group also includes a heterogeneous, although smaller, set of countries. The remaining two groups, however, include smaller and more homogeneous countries. The Scandinavian group includes only five countries in Scandinavia, and the countries in the Socialist group share the historical experience of having been part of the Soviet Union or the Soviet bloc, which might have long lasting effects beyond those caused by the origin of their legal system. Countries with different legal traditions differ in their approach to the private contracting rights of individuals, as well as in the role of case law in producing rules with broader validity. In particular, in English Common Law systems, judicial decisions have precedential value on future cases, which might make such systems more responsive to demands arising from citizens compared to systems that require acts from the legislative branch to produce

laws (this is difficult particularly in the case of “bimodal” issues, see Medoff et al. 1995). For instance, in the United States the courts have played a crucial role in establishing abortion on demand (*Row vs. Wade* 1973) and, more recently, in making same-sex marriage legal (*Obergefell v. Hodges*, 2015).

Regarding the political regime, there are at least two reasons to expect that the presence of democratic institutions could influence the regulation of morally controversial transactions. First, the democratic process (at least in principle) ensures that laws and regulations reflect the citizens’ preferences and beliefs, as opposed to imposing policies in accordance to the views of the individual, group or political party in charge. Second, democratic regimes tend to limit the role of organized religion in influencing regulations. Both these channels would imply that democracies should make it more likely for regulations to change with economic development, if such an association indeed exists. For our analysis, we use a dichotomous democracy measure from Teorell et al. (2016). According to this variable, a country is democratic if political leaders are chosen through elections, and if they satisfy a minimal level of suffrage (Boix, Miller and Rosato 2013).

Finally, we consider the political and economic status of women. Given the centrality of women’s role in the activities that we consider, and the correlation between economic development and improvements in the role of women in society (Duflo 2012, Jayachandran 2015), it is possible that the patterns observed in section I are due to the greater opportunities and influence of women in politics and the economy rather than to increases in GDP per capita, or, better said, that the relationship between income and legislation requires also openness to recognizing women’s right in order to occur. We use two variables from Teorell et al. (2016). The first is an indicator of women’s economic rights (including women’s freedom to choose their profession or employment without the husband’s permission, the right to own land or open a bank account; see the Appendix for more details), which can take four values ranging from 0 if a country does not recognize economic rights to women and if systematic gender discrimination is built into law, to 4 in countries where all of women’s economic rights are guaranteed by law and the government “fully and vigorously” enforces these rights. The second variable is an indicator of women’s political rights (including the right to vote and to run for political office); the variable can take four values, ranging from 0 for countries where women’s political rights are not

guaranteed by law, to 4 in countries where women’s political rights are guaranteed by law and enforced in practice.

We expect that these features have a direct relationship with the type of legislation on abortion, prostitution and surrogacy. Perhaps more interestingly, we investigate whether our main relationship of interest, that between legislation on these issues and income, depends on these other features. To do so in our econometric framework, in addition to adding these variables to the model, we interacted each of the variables with GDP per capita, and, as explained in detail below, included those interactions when computing predicted probabilities. Table 1 shows descriptive statistics on the variables used in the analysis (for years 1982, 1995 and 2010).

Table 1: Descriptive statistics on GDP and cultural, historical and political variables

	1981			1995			2010		
	mean	min	max	mean	min	max	mean	min	max
GDP									
GDP per capita (\$1,000)	9.89	0.19	111.96	10.65	0.17	72.82	12.94	0.21	103.27
ln (GDP per capita)	1.2	-1.6	4.7	1.2	-1.8	4.3	1.6	-1.5	4.6
Legal origin									
English	0.37			0.31			0.32		
French	0.48			0.42			0.44		
Socialist	0.05			0.19			0.17		
German	0.04			0.04			0.03		
Scandinavian	0.05			0.04			0.03		
Democratic regime	0.39			0.57			0.59		
Religion									
Majority Catholic	0.25			0.24			0.27		
Majority Muslim	0.19			0.23			0.25		
Other	0.56			0.53			0.48		
Women's Rights									
Economic rights: High	0.31			0.33			0.37		
Political rights: High	0.51			0.71			0.93		

