Individualism and women's economic rights

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ABSTRACT

Individualism is associated with an emphasis on personal liberty and self-determination, values that reduce support for patriarchal norms and increase gender equality. Here, we investigate whether individualism affects women's economics rights, a key institutional determinant of the economic opportunities available to women. We provide evidence of an economically and statistically significant association between individualism and the *de facto* level of women's economic rights. This result is robust to a variety of controls, including per capita income, women's educational attainment, oil production, historical determinants of patriarchal culture, and the quality of legal and political institutions. In addition, we present evidence that this association is causal, drawing on instruments motivated by roles of climate and disease in cultural evolution. Finally, we show that individualism's influence on women's economic rights is magnified in democratic and common law countries, suggesting that democracies and common law systems channel cultural preferences into legal outcomes.

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1. Introduction

Women's economic rights reflect the presence and enforcement of laws that affect women's ability to work, receive compensation, start a business, and control assets. Quantifying gendered laws across countries, Hyland et al. (2020) document that gender equality before the law associates with higher female labor force participation rates and a smaller wage gap between men and women. Women, however, currently enjoy equal economic rights with men in only eight countries (Hyland et al., 2020). In this paper, we explore if countries with more individualistic values grant women greater economic rights.

Restricting women's rights and freedoms has significant economic and social consequences (Duflo, 2005; Sinha et al., 2007). For example, limitations on women's labor rights, including gendered employment laws, decreases female labor force participation and entrepreneurship, and increases the gender wage gap (Htun et al., 2019; Islam et al., 2019; Malta et al., 2019; Amin and Islam, 2015; Gonzales et al., 2015; Zveglich and Rodgers, 2003; Ogloblin, 1999, 2005). Similarly, increasing women's property rights increases female labor supply (Hallward-Driemeier and Gajigo, 2015; Heath and Tan, 2019), raises innovation rates (Kahn, 1996), and alters investment risk preferences (Koudijs and Salisbury, 2020; Koudijs et al., 2021). Gendered laws also restrict women's access to finance (Demirguc-Kunt et al., 2013) and limit financial innovation (Hazan et al.,

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2019).[1] At a more conceptual level, the expansion of women's economic rights is closely associated with greater market freedom, non-discrimination, and self-ownership, which plays a central role in the feminist debate over whether capitalism fosters women's economic and strategic interests, e.g. Cudd and Holstrom (2011).

Equality before the law not only associates with better female economic outcomes but also with greater investments in women and children's health and education (Geddes et al., 2012; Branisa et al., 2013; Deininger et al., 2013; Menon et al., 2014; Roy 2015; Mishra and Sam, 2016; Deininger et al., 2019; Harari, 2019; Annan et al., 2021). Fewer gendered legal restrictions lead to lower rates of sexually transmitted diseases (Anderson, 2018) and lower fertility rates (Branisa et al., 2013).[2] Legal gender discrimination not only affects women's economic and social opportunity but also has significant national level consequences, lowering economic growth and income per capita (Goldin, 1986; Lagerlof, 2003; Bloom et al., 2009; Cuberes and Teignier, 2014; Cavalcanti and Tavares, 2016; Klasen, 2018).

These studies shed light on the consequences of women's economic rights; however, the literature on determinants of women's economic rights is limited in that it focuses nearly exclusively on the role of economic factors. Several prominent papers argue that men's self-interest combined with economic change is largely responsible for the extension of rights to women (Fernández, 2014). For example, Geddes and Lueck (2002) argue that granting women rights solves a principle-agent problem between husband and wife, and Doepke and Tertilt (2009) find that returns to both male and female human capital increase the incentive for fathers to grant women rights. In addition, Ross (2008) argues that oil production influences the development of women's economic and political power, but he does not directly consider women's economic rights.

