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Constitutional social and environmental human rights and child health outcomes in Latin American countries

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Abstract: This paper analyses the health-improving effects of introducing four different constitutional social and environmental human rights (health, free education, adequate living (or welfare), and environment) and the American Convention on Human Rights (ACHR) into national constitution and jurisprudence in Latin America, where human rights litigations are particularly active. By using retrospective fertility surveys conducted in 15 Latin American countries from the Demographic and Health Surveys, I compare the survival of infants born to the same mother before and after the introduction of four different constitutional human rights and the ACHR. This is to disentangle the effects of these rights from changes in other country-level characteristics. The major results are as follows. (1) No constitutional social and environmental rights significantly change the total amount and composition of government spending. (2) Introducing a right to health into the national constitution is associated with a 2.6 per cent subsequent reduction in infant deaths among poor mothers, but not associated with infant deaths among the general population. (3) The right to education, welfare, and environment and the ratification of the ACHR are not associated with a subsequent reduction in infant deaths. (4) The effects of a right to health are robust after allowing for total government spending and its composition (health, education, and social security and welfare spending), which indicates that the allocation of government health spending—rather than an absolute amount of spending induced by the constitutional right to health—might be important to reduce infant deaths among poor mothers.

Keywords: human rights, constitutional economics, comparative economics, child mortality
JEL classification: I18, K10, O54, P50

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1 Introduction

Over the last ten years the empirical examination of human rights laws has grown in the fields outside of human rights law, such as economics, political science, and public health (Ben-Bassat and Dahan 2008; Edwards and Marin 2015; Jeffords 2015; Matsuura 2013). In the traditional view, these human rights have been considered as an aspiration or social objective that countries should work toward. However, this recent view has focused on the aspect of these rights as legal and political instruments that can be used to improve social and environmental conditions implied in these rights. Taking human rights as the statement of a desirable social objective is an ethical and moral issue. However, if we regard human rights as an instrument for achieving desirable social and environmental outcomes then we have an empirical question that can be addressed with data: Does the introduction of social and environmental human rights improve the social and environmental conditions of the country? If so, how?

The concept of human rights as a legal and political instrument of social change is perhaps most visible in today's Latin America, where human rights litigations are particularly active. Since 1990, the courts have taken an active role in redressing the failures of education, health, welfare, and environmental policies in these regions. Hundreds of thousands of reported decisions based on these rights have already been published (Boyd 2011; Hogerzeil et al. 2006). Successful cases were mainly linked to constitutional provisions of these rights being supported by international human rights treaties (Hogerzeil et al. 2006). Courts in Argentina, Brazil, Colombia, and Costa Rica are particularly active in enforcing these social and environmental rights (Zuniga et al. 2013).

There are at least three reasons why human rights litigations are particularly active in Latin American countries. First, social and environmental human rights form a crucial part of Latin American constitutional laws. Today, many Latin American countries include provisions of education, health, adequate living, and environmental rights in their national constitutions. This is not surprising as countries with French civil law origin tend to include provisions of social and environmental rights, compared with those of British common law origin. Unlike many Latin American countries, the constitutions of the United States and Canada do not contain any direct reference to health or other social and environmental rights.

Second, the availability of amparo proceedings may encourage individuals to seek judicial protection from the violation of constitutional human rights. Amparo is a legal procedure – first developed in Mexico and common in Latin America – that allows individuals to petition the courts for the protection of their human rights. Today, the amparo or a similar procedure is found in all Latin American countries with the exception of Cuba (Brewer-Carias 2009). After spreading throughout Latin America, it was also incorporated in the American Convention on Human Rights (ACHR) that provides comprehensive human rights protection throughout the region.

Third, along with national constitutions and domestic courts, the ACHR and the Inter-American Court on Human Rights¹ provide a regional mechanism for individual complaints, becoming an effective measure to ensure respect for human rights and improving social and environmental conditions throughout Latin America. At the time of writing, 22 states have ratified the ACHR and ceded binding jurisdiction to the Inter-American Court (OAS 2016). Although Article 26 of the ACHR only requires the progressive development of economic and social rights, the Inter-

¹ The American Convention on Human Rights established two means of protection: the Inter-American Court of Human Rights and the Inter-American Commission on Human Rights.

American Court of Human Rights has developed a jurisprudence of economic, social, and environmental rights by interpreting the “right to life” in a way as to comprehend the “right to a dignified existence” and the “right to a decent life” (Bueren 2010).

Human rights litigations in Latin America have attracted both praise and criticism. Some view such litigation as a response to a government’s inability to address the needs of its people and it can play a crucial role in advancing human rights of the region (Zuniga et al. 2013). Yet, others question the ability of the courts to redress complex social policies with significant budgetary implications and are worried that such human rights litigations ultimately distort government priority and hinder the optimal allocation of economic and social resources (Zuniga et al. 2013). The aim of this paper is to provide evidence on whether such human rights litigations in Latin America are, on average, beneficial to health at the population level.

This paper analyses the effects of introducing four different constitutional human rights (health, free education, adequate living (or welfare), and environment) and the ACHR into national constitution and jurisprudence on child health outcomes in Latin America.