Our analyses do not fully control for country-specific, unobserved heterogeneity, in the way that a country-level fixed effect specification would. We decided not to include country fixed effects for two main reasons. First, including fixed effects in a multinomial logit framework is problematic (Allison 2009). An alternative would be to estimate linear probability models with country fixed effects; however, but doing so with our categorical variables would make the

interpretation of the predicted probabilities less immediate. Second, most of the covariates that we include in our models are either time-invariant (e.g., legal origin) or, when they change over time, they do so slowly or rarely (e.g., religion, democracy). Because, as we argued above, there are strong reasons to believe that these variables are related to the legislation as well as affect its relationship with economic development, we chose to include them directly. Our goal, at this stage, is to present an exploratory, descriptive analysis in order to measure interesting correlations that should be the basis for future, more structured work.

III. Findings

Legislation and income

Figure 2 reports the predicted probabilities for each category of legislation on abortion and prostitution, as a function of GDP per capita, controlling for legal origin, democracy, religion and women's political and economic rights as described above. We set all of these other indicator variables (including the year dummies) at their overall mean. For the regulation of abortion, the available information on all variables of interest is from 1981 to 2010, for up to 151 countries, with a total of 3,781 country-year observations. For prostitution, the sample size is of 3,215 observations, from the same time period as abortion and with up to 133 countries per year.

Higher income per capita is strongly associated with the adoption of legislation regulating abortion, with this legislation allowing abortion, and with conditions being increasingly permissive. At low levels of income, our estimates imply that only a small share of countries allow abortion on demand, whereas the predicted probability of countries allowing it is higher than 80% at high levels of income.

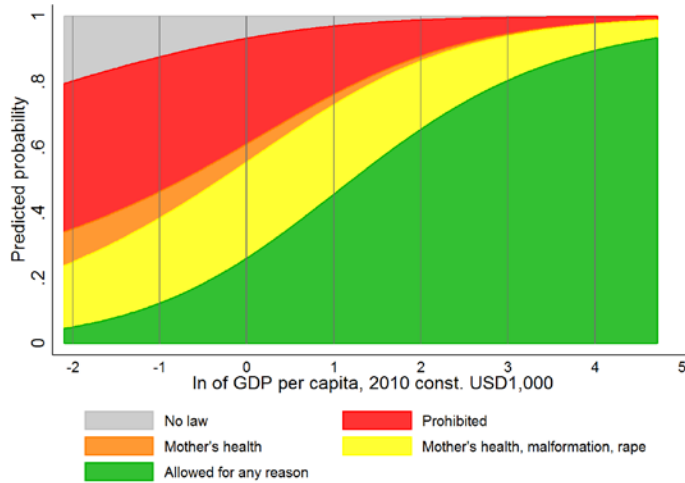
As for prostitution, there is an association between higher income per capita and the likelihood to legislate on the issue and to formally allow (or not prohibit) the exchange of money for sex (though still prohibiting brothels or pimping). The implied share of countries where prostitution is not illegal goes from about 5% at the bottom of the income distribution to 20% at the top. However, the relationship is weaker compared to the case of abortion; overall, the presence of explicit prohibition as well as the absence of formal regulation cut through all income levels with similar estimated shares.

These findings are consistent with the view that higher income increases the cost of prohibition, particularly for abortion. The weaker relationship found for prostitution may suggest

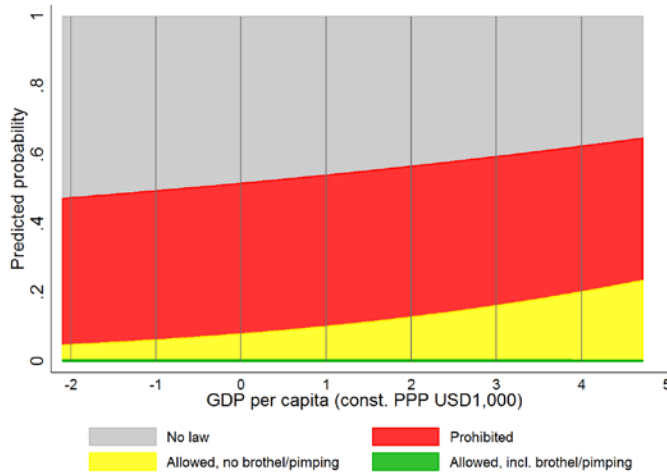
a stronger role for the opposing historical, cultural and political factors that we discussed above. We now proceed to analyze this possibility.