In this paper, we advance this literature by proposing and testing a cultural theory of rights determination—that individualism increases women's economic rights. At a fundamental level, individualism-collectivism reflects a society's understanding of the self as either *independent* or *interdependent* (Gorodnichenko and Roland, 20112020). In individualist cultures, the self is understood to be an independent, autonomous entity, and individuals are expected to develop their own preferences, ideas, and emotions. Collectivist societies, in contrast, view the self as interdependent, entrenched in a web of social systems and obligations.[3]

Davis and Williamson (2019) provide evidence that individualist values promote gender equality. As they argue, individualism is closely associated with personal autonomy and respect for individual rights, values that support a cultural understanding of women as autonomous agents and the moral equals of men. In contrast, collectivist societies tend to subordinate women's personal goals to their perceived obligations as members of various collectives, such as family, church and nation. This generates greater acceptance of gender inequality. We hypothesize that this fundamental difference in a society's understanding of women, as autonomous agents or subordinate members of collectives, will be expressed in the level of women's economic rights. In particular, we expect a positive relation between individualism and women's economic rights.

To test this hypothesis, we construct a measure of individualism-collectivism based on data from World Values Surveys, described in Inglehart et al. (2018), which we use to update Hofstede's (1980) original individualism measure (Beugelsdijk et al., 2015; Davis and Williamson 2016, 2018, 2019, 2020). We collect a women's economic rights index from the Cingranelli-Richards (CIRI) Human Rights Dataset (Cingranelli et al., 2014). This measure captures both de jure and de facto economic rights for women. Combining the data results in a cross-section of 93 countries.

We find strong support for our primary hypothesis. Individualism is positive and significantly associated with women's economic rights. This finding is robust to a variety of controls, including measures of modernization, variables tied to women's economic participation, markers for patriarchal culture, and measures of institutional quality.

To address endogeneity, we consider two instruments for individualism motivated by historical roles of climate and disease in cultural selection and evolution, rainfall variation (Davis, 2016) and the historical prevalence of infectious disease (Fincher et al., 2008; Cashdan and Steele, 2013; Murray and Schaller, 2010; Nikolaev and Salahodjaev, 2017). Instrumental variable analysis indicates a strong positive relation between the exogenous component of individualism and the strength of women's economic rights.

Next, we consider a number of cultural-institutional hypotheses. These hypotheses are motivated by the close empirical association between individualism and the quality of national institutions (Williamson, 2000; Licht et al., 2007; Klasing, 2013; Davis and Abdurazokzoda, 2016) and are designed to help us understand the channels through which individualism affects women's economic rights. In addition to having a *direct* effect on women's economic rights via its impact on values and preferences, individualism may affect women's economic rights *indirectly* through its impact on a country's political and economic institutions (Williamson, 2000; Licht et al., 2007; Klasing, 2013; Davis and Abdurazokzoda, 2016). For

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[1] Changes in divorce law, from mutual consent to unilateral divorce, are associated with a large increase in married women's labor force participation (Fernández and Wong, 2014, 2017). García-Ramos (2021) finds that a change to unilateral and no-fault divorce increases male to female intimate partner violence to prevent women from leaving the marriage.

[2] La Ferrara et al. (2012) find that exposure to soap operas leads to a decrease in fertility. Similarly, Oster and Jensen (2009) show that the arrival of cable television in rural India increased women's autonomy while decreasing son preference, fertility rates, and social acceptability of domestic violence. Using data from India on access to health centers and gender differences in vaccinations, Oster (2009) illustrates a non-monotonic association between access and gender equality.

[3] As one reviewer highlighted, the concept of individualism-collectivism is related to liberalism—a political ideology (see Gaus et al., 2020). We agree that individualism and liberalism are undoubtedly closely related. For example, individualist values tend to give rise to liberal policy preferences, such as granting women economic rights. Our use of individualism is as a psychological construct, not a political ideology (see Gorodnichenko and Roland 2013 for an excellent review). Adequately addressing the association between individualism and liberalism, however, is beyond the scope of this paper.

example, individualism may increase political rights, which allows women or their advocates to demand economic rights more effectively. In addition, it may be that greater economic rights of women in individualist countries are simply a reflection of their greater protection of property rights.

This possibility, which we refer to as the *Institutional Channels Hypothesis*, stems from a large body of work that theorizes a hierarchy of institutions, organized in a series of layers from fundamental to proximate. For example, North (1990) and Williamson (2000) develop a framework where culture, an informal institution, provides the foundational layer for formal institutions, including political institutions. Roland (2004) argues that because informal institutions change relatively slowly, the dominant direction of influence is from culture to formal institutions, a conclusion supported by Licht et al. (2005) and Stulz and Williamson (2003).