This paper improves previous literature in a number of ways. First, it includes multi-dimensions of social and environmental rights in the same analysis. The achievement of one right is closely related to, and dependent on, the realization of other social and environmental human rights. For example, a right to education may affect the achievement of a right to health. There is well-established evidence that investment in education improves population health (Cutler and Lleras-Muney 2006). However, this right to education must be financed through competing government budgets, as with health and health care. This means there is a possibility that the implementation of one right may hinder the achievement of another. However, this aspect is largely ignored in today’s human rights law literature.

Second, the courts (and even legal scholars) may find an implicit social and environmental right derived from other constitutional rights. For instance, despite the absence of a codified right to health in the constitution, India’s Supreme Court found that the right to life, which is guaranteed by the Indian constitution, could in some circumstances imply a right to access to health care (Hogerzeil et al. 2006). Thus, it is not always clear whether a codified constitutional right has led to greater litigation and/or greater social improvement. However, such court cases also show that the courts cannot create a right to health from nothing. Thus, we should include other social and economic rights that can potentially create a right to health or other socio-economic rights.

Third, this paper improves identification strategies used in previous literature. By using retrospective fertility surveys conducted in 15 Latin American countries from the Demographic and Health Surveys (DHS) and government spending data, I compare the survival of infants born to the same mother before and after the introduction of four different constitutional human rights (health, free education, adequate living (or welfare), and environment) and the ACHR into the national constitution and jurisprudence to disentangle the effects of these rights from that of changes in other country-level characteristics.

The main results of this paper are as follows. (1) No constitutional social and environmental rights significantly change the total amount and composition of government spending. (2) Introducing a right to health into the national constitution is associated with a 2.6 percent subsequent reduction in infant deaths among poor mothers, but not associated with infant deaths among the general population. (3) The right to education, welfare, and environment and ratification of the ACHR are not associated with a reduction in infant deaths. (4) The effects of a right to health found in this paper are robust after allowing for total government spending and its composition (health, education, and social security and welfare), which means that more equitable allocation of

government health spending induced by the constitutional right to health might be an important driver for reducing infant deaths among poor mothers.

The rest of the paper is organized as follows. Section 2 describes the data used. Section 3 presents the empirical strategy. Section 4 presents the results of the empirical analysis. Finally, Section 5 summarizes the discussion and concludes the paper.

2 Data

2.1 Constitutional social and environmental human rights and the ACHR in Latin America

I constructed a database of the constitutional social and environmental human rights for 15 Latin American countries. The database includes a right to free primary education, a right to health or health care, a right to adequate living standards (welfare), and the right to environment.

The right to access to education is one of the oldest socio-economic constitutional human rights included in national constitutions in Latin America. The right to education, at a minimum, encompasses access to education, quality of education, and the learning environment. However, I exclusively focus on one dimension of the right to education – access to free education – in this paper. At the level of national constitutions, the right to free public education was first adopted by Haiti in 1816, followed by Brazil and Peru. A dummy variable of a constitutional right to education was defined as 1 if there were constitutional guarantees of free primary education in country i at time t ; otherwise the value was set to 0. Note that mothers' exposure to the constitutional guarantees of free primary education is more likely to be controlled by the mother fixed effect.

The right to adequate standard of living or welfare is also included in the database. The enjoyment of this right requires, at a minimum, that everyone shall enjoy the necessary subsistence rights such as adequate food, water, clothing, and housing. In some countries, all citizens are automatically entitled to a decent standard of living (e.g., Ecuador). In other countries, all workers and their family members are entitled to a decent standard of living through minimum wage and full-time employment (e.g., Costa Rica). Other countries guarantee a decent standard of living only for children (and their parents). A dummy variable of constitutional rights was defined as 1 if there were constitutional guarantees of an adequate standard of living for all people or children (and their parents) in country i at time t ; otherwise the value was set to 0.

The data on the right to health or health care comes from Matsuura (2013). The right to health must be explicitly stated in the constitution and theoretically enforceable (see the Appendix in Matsuura (2013) for a detailed classification). A dummy variable of constitutional health right is 1 if there is a constitutional health right in country i at time t ; otherwise it is 0.

The right to a “healthy” environment is perhaps the most recent social and environmental right to be added to many of the Latin American constitutions. I use Boyd (2014) as my primary source of information to create this dataset. If no information was available for a particular year, then I searched the original provision and traced back to the data introduced in the other three socio-economic rights. A dummy variable of the constitutional right to a healthy environment is 1 if there is a constitutional healthy environmental right or state duty to protect a healthy environment in country i at time t ; otherwise it is 0.

Finally, data on the ACHR come from the Organization of American States' Department of International Law (OAS 2016). A dummy variable of the ACHR is 1 if a country has ratified the ACHR in country i at time t ; otherwise it is 0. The Inter-American Court of Human Rights has developed a jurisprudence of the right to health and other social and environmental rights by interpreting the "right to life" in a way as to comprehend the "right to a dignified existence" and the "right to a decent life". Although this is not a constitutional right, I included this variable in the specification because it may affect government spending and population health.

Table 1 presents a list of nations with constitutional provisions for education, health, adequate living (welfare), and environment. There were a number of difficult cases wherein the interpretation of a constitution is a matter of judgment, and such cases are discussed in Appendices A and B.