Figure 2: Legislation and economic conditions

2a. Abortion



2b. Prostitution



The role of historical, cultural and political factors

From our main multinomial logit regressions, we estimate that a democratic regime and more economic and political rights for women are associated with slightly higher likelihoods to more permissive abortion legislation, all else constant. Countries with a democratic regime and with stronger political rights for women are also more likely to permit non-organized forms of prostitution. Countries with a majority of Catholics are less likely to formally legislate on

markets for sex, but also more likely to allow, again, non-organized forms of prostitution. As for legal origin, there were no significant differences between English and French legal origin countries; however, countries with a Socialist legal origin are considerably more likely to have permissive laws regulating abortion¹²

We next analyze, in addition to the independent impact of these factors on legislation, how these different characteristics affect the relationship between income and regulation. The analyses below present, as before, predicted likelihoods of countries adopting different types of legislation at different income levels; however, the underlying multinomial regression models also include interactions terms between income per capita and, in turn, an indicator for each of the other variables of interest. To calculate the predicted probabilities, we then set all variables but income per capita and the other factor of interest (and their interaction) at their mean, and we present the findings separately for each category. Figure 3 shows the findings for abortion, and Figure 4 those for prostitution.

Although the prevailing religious attitudes in a country at a given time affect the relationship between income and regulations for abortion, a positive relationship between income and the predicted share of countries allowing abortion (including on demand) characterizes countries with different prevailing religions (Figure 3.a). There are some differences across these groups of countries, however. Countries with a majority of Muslim citizens show more liberal regulation at lower levels of income, but the correlation between economic conditions and the probability of more permissive abortion laws is weaker than for other countries. Countries where Catholicism is prevalent are at the other extreme; in these cases, higher income correlates with a higher adoption rate of permissive policies, but catholic countries at the lowest end of income per capita are those with the most restrictive laws. Higher income is associated with more permissive abortion laws in both English and French legal origin countries. However, countries of English legal origin are less likely to prohibit abortion at lower levels of income compared to countries in the French legal origin. However, we observe that the positive relationship between income and abortion on demand is steeper in countries of French legal origin; as a result, the predicted share of countries allowing abortion on demand is around 90 percent for high-income countries of French legal origin while it is about 60 percent for countries in the English tradition.

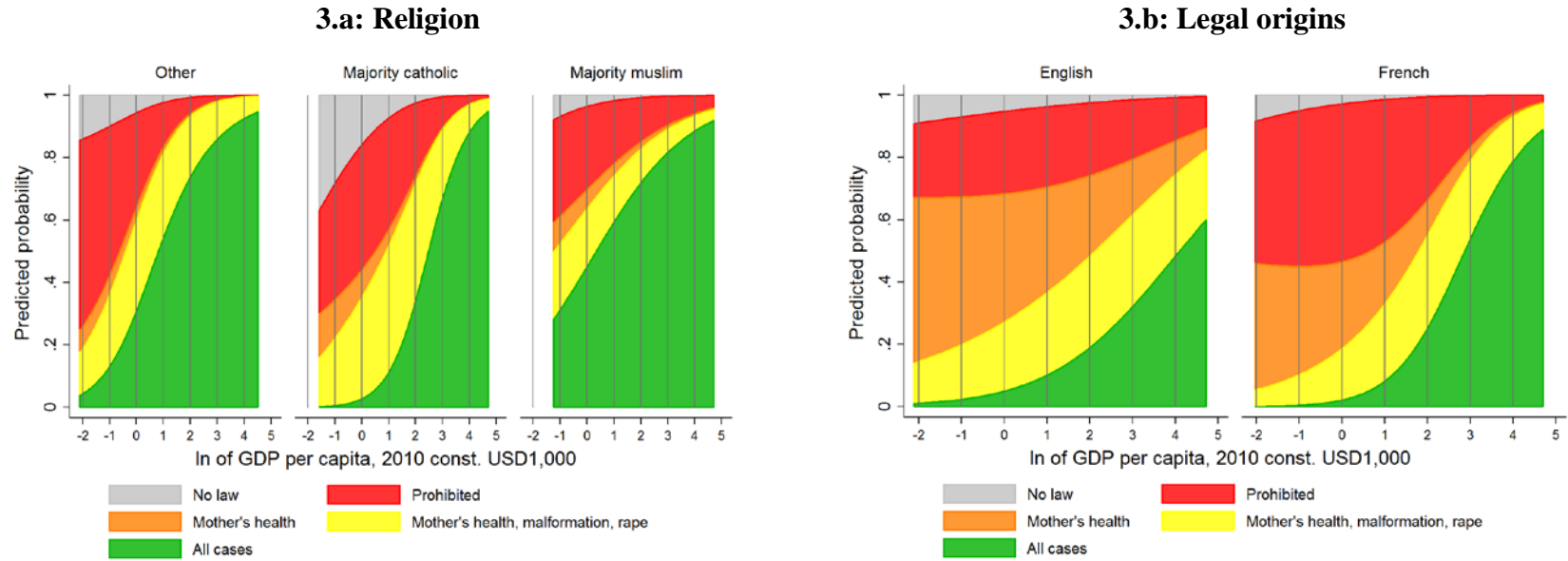
¹² Abortion was legalized in many Eastern European countries in the 1950s; among other reasons, one of the intended goals of permissive abortion policies was to allow greater female labor force participation (Potts 1967; Wolchik and Meyer 1985).