Our results provide qualified support for the *Institutional Channels Hypothesis*. While women's economic rights and institutional quality are indeed positively related, individualism remains significant when controlling for the quality of political and economic institutions. This suggests that individualism affects women's economic rights beyond its impact on institutional quality. Thus, individualism appears to effect women's economic rights *directly* through its influence on the values and policy preferences of the polity, as well as *indirectly*, via its influence on a country's economic and political institutions.

A second possibility is the *Interdependent Institutions Hypothesis*, developed by Davis and Williamson (2016), which holds that cultural values interact with legal and political institutions to determine social policy outcomes. This idea is based on the notion that the values and preferences of a country's people are not automatically converted into policy outcomes. Instead, legal and political institutions play a key role in determining the degree to which a society's preferences influence policy formation. We therefore argue that a country's cultural values affect social policy more in countries with a common law legal tradition and democratic political institutions. Our empirical results provide strong support for this conclusion. In the absence of these institutions, there may be no formal mechanism through which cultural values regarding women's economic rights become encoded in the legal system.

The paper most similar to ours conceptually is Davis and Williamson (2019). Using individual-level WVS data, their work shows that individualism explains variations in patriarchal attitudes and key social outcomes for women, including educational attainment, fertility and labor force participation. In order to isolate individualism's influence from other confounding effects, country fixed effects are included. While econometrically justified, the use of country fixed effects means that their analysis fails to capture vital country-level channels through which individualism may influence gender equality. Our paper provides an important advance in the literature by showing that national culture effects the laws that govern women's economic opportunities.

Our work closely relates to the growing literature linking individualism-collectivism to economic and social outcomes, including income per capita (Davis, 2016; Gorodnichenko and Roland, 2011), innovation and patenting rates (Gorodnichenko and Roland, 2017), institutional quality (Licht et al., 2007; Klasing, 2013; Davis and Abdurazokzoda, 2016), regulation (Davis and Williamson, 2016; Cline and Williamson, 2017; Ang and Fredriksson, 2018; Rivera-Rozo et al., 2018; Williamson, 2021), and the structure of the family (Davis and Williamson, 2020).

Our work also contributes to an emerging literature demonstrating that culture affects women's economic and social outcomes. This includes the roles of inherited cultural values (Fernández, 2007; Fernández and Fogli, 2009, 2013), historical plow use (Alesina et al., 2013), religion and religiosity (Norris and Inglehart, 2002; Seguino, 2011; Davis and Gao, 2020), gendered language (Davis and Reynolds, 2018; Gay et al., 2013; Hicks et al., 2015; Mavisakalyan, 2015), and cool water conditions (Welzel 2013, 2014, Silva et al., 2017).

2. Data

To quantify women's economic rights, we rely on a measure collected from the Cingranelli-Richards (CIRI) Human Rights Dataset (David et al., 2014). This index of women's economic rights captures equal pay for equal work, free choice of profession or employment, the right to gainful employment, equality in hiring and promotion practices, job security, non-discrimination by employers, freedom from sexual harassment in the workplace, and the rights to work at night, in dangerous occupations, and in the military and police force. As a robustness test, we also consider an index of women's *de jure* economic rights recently developed by the World Bank's *Women, Business and the Law* project. We utilize the CIRI index as our main measure because it reflects both *de jure* rights written into law and *de facto* rights represented by enforcement of women's legal rights.

The CIRI index ranges from 0 to 3 with 3 indicating that all women's economic rights are guaranteed by law and backed by government enforcement. A country with a score of 2 indicates that women have some economic rights written into law and the government enforces these rights in practice; however, some economic gender discrimination may be present. Scoring 1 on the index implies a country grants women some economic rights under the law but they are not enforced. A score of zero indicates that women have no economic legal rights and systematic gender discrimination may be legal. Data are collected in 2010.

