

The Role of Historical Resource Scarcity in Modern Gender Inequality

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Abstract

We propose that historical resource scarcity played a role in the evolution and/or strengthening of gender norms inimical to women, cultures that persist to this day. Consistently, we find that nations' historical resource endowments are each related to their present levels of gender inequality, measured by the UNDP Gender Inequality Index (GII). Investigating the effects of historical resource scarcity on different dimensions of the GII, we find that it is significantly, negatively associated with reproductive health and labor market outcomes, but not with the indicators of women empowerment. Further, using the individual-level data from the World Values Survey (WVS), we find that this relationship also holds at sub-national level.

Introduction

Several recent studies have reported a connection between historical factors and present-day gender norms and inequality. For instance, Alesina et al. (2013) argue that the adoption of the plough led to more unequal gender norms and find that female labor force participation and the share of women in parliament is lower in countries whose ancestors traditionally practice plough agriculture. Hansen et al. (2015) show that the female labor force participation and the share of women in parliament are lower, in societies that moved to agriculture earlier. And, Hazarika et al. (forthcoming) find that ancestral resource endowments are negatively associated with missing women both across countries and Indian districts.

This paper furthers this line of inquiry by hypothesizing that historical resource scarcity in parts of the world, caused by unfavorable agro-ecological conditions, strengthened cultures in which girls and women are discriminated against in the intra-household allocation of resources. Our theory is that societies with a greater scarcity of resources experienced a stronger bargaining in the allocation of intra-household resources in which men had an advantage because of several reasons. First, men had an advantage in physical strength. Second, domesticity, a result of transition to agriculture and/or the use of plough, may have diminished women's bargaining power in the division of intra-household resources, which would be even more pronounced in societies with limited resources. Further, Iversen and Rosenbluth (2010) argue that land scarcity made cultivation of food more labor intensive resulting in "a premium on male brawn".

Data and Empirical Strategy

Gender inequality is measured by the United Nations Development Programme (UNDP) Gender Inequality Index (GII). The GII measures women's disadvantages in three dimensions: reproductive health (measured by Maternal Mortality Ratio (MMR) and Adolescent Birth Rate (ABR)), empowerment (measured by women's share in parliament and the difference between the proportions of adult women and men with secondary or higher education), and the labor market (measured by the differences in the labor force participation rates of women and men).

Of two, the first measure of nations' historical resource environments is the ancestral arable land from the study by Alesina et al. (2013). Our second historical resource endowment measure is the fraction of a country's land that is potentially arable, *i.e.*, suited to rainfed cultivation. It is a valid measure for (1) potential arable land speaks to the agricultural potential of a region in the absence of modern irrigation and technologies, (2) a modern soil map of the world is also historical, as are the climatic and soil requirements of mankind's main crop, (3) the world's climate has been fairly stable for the past 1 to 2 millennia (Jones and Mann, 2004).

We estimate the following linear equation:

$$y_i = \alpha + \beta \text{Historical Resource Endowment}_i + X_i' \delta + \varepsilon_i$$

where i denotes country and X_i' is a vector of contemporary and historical control variables. y_i denotes measures of gender inequality, the GII and its indicators.

We further use the WVS data to investigate the relationship between historical resource scarcity at sub-national levels and individuals' perceptions regarding women's rights and abilities. We estimate the following equation

$$y_{i,d,c} = \alpha_c + \gamma \text{Ancestral Arable Land}_d + X_i' \theta + X_d^H \lambda + \varepsilon_{i,d,c}$$

where $y_{i,d,c}$ denotes the response of individual i living in district d in country c to the following questions: (1) "On the whole, men make better political leaders than women do", (2) "When jobs are scarce, men should have more right to a job than women", and whether the respondent is in the labor force (for females only). X_i and X_d^H denote the individual-level and district-level historical controls, respectively.

Endowments of Arable Land and Gender Inequality.
Dependent Variable: UNDP Gender Inequality Index in 2012.