The impact on the legislation-income relationship of the other features that we consider – political regime and women’s political and economic rights – is limited in the case of abortion regulation. In fact, the strong, positive correlation between economic conditions and liberality of the legislation is similar regardless of these other features (Figures 3b-e).¹³

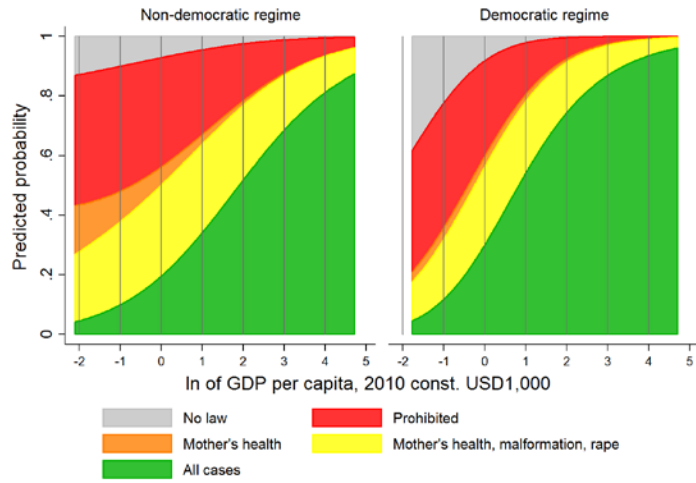
The differences between these groups of countries are more marked in the case of prostitution (Figure 4). We estimate a positive association between income and laws allowing prostitution in countries with a majority of Catholics and countries with more religious diversity. The relationship, however, is fully reversed in countries with a majority of Muslims, where higher income correlates with a lower likelihood of the presence of a law regulating prostitution, and with a higher likelihood of prostitution being prohibited, given that a law exists. As for the other features, we estimate that higher income is associated with a higher likelihood of prostitution being permitted in democratic regimes, in countries where women are granted more economic and political rights, and in countries where the dominant religion is not Islam. Conversely, in non-democratic regimes, in countries where Muslims are the majority, and in countries that do not recognize women’s economic and political rights, higher incomes are associated with equally or more restrictive legislation on prostitution.

¹³ For legal origins, the figure reports only countries with English and French traditions, because the sample size is larger and estimates are more reliable in these two groups.