We follow several recent papers to construct a measure of individualism using data from the World Values Survey (WVS) (Beugelsdijk et al., 2015; Davis, 2016; Cline and Williamson, 2017; Davis and Williamson, 2016, 2018, 2019, 2020). This approach has two advantages over the use of well-known national measures of individualism, such as Hofstede's (1980, 2001) individualism and Schwartz's (1994, 2006) embeddedness, a measure of collectivism. First, both Hofstede and Schwartz's measures are based on older data and may not reflect contemporary values (Beugelsdijk et al., 2015). Second, the use of the

WVS significantly expands both the number of countries and weight of less developed countries in the sample. Relative to the Hofstede measure, for example, using the WVS based measure expands our sample from 75 to 93 countries, an increase of over 20%, and nearly doubles the number of low- and middle-income countries, which rises from 23 to 42.

Our approach to measuring individualism draws closely on Beugelsdijk et al. (2015), hereafter BMH, who replicate the Hofstede measure of individualism. According to Hofstede, individualism-collectivism stresses differences in the expected scope of individual responsibility, contrasting an individualistic society in which everyone looks after him or herself, with a collectivist society in which individuals form strong, cohesive groups as a form of social insurance. BMH use four questions in the WVS, which relate to the taste for private versus government ownership of business, whether it is a priority to make one's parents proud, and whether homosexuality and abortion are justified. While we employ the first three of these questions, the question regarding the justifiability of abortion is potentially jointly determined with women's economic rights, making this question problematic for our study. Thus, we omit it from our index. We instead include a measure of the preference for individual vs. government responsibility (Davis, 2016; Di Tella et al., 2007; and Couttenier and Sangnier, 2015). Because this question contrasts individual and collective responsibility in the political sphere, there is not a direct conceptual link to women's economic rights.

Our collection of questions directly relates key dimensions of individualism-collectivism, including valuing market capitalism and competition, the role of individual incentives, weak family ties, the right to private life, autonomy and self-orientation, and less conformity. These questions are conceptually consistent with Hofstede's meaning, description and implication of individualism.[4] Thus, an individual who finds homosexuality justifiable is expressing tolerance and the belief in a private life. Someone who believes in more private instead of government ownership of business values market competition and capitalism. Placing less importance on making parents proud aligns with weaker family ties and less conformity. Therefore, each question indirectly captures attitudes that relate to individualistic values. To create a country-level individualism index, we aggregate individual responses by extracting the first principal component. A higher score indicates more individualism.

Combining the women's economic rights index with the individualism index results in data available for 93 countries. Summary statistics for these and other variables are reported in Table 1. Additional variables used in the analysis are described in the text. Variable definitions and sources are listed in Appendix 1.

3. Results

In this section, we present evidence on the empirical association between individualism and women's rights. We begin by considering the bivariate relation between the individualism index, *idv_index*, and the CIRI index of women's economic rights, *wecon*. As seen in column 1 of Table 2, there is a strong, positive, statistically significant association between individualism and women's economic rights. Indeed, taken alone, individualism accounts for over 53% of the observed variation in women's economic rights.

In column 2, we present results for our baseline specification, in which we regress the index of women's economic rights on individualism and three controls, *British* legal origin, *latitude*, the absolute value of latitude, and *landlocked*, a dummy variable for whether a country is landlocked. These variables are exogenous and proxy for important dimensions of institutional quality. British legal origin is related to both the protection of private property and the adaptability of a country's legal system (La Porta et al. 2008; Beck et al., 2003). The absolute value of latitude plays a role in the transfer of institutions under colonization (Hall and Jones, 1999) and serves as an exogenous proxy for institutional quality. Being landlocked may increase regulation by reducing the competitive pressure of international competition (Olson, 1982).

As shown, individualism is positively related to women's economic rights and significant at the 1% level. Of the three control variables, only latitude is significant at the 5% level or better. The effect of individualism is also economically significant: a one-standard deviation increase in individualism is associated with a 0.64 standard deviation increase in women's economic rights. This is over three times the effect of a one-standard deviation increase in latitude, the only statistically significant control variable in this specification.

Fig. 1 shows the conditional association between individualism and women's economic rights from column 2. As is evident from this figure, this relation is not driven by outliers or by any particular group of countries.