Table 1: Summary of constitutional social and environmental rights and American Convention on Human Rights (ACHR)

Country	Year that constitutional right adopted				ACHR ratified
	Health	Free education	Welfare	Environment	
Argentina	1994	1994	1957	1994	1984
Bolivia	1967	1851		2002	1979
Brazil	1988	1824		1988	1992
Chile		1980		1980	1990
Colombia	1991	1886	1991	1991	1973
Costa Rica		1949	1949	1994	1970
Cuba	1976	1940		1976	
Dominican Republic		1994			1978
Ecuador	1998	1967	1984	1984	1997
El Salvador		1983	1983	1983	1978
Guatemala	1985	1985	1985		1978
Guyana		1970	1970	1980	
Haiti	1989	1816		1989	1977
Honduras	1982	1982	1982	1982	1977
Mexico	1983	1867	1983	1999	1981
Nicaragua	1987	1893		1987	1979
Panama		1972	1972	1972	1978
Paraguay	1967	1967	1967	1992	1989
Peru	1993	1828	1993	1979	1978
Trinidad and Tobago					1991
Uruguay		1967		1967	1985
Venezuela	1999	1945	1999	1999	1977

Source: With the following exceptions, the data on constitutional social and environmental rights and international treaties are based on the author's own research using a standard database, such as the Constitutional Finder and FindLaw database. Data on the right to health are taken from Matsuura (2013). Data on the right to environment are taken from Boyd (2014). Data on the ACHR are taken from OAS (2016).

2.2 Other data

All data used for this article, with the exception of the constitutional social and environmental human rights, is taken from published sources. Both national- and individual-level data are used to understand the role of constitutional social and environmental rights on government spending and child health outcomes.

National-level data

Until recently, the domains of constitutional social and environmental human rights and government budgets have been treated separately. However, it is natural to think that these constitutional rights may bind government spending on health, education, welfare, and environment. To test this hypothesis, data for total government spending and its composition are taken from published sources.

The data for government spending (as a percent of gross domestic product (GDP)) is calculated by dividing public spending, minus interest payments from the government finance statistics of the International Monetary Fund (IMF), by GDP from international financial statistics (IFS). The government spending on health, education, and social security and welfare are taken from the social policy in Latin America and the Caribbean dataset (Huber et al. 2008). Huber et al. (2008) compiled and estimated a consistent series of datasets including health, education, and social security and welfare spending as a percentage of GDP based on the four different previously available datasets. Although several other datasets (e.g., World Tax Database) exist, social policy in Latin America and the Caribbean dataset is the most consistent government spending data on health, education, and social security and welfare in Latin America over the period 1970–2000. Data on government spending on environment is not available in their datasets.

Several country-level control variables are included in the specifications. Data for the democratic variables are taken from the Polity IV database (Marshall 2014). Following the procedure of Besley and Kudamatsu (2006), I constructed two dummy variables for democratic governance based on the democracy score (Polity score). The high democratic governance variable is equal to 1 if the *Polity* variable is greater than 7; otherwise it is 0. The low democratic governance variable is equal to 1 if the *Polity* variable is greater than 0, but less than 7; otherwise it is 0.

Data for per capita GDP is taken from the Institute for Health Metrics and Evaluation (Gakidou et al. 2010). This is to control the level of general resources for health, education, welfare, and other activities. Data on the proportion of people aged 14 and under and 65 and over are taken from the World Development Indicators. These two variables are used to control for the stages of demographic transition in country i at time t .

Individual-level data

To investigate the effect of constitutional social and environmental human rights on child health outcomes, multi-level panel data models are used to show that, at the individual child level, infant death is affected by constitutional social and environmental rights at a national level. I use retrospective fertility surveys of the DHS conducted in 15 Latin American countries. In the DHS, all women of childbearing age (15–49 years) in the sample households are asked about the timing of all births and the age (months) at which the child died. I created a dummy variable equal to 1 if baby i – who was born to mother m in country c in year t – died before reaching the age of 1 year; otherwise it is 0. Other individual-birth level variables are a dummy variable for the gender of the infant, a dummy variable for the multiplicity of the birth, a series of dummy variables for age of the mother at the time of each birth (34 dummy variables), and a series of dummy variables for the birth order (17 dummy variables). All of these come from the same dataset. Apart from the individual birth recodes, the data also contain mother-level variables. As social and environmental human rights are most likely to affect living conditions among children born to poor mothers, I constructed a dummy variable for whether or not a child’s mother is poor. A dummy variable is

equal to 1 if a mother's household does not own any bicycle, motorcycle, car or truck, refrigerator, radio, and television; otherwise it is 0.

In order to match government spending data from social policy in Latin America and the Caribbean database, I only used data covering birth records from 1970 to 2000. Note that the decision to truncate the pre-1970 and post-2000 observations does not change the major results of this paper.