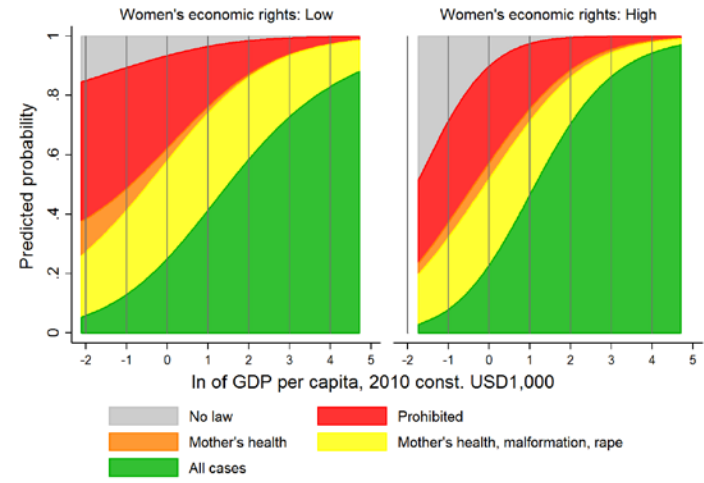
Figure 3: The effect of historical, cultural political characteristics on the income-abortion legislation relationship



3.c: Political regime



3.d: Women's economic rights



3.e: Women's political rights

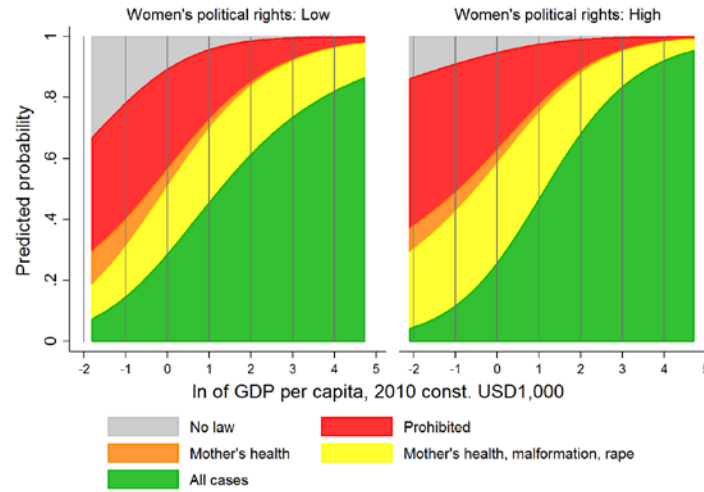
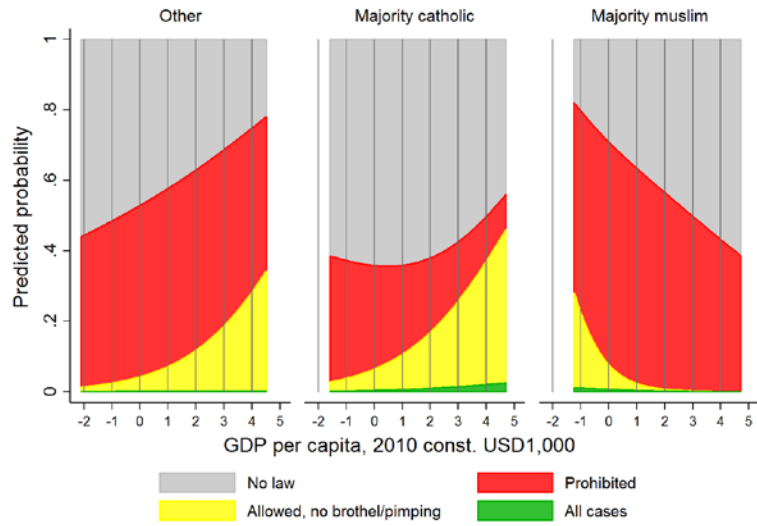
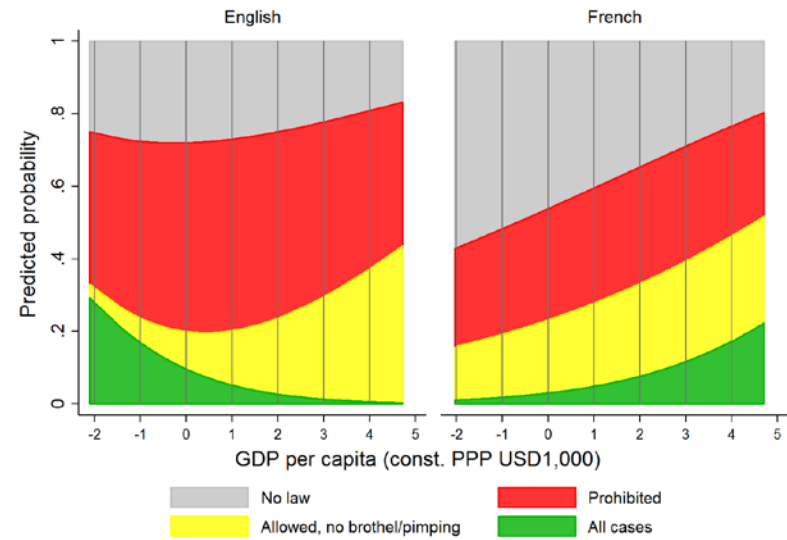