	(1)	(2)	(3)	(4)
Fraction of country's land area that is potentially arable	-0.147*** (0.0409)	-0.109*** (0.0401)		
Fraction of country's ancestral lands suited to agriculture			-0.112*** (0.0393)	-0.106*** (0.0337)
Ln(nominal per capita income in 2012 - USD)	0.0115 (0.0575)	0.0527 (0.0651)	-0.00102 (0.0627)	0.0426 (0.0654)
ln(Per capita income) squared	-0.00519 (0.00345)	-0.00666* (0.00382)	-0.00444 (0.00374)	-0.00604 (0.00381)
Fraction of land area in the geographical tropics	0.122*** (0.0232)	0.0550* (0.0282)	0.0841*** (0.0238)	0.00614 (0.0296)
Distance to nearest coastline or sea-navigable river	-0.0134 (0.0190)	-0.0306 (0.0212)	0.0161 (0.0178)	-0.0102 (0.0220)
Observations	133	133	134	134
Adjusted R ²	0.726	0.768	0.719	0.773

Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Results

Nations' historical resource endowments, measured by the availability of arable land and ancestral arable land, are each negatively related to the GII. This negative relationship is robust to the inclusion of a host of contemporary and historical control variables such as the GDP per capita, years since transition to agriculture, ancestral plough use, contemporary structure of the economy, democracy, indicator of the experience of communism, legal origins, etcetera. Further, we find that historical resource scarcity continues to affect women's reproductive health and labor market outcomes. A greater historical endowment is associated with lower MMR and ABR and lower female-male labor force participation gap, but not with the indicators of women empowerment.

Finally, we find that the respondents of the World Values Survey residing in sub-national regions with ancestral lands better suited to agriculture are less likely to hold the opinions that men ought to have more right to scarce jobs and that men make better political leaders than women.

Historical Resource Scarcity and Attitudes Regarding Women's Rights and Capabilities:
Individual-level OLS Estimates

	Dependent Variables:					
	Female labor force participation		When jobs are scarce, men should have more right		Men make better political leaders	
	(1)	(2)	(3)	(4)	(5)	(6)
Fraction of district's ancestral lands suited to agriculture	0.117*** (0.0442)	0.0195 (0.0405)	-0.177*** (0.0444)	-0.196*** (0.0642)	-0.621*** (0.0919)	-0.423** (0.170)
Individual-level controls	Yes	Yes	Yes	Yes	Yes	Yes
District-level controls	Yes	Yes	Yes	Yes	Yes	Yes
Country-level controls	Yes		Yes		Yes	
Continent dummies	Yes		Yes		Yes	
Country dummies		Yes		Yes		Yes
Countries	48	53	70	74	69	73
Continent dummies	453	479	674	700	672	698
Observations	43,801	47,587	80,303	87,528	64,215	72,152
Adjusted R ²	0.169	0.266	0.206	0.275	0.191	0.258

Standard errors clustered at district level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Individual-level controls: age, age², dummy for being married, dummies for primary and secondary education, gender, and dummy for being married. District-level controls: ancestral plough use, fraction of ancestral land that was tropical or subtropical, ancestral domestication of large animals, ancestral settlement patterns, and ancestral political complexity. Country-level controls: income per capita and income per capita squared in natural logs measured in the same year, as the dependent variable. Note that the specifications reported in this Table are identical to the corresponding specifications reported in Table V of Alesina et al. (2013).

Discussion and Conclusions

This paper finds that historical resource scarcity played a role in the emergence of gender norms inimical to women, cultures that exist even today. We show that gender inequality is less in countries whose ancestors were endowed with a greater fraction of land that was cultivable. We further find that the relationship between the historical resource scarcity and reproductive health outcomes remains robust when we control for the female labor force participation indicating that the effects of historical resource scarcity on modern gender inequality is independent of gender roles. In a series of robustness checks, we show that our resource scarcity measures are indeed historical and that the observed effect of historical resource scarcity on gender inequality is through culture persistence.

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