In the next four columns, we examine each of the four components of the individualism index, which reflect the tastes for private ownership and individual responsibility, the importance of making parents proud and the justifiability of homosexuality. All four components have the expected sign and are significant at the 5% level or better. Note that our findings are similar for components that represent attitudes toward very different spheres of life – economic, family, and sexual – which is consistent with the idea that these attitudes are reflective of a fundamental common value system rooted in individualism. More generally, our findings indicate that the association in columns 1 and 2 is not driven by any one component of the individualism index.

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[4] Hofstede (2001, p. 225) contrasts an individualistic society in which "everyone is expected to look out for themselves," with a collectivist society in which people are "integrated into strong, cohesive in-groups, which... protect them in exchange for unquestioning loyalty." Hofstede's conceptualization of individualism is only one possible approach. Ann Davis (2020) discusses alternative concepts of the individual, and Ciftci (2022) conceptually and empirically distinguishes between expressive, social and economic individualism.

Table 1
Summary statistics.

Variable	# Observation	Mean	Standard Deviation	Min	Max
Women's Rights					
wecon	93	1.38	0.90	0.00	3.00
wbl_index	93	73.08	17.93	26.25	97.50
Individualism, Components and Instruments					
idv_index	93	−0.06	1.43	−2.71	3.58
private_own	93	5.59	0.78	4.18	7.71
indv_resp	93	4.69	0.88	2.79	6.73
just_homo	93	2.97	1.59	1.01	7.62
parents_proud	93	3.27	0.40	2.16	3.94
rainvar	92	−0.15	0.46	−0.76	0.95
disease	92	0.08	0.62	−1.18	1.19
Democracy					
voice	93	−0.02	0.98	−2.14	1.57
gastil	93	7.45	3.75	0.00	12.00
polity	92	4.45	6.18	−10.00	10.00
Controls					
British	93	0.24	0.43	0.00	1.00
latitude	93	31.18	16.74	0.23	60.21
landlocked	93	0.22	0.41	0.00	1.00
income per capita	93	9.41	1.03	6.98	11.70
plow	91	0.66	0.44	0.00	1.00
ag_revolution	91	5.87	1.96	1.48	10.38
climate	85	0.70	0.32	0.02	1.00
soil	85	0.60	0.21	0.19	0.96
oilrents	93	4.20	9.65	0.00	53.10
communism	91	0.18	0.30	0.00	0.83
gender_noun	50	1.04	0.99	0.00	2.00
gender_pronoun	73	1.00	0.76	0.00	2.00
wpol	93	−1.37	17.84	−98.50	3.00
rule of law	93	−0.02	0.99	−1.77	1.96
corruption	93	−0.01	1.02	−1.58	2.36

Notes. All variables are described in Appendix 1.

Table 2
Individualism and women's economic rights.

Dependent Variable:	(1) wecon	(2) wecon	(3) wecon	(4) wecon	(5) wecon	(6) wecon	(7) wbl_index
idv_index	0.455*** (10.14)	0.397*** (7.850)					8.575*** (8.117)
private_own			0.270** (2.471)				
indv_resp				0.449*** (5.237)			
parents_proud					−1.304*** (−5.284)		
just_homo						0.327*** (7.388)	
Baseline controls	No	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.405*** (21.93)	1.095*** (6.135)	−0.865 (−1.493)	−1.701*** (−3.747)	5.437*** (5.686)	−0.126 (−0.690)	71.47*** (19.31)
# Observations	93	93	93	93	93	93	95
Adj. R^2	0.53	0.56	0.31	0.43	0.44	0.54	0.51

Notes. All variables are described in Appendix 1. Baseline controls include British legal origin, landlocked, and latitude. Standard errors are clustered by country. T-statistics in parentheses *** $p < 0.001$, ** $p < 0.05$, * $p < 0.10$.

In column 7, we use an alternative measure of women's economic rights developed as part of the *Women, Business and the Law* (WBL) project at the World Bank (Hyland et al., 2020). As before, there is a strong positive relation between individualism and this measure of women's rights. Because the WBL index is intended to measure only *de jure* women's rights, we focus on the CIRI index for the remainder of the analysis, as it reflects both *de jure* and *de facto* considerations.