Figure 4: The effect of historical, cultural political characteristics on the income-prostitution legislation relationship

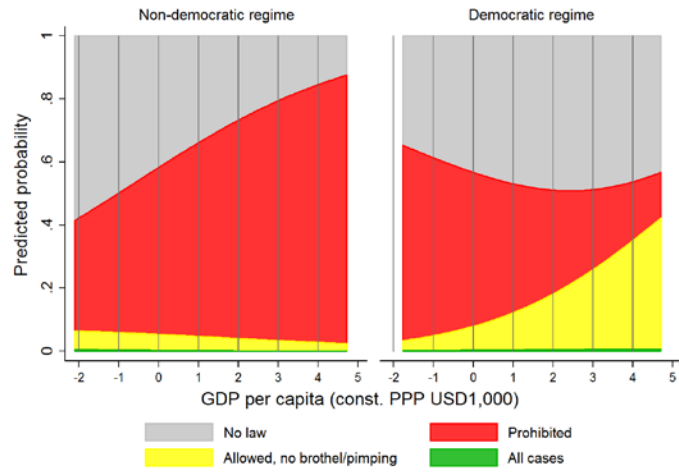
4.a: Religion



4.b: Legal origins



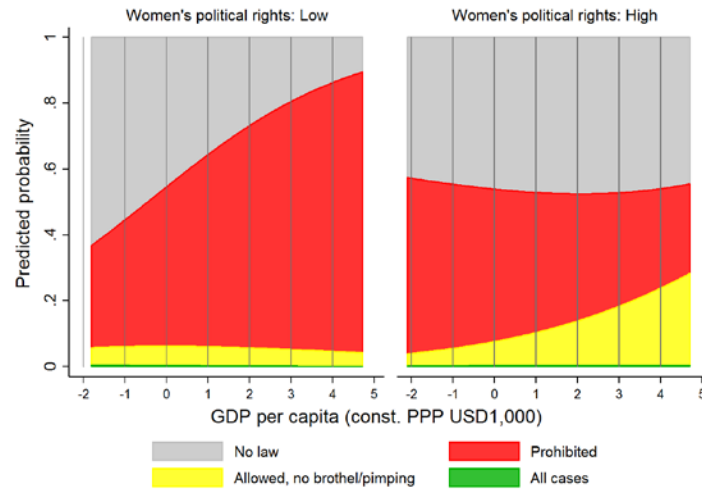
4.c: Political regime



4.d: Women's economic rights



4.e: Women's political rights

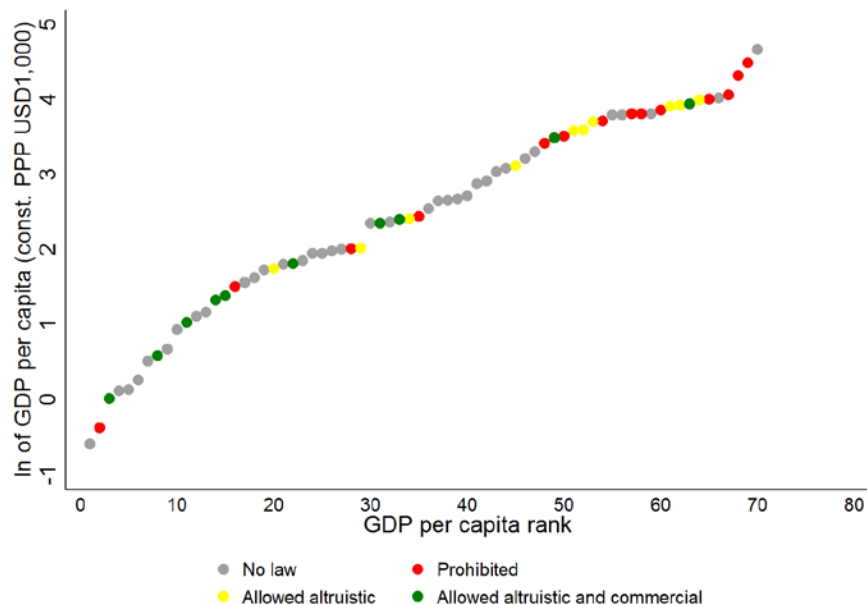


Gestational Surrogacy

As mentioned above, countries started regulating gestational surrogacy only in the second half of the 1980s, and by 2015 legislation was present in only 35 countries. It is therefore difficult to estimate multinomial logit models at this stage. We thus opted to present a descriptive analysis.

In Figure 5, we rank countries according to their GDP per capita, and indicate their stance on gestational surrogacy, with grey dots indicating that a law regulating surrogacy does not exist, red dots denoting prohibition of any form of gestational surrogacy, yellow dots indicating that only altruistic surrogacy is permitted, and green dots indicating that both altruistic and commercial surrogacy are permitted. There is no clear relationship between income and the likelihood that countries pass a law on surrogacy, and with the likelihood of countries allowing commercial surrogacy.¹⁴ By contrast, the countries in the top half of the income distribution appear to be more likely to allow altruistic surrogacy. To reiterate, because gestational surrogacy is a relatively new practice made possible by recently developed technology and only a few countries have regulated this activity, it is therefore soon to draw conclusions.

Figure 5: Gestational surrogacy legislation and Income, 2015



¹⁴ Seven of the ten countries where commercial surrogacy is legal were part of the Soviet Union (Armenia, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Russian Federation, and Ukraine); the remaining three countries are India, Israel and the United States of America.

IV. An interpretative framework

Our main finding of a positive association between per-capita income and liberal legislation for abortion and prostitution is consistent with the idea that cost-benefit considerations affect attitudes toward repugnant transactions. We propose a conceptual framework to highlight possible mechanisms for this association.