3 Methodology

3.1 National-level analysis: The analysis of total government and social expenditure

Difference-in-difference methods were used to estimate the association of the introduction of four different socio-economic rights into national constitutions on government social and other spending over time at the country level. The difference-in-difference approach is widely used to evaluate the effect of laws and political institutions in a cross-country setting in the field of political economics (Enikolopov and Zhuravskaya 2007; Persson and Tabellini 2007), law and economics (Armour and Cumming 2008), and health economics (Besley and Kudamatsu 2006; Nelson 2010). Annual data from 1970 to 2000 was obtained for a panel of 22 Latin American countries in order to study the effects of introducing four different social and environmental rights (health, education, adequate living/welfare, and environment) into national constitutions and the ratification of the ACHR on total government spending and government spending on health, education, social security, and welfare. The following equation is estimated:

$$\begin{aligned}
 GOVEXP_{c,t} = & \alpha_c + \gamma_t + \beta_1 \times HEALTH_{c,t} + \beta_2 \times EDUC_{c,t} + \beta_3 \times LIVING_{c,t} \\
 & \times \beta_4 \times ENV_{c,t} + \beta_5 \times ACHR_{c,t} + X\delta + \sum_{c=1}^{22} \phi_c \times TREND_t \quad . \quad (1) \\
 & + \sum_{c=1}^{22} \psi_c \times TREND_t^2 + \sum_{c=1}^{22} \pi_c \times TREND_t^3 + \varepsilon_{i,t}
 \end{aligned}$$

The dependent variable is the spending that varies by country c and time t ; α and γ are the country and year fixed effects. $TRENDS$ are country-specific trends. This panel data model includes country and year fixed effects as well as country-specific linear, quadratic, and cubic trends. X is a vector of controls, including logged GDP per capita, proportion of people aged 14 and under and 65 and over, and low and high levels of democracy. Reported standard errors of the estimates are clustered at the country level to control for autocorrelation in the outcomes over time (Bertrand et al. 2004).

3.2 Individual-level data: Child health outcomes

I employ a multi-level panel data design by combining individual- and country-level data. By using retrospective fertility surveys conducted in 15 Latin American countries from the DHS, I address the question of whether the introduction of four different social and environmental human rights into a national constitution and the ratification of the ACHR lead to the improvement of infant deaths.

$$\begin{aligned}
INFDEATH_{i,m,c,t} = & \alpha_m + \beta_1 \times HEALTH_{c,t} + \beta_2 \times EDUC_{c,t} + \beta_3 \times LIVING_{c,t} + \beta_4 \times ENV_{c,t} \\
& + \beta_5 \times ACHR_{c,t} + \beta_6 \times GENDER_i + \beta_7 \times MULTIPLE_i + \sum_{j=1}^{34} \kappa_j IMAGE_{i,t} \\
& + \sum_{j=1}^{17} \rho_j \times BORDER_i + X\delta + \sum_{c=1}^{15} \varphi_c \times TREND_t + \sum_{c=1}^{15} \psi_c \times TREND_t^2 \\
& + \sum_{c=1}^{15} \pi_c \times TREND_t^3 + \varepsilon_{i,t}
\end{aligned} \tag{2}$$

The dependent variable, *INFDEATH*, is a dummy that equals 1 if baby *i* who was born to mother *m* in country *c* in year *t* died before reaching the age of 1 year; otherwise it is 0. The specification includes mother fixed effects, year fixed effects, country-specific trends and their square and cubic terms, gender of the infant, multiplicity of the birth, series of dummy variables of the age of the mother at the time of birth, and a series of dummy variables of the birth order. As well as country-level controls (*X*) including logged GDP per capita, proportion of people aged 14 and under, proportion of people aged 65 and over, and low and high levels of democracy. To take into account the interaction between the mother's age and birth order, I also included the interaction terms between a series of dummy variables for the mother's age and a series of dummy variables for birth order in the last two specifications. Reported standard errors of the estimates are clustered at the country level to control for autocorrelation in the outcomes over time.

4 Results

Table 2 presents summary statistics of all the data used in the analysis, showing the mean, standard deviation, and minimum and maximum value of the dependent and independent variables.

Table 2: Summary statistics

	Observation	Mean	SD	Minimum	Maximum
National-level data					
Health spending as a percent of GDP	599	2.163	1.560	0.244	10.600
Education spending as a percent of GDP	603	3.302	1.555	0.400	9.000
Social security and welfare spending as a percent of GDP	495	3.479	3.721	0.000	19.738
Public spending (minus interest payments) as a percent of GDP	495	18.983	9.901	7.440	92.331
Right to health	660	0.291	0.455	0	1
Right to education	660	0.717	0.451	0	1
Right to adequate living	660	0.368	0.483	0	1
Right to environment	660	0.474	0.500	0	1
ACHR	660	0.559	0.497	0	1
Logged per capita GDP	607	8.516	6.547	-16.465	18.839
Proportion of people aged 14 and under	660	39.227	5.752	24.810	48.437
Proportion of people aged 65 and over	660	4.680	1.946	2.426	12.901
Low level of democracy	660	0.627	0.484	0	1
High level of democracy	660	0.380	0.486	0	1
Individual-level data					
Right to health	417,448	0.432	0.495	0	1
Right to education	417,448	0.666	0.471	0	1
Right to adequate living	417,448	0.167	0.373	0	1
Right to environment	417,448	0.385	0.487	0	1
ACHR	417,448	0.766	0.423	0	1
Infant death	417,448	0.063	0.242	0	1
Girl	417,447	0.491	0.500	0	1
Multiple	417,448	0.017	0.128	0	1
Birth order	417,448	3.109	2.245	1	18
Mother's age at the time of birth	417,448	24.761	5.895	10	49
Poor mother	399,080	0.139	0.346	0	1
Logged per capita GDP	367,920	8.036	7.298	-16.465	18.839
Proportion of people aged 14 and under	417,448	41.358	3.906	31.118	48.437
Proportion of people aged 65 and over	417,448	3.657	0.620	2.426	5.710
Low level of democracy	417,448	0.678	0.467	0	1
High level of democracy	417,448	0.264	0.441	0	1
Health spending as a percent of GDP	383,375	1.724	1.203	0.244	5.300
Education spending as a percent of GDP	391,756	2.947	1.447	0.500	9.000
Social security and welfare spending as a percent of GDP	315,616	1.895	2.053	0.000	10.600
Public spending (minus interest payments) as a percent of GDP	328,628	16.248	8.852	7.440	92.331