Next, we consider a variety of robustness tests. Perhaps the most common conceptual framework for understanding women's rights is the modernization hypothesis. This holds that the economic, social and political status of women reflects the overall level of economic development (Fernández, 2014; Geddes and Lueck, 2002; Doepke and Tertilt, 2009; Doepke et al., 2012).
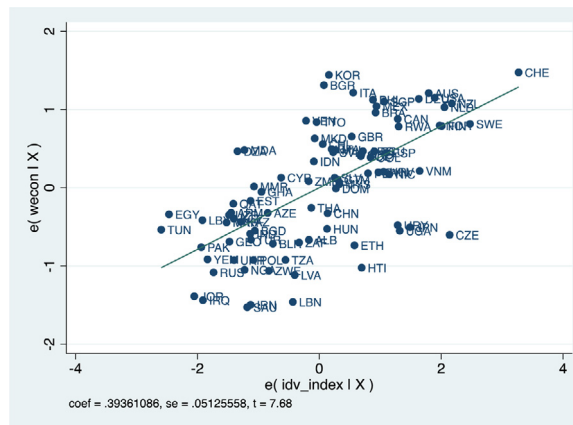
Fig. 1. Individualism and Women's Economic Rights

Notes. *wecon* is the CIRI index of women's economic rights. *idv_index* is the individualism index constructed from four WVS questions. This figure illustrates the conditional association between individualism and women's economic rights based on the regression reported in Table 2, column 2.

Table 3

Individualism and women's economic rights: additional controls.

Dependent Variable:	(1) wecon	(2) wecon	(3) wecon	(4) wecon	(5) wecon	(6) wecon	(7) wecon	(8) wecon	(9) wecon
idv_index	0.342*** (6.458)	0.346*** (5.272)	0.390*** (7.355)	0.334*** (3.977)	0.370*** (6.919)	0.456*** (7.803)	0.388*** (7.356)	0.390*** (7.077)	0.193** (2.576)
income per capita	0.222*** (2.652)								
U-curve		Yes							
plow and ag_revolution			Yes						
Religion dummies				Yes					
communism					−0.412 (−1.422)				
gender_noun						0.116 (1.159)			
gender_pronoun							0.118 (1.145)		
oilrents								−0.002 (−0.335)	
Regional controls									Yes
Baseline controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	−0.839 (−1.120)	0.794 (1.226)	1.144*** (4.617)	1.157*** (4.851)	1.018*** (5.491)	0.871*** (3.010)	0.911*** (3.383)	1.100*** (6.112)	1.721*** (3.132)
# Observations	93	80	91	93	91	50	73	93	91
Adj. R^2	0.60	0.62	0.57	0.61	0.58	0.68	0.60	0.56	0.65

Notes. All variables are described in Appendix 1. U-curve controls include measures for female education, fertility, and shares of the service and industrial sectors. Regional controls are dummy variables classified by World Bank regions. Baseline controls include British legal origin, landlocked, and latitude. Standard errors are clustered by country. T-statistics in parentheses *** $p < 0.001$, ** $p < 0.05$, * $p < 0.10$.

Modernization theory is potentially problematic for our approach because individualism is related to economic development. For example, the increases in mobility and urbanization associated with economic development may undermine traditional collectivist social structures. This is challenging because the observed relation between individualism and women's rights might reflect their common relation to modernity.

To see whether this is the case, we augment our baseline specification to include the log of per capita income. Our results are shown in column 1 of Table 3. As expected, the coefficient on the log of per capita income is positive and significant. However, the statistically significant relation between individualism and women's economic rights is robust to this inclusion.

Women's economic rights may also relate to the level of women's economic activity. For example, Ross (2008) argues that female employment is linked to the growth of women's political power, and female labor force participation may also change attitudes toward women working (Fernández et al., 2004; Fogli and Veldkamp, 2011). In addition, a well-developed literature on the feminization U-curve posits casual mechanisms relating female economic activity to female human capital accumulation, declining fertility, and changes in the sectoral structure of employment (Boserup, 1970; Goldin, 1995; Olivetti, 2013; Gaddis and Klasen, 2014). Motivated by these associations, we control for the average years of female education, total fertility, and the share of employment in the manufacturing and service sectors. As seen in column 2, the inclusion of these variables has little effect on our results for individualism.