Assume that a country decides to legalize a certain morally controversial transaction if $\Delta = L(E_L, R_L, X) - P(E_P, R_P, X) > 0$ for a majority of voters, where L and P denote individual utility under legalization and prohibition, respectively; E stands for “efficiency” (the “gains from trade” from the activity), R for “moral repugnance”, and X are other potentially relevant factors (including individual income). E , R and X , in turn, are a function of technology and other factors related to economic development, which we proxy with per-capita GDP (y). Differentiating Δ with respect to y gives:

$$\frac{d\Delta}{dy} = \frac{\partial \Delta}{\partial E} \frac{\partial E}{\partial y} + \frac{\partial \Delta}{\partial R} \frac{\partial R}{\partial y} + \frac{\partial \Delta}{\partial X} \frac{\partial X}{\partial y} \quad (1)$$

Thus, economic development can affect the regulation of morally disputed transactions through three channels: direct effects on efficiency and repugnance (first and second term, respectively); and an indirect effect through the change in the individuals’ relative valuation of the two policy options (legalization vs. prohibition) due for example to income effects (third term). These three terms have ambiguous signs. Starting with the first term in (1), economic development can increase the net benefit of the activity. For example, the impossibility of terminating a pregnancy is arguably a higher economic burden in higher-income countries, because of missed education and job opportunities (Becker 1960). Similarly, by helping women and couples to overcome biological constraints, gestational surrogacy can allow delaying having a child to pursue a career. New medical procedures or technologies that make abortion safer or in-vitro fertilization more successful, or that facilitate disease prevention and detection, can have similar effects on the benefits of abortion, surrogacy and prostitution. However, with development, less morally controversial alternatives might become available. For instance, contraception techniques and devices might reduce the demand for abortions (Marston and Cleland 2003), and online pornography might reduce the demand for prostitution. As for the second term in (1), improved economic conditions may affect how an activity is performed, thus making it more or less morally repugnant. For instance, medical advances that allow early detection of fetal abnormalities might reduce the ethical aversion toward abortion; conversely,