Source: Data on health, education, and social security and welfare spending are from social policy in Latin America and the Caribbean database. Data for government spending are from the IMF's government finance statistics and international finance statistics. Data on per capita GDP are from the Institute for Health Metrics and Evaluation. Proportions of people aged 14 and under and those aged 65 and over are from the World Development Indicators. Low and high levels of democracy are constructed from the Polity IV database. Infant death, Girl, Multiple, Birth order, Mother's age at the time of birth, and Poor mother data categories are taken or calculated from the Demographic and Health Surveys.

Table 3 presents the results of the multivariate analysis of government spending and its composition. The first three columns show the result of estimating Equation (1) using social policy in Latin America and the Caribbean database from 1970 to 2000. In the first column, the coefficient of -0.0955 on the constitutional right to health indicates that the introduction of a constitutional right to health reduces government spending on health by 0.1%, but it is not statistically significant. Similarly, the second and third columns show that the constitutional right to education (welfare) does not significantly increase or decrease government spending on education (social security and welfare).

Finally, the last column shows the result of estimating the same equation, using government spending as a percentage of GDP from the IMF's government spending data. Neither the four constitutional human rights nor the ACHR significantly change the total amount and its composition of government social spending (health, education, and social security and welfare).

Table 3: Regression results of government expenditure using national-level data

Variables	Government social expenditure (% of GDP)			Government expenditure (%)
	Health (%)	Education (%)	Social security and welfare (%)	
Right to health	-1.796 (1.047)	-0.0955 (0.257)	0.309 (0.391)	-0.143 (0.564)
Right to education	1.939 (1.561)	0.0202 (0.331)	0.348 (0.247)	0.711 (0.988)
Right to adequate living	-1.12 (1.084)	0.0771 (0.302)	-0.830* (0.409)	-0.874 (0.588)
Right to environment	1.88 (1.287)	-0.14 (0.279)	0.327 (0.265)	0.792* (0.444)
ACHR	0.765 (0.722)	0.285 (0.265)	-0.124 (0.186)	-0.564* (0.289)
Low level of democracy	0.801 (0.877)	-0.206 (0.142)	0.475** (0.197)	-0.0597 (0.239)
High level of democracy	-0.585 (0.895)	0.369 (0.254)	-0.332 (0.273)	-0.0965 (0.292)
Logged per capita income	-0.194 (0.200)	-0.144** (0.052)	0.0258 (0.080)	0.0912 (0.097)
Proportion of people aged 14 and under	-2.590** (0.980)	-0.534 (0.338)	0.459 (0.286)	-0.963 (0.681)
Proportion of people aged 65 and over	-18.17*** (5.830)	2.071 (3.338)	-1.665** (0.782)	1.239 (1.948)
Country fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Country-specific time trends	Yes	Yes	Yes	Yes
Country-specific time trends ²	Yes	Yes	Yes	Yes
Country-specific time trends ³	Yes	Yes	Yes	Yes
Observations	476	558	559	484
R-squared	0.931	0.885	0.862	0.969

Notes: Standard errors are clustered at country level and reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Author's compilation based on study data.

Table 4 presents the results of multivariate variable regressions of infant death using the DHS. In the first two columns, the explanatory variables include gender of the infant, multiplicity of the birth, a series of dummy variables of age of the mother at the time of birth, and a series of dummy variables of birth order. No country-level control variables are included in the first two specifications. The first column uses the entire sample of 15 Latin American countries. It shows that the coefficient of -0.000381 on the constitutional right to health is not significantly different from 0, which indicates that the introduction of a constitutional right to health is not associated with infant death among the general population. The right to education, welfare, and environment and the ratification of the ACHR are not associated with a reduction in infant deaths among general populations. The second column uses the subsample of infants born to poor mothers. The coefficient of -0.0141 on the constitutional right to health indicates that the introduction of a constitutional right to health is associated with a subsequent reduction in infant death by 1.4 percent. The coefficient of the right to environment is also significant, but this effect disappears after the inclusion of country-level control variables (columns 4 and 6).