A second locus of concern is that individualism may be correlated with other dimensions of culture that have an independent effect on women's economic rights. Most prominently, we worry that individualism may correlate with historical and other factors shown to influence the intensity of gender roles, patriarchal attitudes, or gender inequality. These factors include historical plow use, the timing of the agricultural revolution, patriarchal religious traditions, a history of communism, gendered language structures, and oil production.

Two measures of historical patriarchy reflect the history of traditional agriculture. As first posited by Boserup (1970), use of the heavy plow, which requires significant upper body strength, may result in a gender division of labor in agriculture. Building on this insight, Alesina et al. (2013) show that historical plow use affects contemporary rates of female labor force participation. The variable *plow* is taken from Alesina et al. (2013) and measures the share of a country's population whose ancestors engaged in plow agriculture. More recently, Hansen et al. (2015) argue that, relative to hunter-gatherers, gender inequality is greater in agricultural societies. As a result, populations that experienced an earlier transition to agriculture have had more time to develop patriarchal social norms. The variable *ag_revolution* measures the time since the agricultural revolution in the countries of origin of a country's current population.

As reported in column 3, however, neither *plow* nor *ag_revolution* is significant, and their inclusion has little impact on the size or significance of the coefficient on individualism.

A substantial body of evidence links religion to support for traditional gender roles (Forsythe et al., 2000; Guisoet al., 2003; Inglehart and Norris, 2003), lower levels of female educational attainment (Cooray and Potrafke, 2011; Dollar and Gatti, 1999; Norton and Tomal, 2009) and employment (Psacharopoulos and Tzannatos, 1989, Davis and Gao 2019). Religions also espouse different values related to individualism and collectivism (Davis, 2020), which raises the possibility of a spurious association between individualism and women's rights if religion is neglected.

Thus, we include dummy variables for whether a country's dominant religion is Catholic, Protestant, Orthodox, Muslim, Hindu, Buddhist or an eastern religious tradition, as defined by the majority religion in 1900. We consider the dominant religious tradition under the argument that the dominant religion will have a greater influence on national institutions that determine women's economic rights. As seen in column 4, only one of these variables, Protestantism, is significant at the 10% level or better. Moreover, individualism is robust to the inclusion of these controls.

A substantial body of work argues that communism reduces gender inequality (Ghodsee, 2019; Klasen, 2019), and it is also, separately, associated with reduced individualism and support for individual economic freedom (Alesina and Fuchs-Schuendeln, 2007). To see whether communism matters for the correlation between individualism and women's economic rights, in column 5 we control for a country's history of communism, equal to the share of the 20th century that the country was under communist rule. The coefficient on this variable is not significantly different from zero and including it does not substantially alter our results for individualism.

Speaking a language in which biological gender plays a role in the grammar of nouns and pronouns is associated with lower rates of female labor force participation (Gay et al., 2013; Mavisakalyan, 2015), early female marriage (Gay et al., 2013), and a greater educational gender gap (Davis and Reynolds, 2018). In columns 6 and 7, we include measures of the gender intensity of a language's nouns (Davis and Reynolds, 2018) and pronouns (Mavisakalyan, 2015). Neither measure is significant, while individualism is significant in both specifications.

Ross (2008) argues that oil production reduces manufacturing exports, which limits opportunities for women's work. Critically, reduced female labor force participation may in turn stifle a key channel through which women enter the political arena, potentially undermining political support for improving women's economic rights. To test whether this is the case, we include a measure of oil rents as a share of national output. As seen in column 8, oil rents is not significant in this specification, while individualism remains significant.

A final concern is that individualism may relate to an unobserved dimension of culture that is responsible for variations in women's economic rights. We address this by controlling for a country's regional location using the set of regional dummy variables developed by the World Bank. Regional location corresponds with shared religious and philosophical traditions and historical experience. In addition, the analysis of contemporary values suggests it serves as a proxy for unobserved cultural aggregates, e.g. Schwartz (2004) and Pryor (2007). As seen in column 9, a number of these regional variables are indeed significant; however, as with other robustness tests, individualism remains positive and highly significant in this specification.