the availability of RU486 (the “abortion pill”) or emergency contraception methods (the “morning after pill”) may increase the repugnance toward abortion if the act is perceived as being “too easy” (Cook 1991). Also, economic development typically implies an increasing role of markets in society, possibly reducing the repugnance of trades in previously unacceptable areas. Finally, income effects raise the value of life and safety (Viscusi 2008), making societies more likely to legalize activities that can increase life expectancy, and those that would occur nonetheless, only in often less safe conditions. Also, individual rights are likely to be normal goods, and economic development often comes with an expansion of these rights, in particular for marginalized groups including women (Doepke, Tertilt and Voena 2010; Duflo 2012). This could produce permissive regulations for activities viewed as expression of women’s autonomy. However, a stronger aversion to coercion or exploitation might lead to restricting activities like prostitution or surrogacy if it is believed that women do not engage in these trades freely.

V. Conclusions and Directions for Future Research

We assembled a novel dataset with information on the legislation regarding three morally controversial activities: abortion, prostitution and gestational surrogacy, and analyzed the relationship between the legislation and countries’ GDP per capita. We found that higher income is associated with more permissive legislation on abortion, and, to a more limited extent, prostitution. We also found that the relationship between income and the legislation on these activities is affected by historical, cultural and political factors, notably religion and women’s political and economic rights. As for gestational surrogacy, we presented descriptive evidence suggesting that higher income countries might be more likely to allow altruistic surrogacy but are not more likely to permit commercial surrogacy.

These patterns are somewhat consistent with evidence from experimental survey data that cost-benefit considerations affect attitudes towards repugnant transaction (Elias et al. 2015a-b). However, the analysis at this stage did not identify causal mechanisms. Rather, we established some correlations that open questions for additional inquiry.

Future studies would indeed test whether there is a causal relationship between income and the presence and nature of legislation, and identify the mechanisms. One way to proceed would be to adopt country fixed-effects models with a non-categorical component of the legislation status, for example focusing on the determinants of the onset of a legislation (or of a more, or

less permissive legislation) within countries. As our data revealed, several countries have adopted laws and in many cases changed their stance on abortion, prostitution and surrogacy in the past four decades. Exploiting these policy changes and using richer data at the country level (particularly in federal countries where different jurisdictions can adopt different regulations) would be natural next steps. Also, as we recognize that economic development is not the only important factor that might shape the evolution of legislation around morally controversial activities, further analysis will require a more in-depth study of other factors such as economic inequality (Bénabou et al. 2015), but also factors more related to social or political aspects that might be correlated with the economic development but also might identify their own peculiar mechanisms of transmission.

Another direction for further research is to explore individual preferences and attitudes towards repugnant activities, both to understand their determinants and distribution across various socio-demographic groups, and to corroborate the mechanisms that drive regulations at the country level.¹⁵ A related question is how individuals and societies “manage” the perception of ethically disputed transactions (Healy and Krawiec 2017).

In addition, other morally controversial activities imply major tradeoffs and, as such, are worthy of study. Examples include payments to blood and plasma donors, the sale and purchase of recreational drugs, assisted suicide, and recent medical and technological procedures such as the commercialization of human genetics (Caulfield 1998). Analyzing the regulation of these activities and of domains that are not morally disputed may help identify whether the links between income and regulation hold broadly or are specific to activities that raise ethical concerns and are, at least in part, gender-specific.

As a final point, academic work in this area warrants the combination of theoretical and empirical approaches from different disciplines, such as philosophy, bioethics, psychology, sociology, law and economics. A starting point would be a comprehensive review of the factors

¹⁵ Elias et al. (2015a, 2015b and 2016) examined individual attitudes towards payments to kidney donors, indentured servitude and prostitution. Attitudes towards paid kidney donations appear to be affected by information on the number of transplants that would be performed if donors were paid (that is, most individuals display “consequentialist” preferences), whereas individuals are under no circumstances willing to accept the legalization of indentured servitude contracts. In the case of prostitution, there are stark gender differences. Men are not only more likely to be in favor if its legalization compared to women, but also become more favorable when presented with evidence that legalizing prostitution reduces violence and STD incidence. Women, on the contrary, are either not affected or somewhat less likely to support the legalization of prostitution when presented with such information.

that scholars in these disciplines identified as important in understanding the evolution of attitudes and regulation of morally controversial trades.

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