Table 4: Regression results of infant death using individual-level data

Variables	All	Poor mothers	All	Poor Mothers	All	Poor Mothers
Right to health	-0.000381 (0.0039)	-0.0141* (0.0065)	-0.000579 (0.0051)	-0.0265*** (0.0079)	-0.000968 (0.0051)	-0.0264*** (0.0079)
Right to education	-0.00211 (0.0016)	-0.00199 (0.0071)	0.00196 (0.0033)	0.0079 (0.0068)	0.0021 (0.0034)	0.0141 (0.0084)
Right to adequate living	0.00124 (0.0039)	0.00288 (0.0124)	0.00423 (0.0040)	0.0183 (0.0109)	0.00442 (0.0042)	0.0134 (0.0114)
Right to environment	0.00428 (0.0030)	0.0202*** (0.0062)	-0.00131 (0.0034)	0.000212 (0.0065)	-0.00117 (0.0034)	-0.0014 (0.0061)
ACHR	-0.00146 (0.0030)	0.00888 (0.0096)	-0.00231 (0.0034)	0.0139 (0.0198)	-0.00229 (0.0034)	0.0123 (0.0196)
Female	-0.0124*** (0.0014)	-0.0205*** (0.0021)	-0.0116*** (0.0014)	-0.0202*** (0.0032)	-0.0115*** (0.0014)	-0.0199*** (0.0033)
Multiple	0.214*** (0.0133)	0.253*** (0.0135)	0.207*** (0.0138)	0.252*** (0.0162)	0.207*** (0.0143)	0.253*** (0.0168)
Low level of democracy			-0.000842 (0.0032)	0.00587 (0.0117)	-0.000985 (0.0032)	0.00768 (0.0112)
High level of democracy			0.00397 (0.0034)	0.000892 (0.0095)	0.00396 (0.0034)	-0.000736 (0.0097)
Logged per capita income			-0.000365 (0.0009)	0.000545 (0.0022)	-0.00039 (0.0009)	0.000838 (0.0023)
Proportion of people aged 14 and under			0.0165*** (0.0053)	0.0224 (0.0193)	0.0165*** (0.0050)	0.023 (0.0199)
Proportion of people aged 65 and over			-0.0314 (0.0210)	-0.105** (0.0450)	-0.0327 (0.0213)	-0.107* (0.0490)
Age of mother	Yes	Yes	Yes	Yes	Yes	Yes
Birth order fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Age of mother × Birth order fixed effect	No	No	No	No	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Mother fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Country-specific trends	Yes	Yes	Yes	Yes	Yes	Yes
Country-specific trends ²	Yes	Yes	Yes	Yes	Yes	Yes
Country-specific trends ³	Yes	Yes	Yes	Yes	Yes	Yes
Observations	417,447	55,539	367,919	38,064	367,919	38,064
R-squared	0.018	0.026	0.018	0.027	0.019	0.037
Number of country	15	15	15	15	15	15
Number of mothers	126,851	13,505	117,687	10,396	117,687	10,396

Notes: Dependent variable=Infant death. Standard errors are clustered at country level and reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Author's compilation based on study data.

The next two specifications add a series of country-level control variables, such as logged GDP per capita, proportion of people aged 14 and under, proportion of people aged 65 and over, and low and high levels of democracy. The constitutional right to health is not significant among general populations (column 3). However, column 4 shows that the introduction of a right to health is associated with a 2.7 percent subsequent reduction in infant deaths among poor mothers (column 4).

Further, the last two specifications include the interaction terms between a series of dummy variables of the age of the mother at the time of birth and a series of dummy variables of birth order. This takes into account that the effect of the mother's age on infant death varies in birth order. The effect of a mother's age of more than 35 years at first birth is perhaps different from the age of more than 35 years at higher-order births. Again, the constitutional right to health is not significant among general populations (column 5), but the introduction of a right to health is

associated with a 2.6 percent subsequent reduction in infant deaths among poor mothers (column 6).

Table 5 estimates the same equations in the last two columns of Table 4 and includes total government spending and its compositions (health, education, and social security and welfare spending) as a percentage of GDP used in Table 3. In theory, the constitutional right to health may cause both more total health spending (although I did not find any effect of a right to health on government health spending in Table 3 data) and more equitable allocation of health spending. Both of them ultimately improves infant health outcome. By controlling for government spending on health, education, and social security and welfare, I find that the magnitude and significance of the coefficient of the right to health does not change that much. This means that a change in the allocation of government health spending, induced by the constitutional right to health, might be more important than a change in the total government health spending for reducing infant deaths among poor mothers.

Table 5: Regression results of infant death using individual-level data

Variables	Without government social spending		With government social spending	
	All	Poor mothers	All	Poor mothers
Right to health	-0.000968 (0.0051)	-0.0264*** (0.0079)	0.000154 (0.0111)	-0.0349** (0.0138)
Right to education	0.0021 (0.0034)	0.0141 (0.0084)	0.0068 (0.0052)	0.0182 (0.0108)
Right to adequate living	0.00442 (0.0042)	0.0134 (0.0114)	0.00697 (0.0119)	0.037 (0.0210)
Right to environment	-0.00117 (0.0034)	-0.0014 (0.0061)	-0.00515 (0.0086)	-0.0271 (0.0172)
ACHR	-0.00229 (0.0034)	0.0123 (0.0196)	-0.00598 (0.0040)	0.00132 (0.0269)
Female	-0.0115*** (0.0014)	-0.0199*** (0.0033)	-0.0125*** (0.0014)	-0.0214*** (0.0035)
Multiple	0.207*** (0.0143)	0.253*** (0.0168)	0.205*** (0.0184)	0.254*** (0.0218)
Health expenditure as percentage of GDP			0.000635 (0.0017)	-0.01 (0.0066)
Education expenditure as percentage of GDP			0.00279 (0.0017)	0.0156** (0.0053)
Social security and welfare expenditure as percentage of GDP			-0.00031 (0.0024)	0.00768 (0.0063)
Public spending (minus interest payments) as a percent of GDP			-0.00022 (0.0005)	-0.000578 (0.0007)
Low level of democracy	-0.000985 (0.0032)	0.00768 (0.0112)	-0.00257 (0.0040)	0.00109 (0.0144)
High level of democracy	0.00396 (0.0034)	-0.000736 (0.0097)	0.00657 (0.0050)	0.0219* (0.0102)
Logged per capita income	-0.00039 (0.0009)	0.000838 (0.0023)	-0.001 (0.0008)	-0.00211 (0.0026)
Proportion of people aged 14 and under	0.0165*** (0.0050)	0.023 (0.0199)	0.0114 (0.0080)	0.0577** (0.0238)
Proportion of people aged 65 and over	-0.0327 (0.0213)	-0.107* (0.0490)	-0.0728* (0.0388)	0.0185 (0.0527)
Age of mother	Yes	Yes	Yes	Yes
Birth order fixed effect	Yes	Yes	Yes	Yes
Age of mother × Birth order fixed effect	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Mother fixed effect	Yes	Yes	Yes	Yes
Country-specific trends	Yes	Yes	Yes	Yes
Country-specific trends ²	Yes	Yes	Yes	Yes
Country-specific trends ³	Yes	Yes	Yes	Yes
Observations	367,919	38,064	261,952	28,713
R-squared	0.019	0.037	0.02	0.047
Number of country	15	15	15	15
Number of mothers	117,687	10,396	96,442	8,974

Notes: Dependent variable=Infant death. Standard errors are clustered at country level and reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Author's compilation based on study data.

5 Discussion

These findings show an interesting picture of how four different social and environmental human rights (right to health, right to education, right to welfare, and right to environment) and the ACHR affect government spending and population health.

First, the finding suggests a robust effect of the introduction of a right to health on subsequent reductions in infant deaths among poor mothers. This indicates that the introduction of a right to health into national constitutions, in fact, protects the health of infants among poor families. This finding is consistent with the findings of previous empirical literature on the effect of a constitutional right to health (Matsuura 2013). Further, this is also consistent with a recent study of human rights, which argued that a right to health litigation is in fact accessible to low income populations in Latin America (Biehl et al. 2012; Brinks and Gauri 2012).

The introduction of a right to education, adequate living standards, and environment and the ratification of the ACHR are not significantly associated with subsequent changes in infant deaths. This is both good and bad news. On the one hand, the pursuit of other human rights – such as education, welfare, and environment – does not necessarily harm child health or the pursuit of a right to health. This is supported by the results in Table 3, which indicate that constitutional social and environmental rights do not affect total government spending as well as its compositions. On the other hand, however, the pursuit of a right to education, welfare, and environment does not lead to the improvement of child health. No effect of a right to adequate living standard (welfare) is particularly surprising because living conditions are likely to be negatively correlated with infant mortality (Alarcón and Robles 2007). One interpretation of these results is that these countries fail to address “a right to adequate living standard” or “right to dignified life” even though there is a constitutional or international law guaranteeing this right. There should be no household that does not own a bicycle, motorcycle, car or truck, refrigerator, radio, and television in our sample if a country has successfully addressed these issues.

In sum, a right to health is the only constitutional human right to improve the health of infants among poor households. Moreover, I find the indirect evidence that the pathway through which the right to health works to improve infant health among poor households is the allocation of government health care spending, induced by constitutional rights. This finding is consistent with my earlier study using historical data of the 50 U.S. states for the period of 1929–2000 (Matsuura 2015). However, the pathway through which the right to health affects population health is still under investigation. I leave this question for future studies.

The results of this paper suggest that a right to health, on average, improves child health outcomes among poor families in Latin American countries. However, we need to be careful about the interpretation of the results.

First, this paper uses the codified right to health in national constitutions, but ignores the right to health that has been recognized through case law. The effect of introducing a codified right to health in national constitution estimates is perhaps less informative if our goal is to evaluate the effects of human rights litigations.

In fact, the effect of social and environmental rights through human rights litigation is the only “visible part of the iceberg” in the full effect of human rights. The presence of such rights in the supreme law of the nation may lead to social change through legislative and social action (Leonard 2009; Matsuura 2015). Sen (2004) argued for the treatment of human rights as an ethical demand for justice and equity in the allocation of material and non-material resources. This ethical demand

will urge citizens, government, and non-government players to work toward the realization and achievement of human rights objectives (Ruger 2006). The effects of a constitutional right to health found in this paper include not only judicial effects but also political and social ones.

Second, the retrospective fertility surveys have their own disadvantages, namely recall bias and selection bias based on maternal deaths. Recall bias is less likely to be a problem because most mothers are able to recall their children's dates of birth. However, if these mothers had died before the surveys were conducted, the retrospective fertility surveys cannot track birth records of their children. Thus, the results of this paper might be affected by selection bias based on maternal deaths.

Third, I found the robust effects of the introduction of a right to health in this paper. However, without truly exogenous variation in constitutional human rights, it is difficult to obtain convincing evidence on the causal effect of constitutional human rights on child health outcomes.

The results of this paper further contribute to a growing literature that evaluates the real world impact of constitutional human rights. Future research should aim to determine the pathways through which constitutional human rights improve the allocation of health and health care resource and population health.

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Appendix A: Demographic and Health Survey (DHS) dataset

Table A1: Observations from DHS dataset

Country	Earliest year of observation	Latest year of observation	DHS dataset used	Number of DHS dataset available	Number of observations (1970–2000)
Argentina	—	—	—	—	—
Bolivia	1970 (1964)	2000 (2004)	2003	5	45,116
Brazil	1970 (1959)	1996	1996	3	25,513
Chile	—	—	—	—	—
Colombia	1970 (1965)	2000 (2005)	2005	6	71,278
Costa Rica	—	—	—	—	—
Cuba	—	—	—	—	—
Dominican Republic	1970 (1965)	2000 (2002)	2002	9	53,667
Ecuador	1970 (1951)	1987	1985	1	11,835
El Salvador	1970 (1956)	1984	1985	1	6,383
Guatemala	1970 (1957)	1998	1995	3	38,753
Guyana	1970 (1970)	2000 (2007)	2009	2	10,929
Haiti	1970 (1964)	2000 (2005)	2000	4	26,437
Honduras	1970 (1969)	2000 (2005)	2005	2	50,093
Mexico	1970 (1948)	1986	1987	1	22,676
Nicaragua	1970 (1961)	2000	1998	2	36,820
Panama	—	—	—	—	—
Paraguay	1970 (1955)	1989	1990	1	15,346
Peru	1970 (1959)	2000 (2007)	1996	11	72,390
Trinidad and Tobago	1970 (1952)	1986	1987	1	7,837
Uruguay	—	—	—	—	—
Venezuela	—	—	—	—	—

Notes: Dashes indicate “no data”. Numbers are calculated from the Demography and Health Surveys. If multiple surveys are available for a given country, the one that maximizes the number of observations in our sample was chosen (from 1970 to 2000).

Source: Author’s compilation based on study data.

Appendix B: Constitutional right dataset

The variable of a right to health comes from Matsuura (2013), in which the following three criteria are used to define a constitutional right to health:

- The right to health must contain the guarantee of the right to access health care rather than the right to a healthy environment or health insurance for all citizens of the nation.
- Such a right must be an individual right enforceable through the independent judicial review.
- Such a right is explicitly written in one or more provision(s) of a nation's constitution.

The third condition is violated in two of the 22 Latin American countries (Costa Rica and El Salvador). In these countries, constitutional courts have created the right to health from other constitutional rights. However, Costa Rica and El Salvador were classified as countries with no constitutional rights to health.

Some constitutions show strong commitment to human rights and directly reference international human rights laws in their national constitutions. In the constitution of Argentina (1998), human rights treaties acquire constitutional status. Thus, Argentina is classified as a country with a constitutional right to health.

The variables of a right to education and adequate standard of living are created based on several different legal databases, including Constitutional Finder and FindLaw database. The right to free primary education must be explicitly written in the national constitution. With the exception of Trinidad and Tobago, a right to free primary education has been recognized in all countries in the sample. In Bolivia, Brazil, Colombia, Haiti, Mexico, Nicaragua, and Peru, a right to free primary education was introduced in national constitutions before 1900. In addition, Costa Rica, Cuba, Ecuador, Paraguay, Uruguay, and Venezuela introduced this right before 1970. This means that within-country variation in this study sample comes from Argentina (Article 75.19), Chile (Article 19.1), Costa Rica (Article 78), Dominican Republic (Article 8.16), El Salvador (Article 56), Guatemala (Article 74), Guyana (Article 27), Honduras (Article 171), and Panama (Article 91).

The right to adequate standard of living is found in Argentina (Article 14 bis), Colombia (Article 44), Costa Rica (Article 57), Ecuador (Article 66), El Salvador (Articles 37 and 38.2), Guatemala (Article 102.a), Guyana (Article 40), Honduras (Articles 123 and 128), Mexico (Articles 4 and 123), Panama (Article 64), Peru (Articles 4 and 10), and Venezuela (Article 91). It is worth noting that Article 44 of Colombia's constitution and Article 123 of Honduras' constitution guarantee a right to adequate standard of living only for children.

The variable of a right to a healthy environment is primarily taken from Boyd (2014). He provides the list of years that a right to a healthy environment was first included in national constitutions. The data on Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Ecuador, El Salvador, Guyana, Honduras, Mexico, Nicaragua, Panama, Peru, Paraguay, and Venezuela are taken from his dataset. For Haiti, the right to environment was introduced in 1987, but this constitution was completely suspended until 1989. Therefore, I replaced 1987 with 1989. For Nicaragua, the final draft of the 1986 constitution was approved on November 19, 1986, but took effect on January 9, 1987. Thus, I replaced 1986 with 1987. Boyd (2014) classified Dominican Republic, Trinidad and Tobago, and Uruguay as countries with no constitutional right to a healthy environment. However, Article 47 of Uruguay's constitution in 1967 recognized clean air, water, and sanitation rights. Thus, I reclassified Uruguay as a country with a constitutional right to a healthy environment.