The evidence presented in this section suggests that there is a strong, positive and economically important association between individualism and women's economic rights. This relation does not appear to be an artifact of the manner in which we measure individualism, and it is robust to a wide variety of variables that control for the relation between modernization and women's rights and the influence of other indicators of patriarchal cultural traditions, including historical plow use, time since the agricultural revolution, religion, communism, gendered language, and oil. While all of the evidence presented so far is supportive of our hypothesis that individualism matters for women's economic rights, it cannot be viewed as conclusive. At best OLS regressions recover correlations in the data, and given the endogeneity of the attitudes and values underlying our individualism index, we cannot claim to have identified causal effects.

4. Addressing endogeneity: instrumental variable analysis

An important limitation of the analysis presented above is that individualism is arguably endogenous. For example, shocks that affect women's economic activity, such as the development of export processing zones, may simultaneously

Table 4

Individualism and women's economic rights: IV regressions.

Dependent Variable:	(1) wecon	(2) wecon	(3) wecon	(4) wecon	(5) wecon
idv_index	0.394***	0.388***	0.278***	0.383***	0.381**
	(4.668)	(4.290)	(2.777)	(3.705)	(2.079)
plow		−0.0381			
		(−0.187)			
ag_revolution		−0.0107			
		(−0.277)			
climate			0.249		
			(0.747)		
soil			−0.141		
			(−0.302)		
oilrents				−0.003	
				(−0.373)	
religion and communism	No	No	No	No	Yes
Baseline controls	Yes	Yes	Yes	Yes	Yes
Constant	1.093***	1.141***	0.740**	1.096***	1.190***
	(5.339)	(4.639)	(2.069)	(5.315)	(3.701)
# Observations	91	90	84	91	90
Adj. R²	0.56	0.57	0.57	0.56	0.61
First stage F-stat	22.67	19.68	15.35	15.71	9.37
Overid p-value	0.74	0.80	0.89	0.62	0.76

Notes: All variables are described in Appendix 1. We instrument individualism using rainfall variation and historical prevalence of infectious disease. Baseline controls include British legal origin, landlocked, and latitude. Standard errors are clustered by country. T-statistics in parentheses *** $p < 0.001$, ** $p < 0.05$, * $p < 0.10$.

effect values related to individualism and empower women to push for expanded economic rights. Reverse causation is also a concern here: increases in women's economic rights may result in accommodative changes in values and beliefs. Given the endogeneity of the values underlying our individualism index, we cannot claim to have identified causal effects in the OLS analysis presented above.

A separate concern is that individualism determines various dimensions of modernization, including economic development (Gorodnichenko and Roland, 2011; Davis, 2016), institutional quality (Licht et al., 2007; Davis and Abdurazokzoda, 2016), and fertility and female education (Davis and Williamson, 2019). As a result, the various specifications in which we test for the modernization hypothesis arguably suffer from over-controlling.

To address these concerns and to estimate the causal effect of individualism on women's economic rights, we consider a series of two-stage least squares regressions in which we employ instruments drawn from existing work linking contemporary levels of individualism to historical climatic and epidemiological environments. In particular, we instrument for individualism using rainfall variation and the historical prevalence of infectious disease.

The link between rainfall variation and individualism is proposed by Davis (2016), who argues that collectivist values facilitate informal risk-sharing arrangements and are, thus, more likely to evolve in preindustrial societies with highly variable rainfall. Davis (2016) and Davis and Williamson (2018, 2019, 2020) provide empirical evidence supporting this association.

Fincher et al. (2008) provide evidence that the historical prevalence of infectious disease is negatively associated with contemporary levels of individualism. As Thornhill and Fincher (2014) argue, areas with a greater prevalence of infectious disease have an incentive to discount individual rights when they conflict with efforts to prevent the spread of disease. Nikolaev and Salahodjaev (2017) argue that societies with a high disease burden tend to develop stronger ingroup-outgroup distinctions. Thus, societies with high prevalence of infectious diseases are more associated with collectivist values.

Table 4 presents instrumental variable regressions using the instruments described above.[5] Column 1 presents results for our baseline IV specification. The coefficient on individualism is positive and highly significant, which is consistent with the claim that individualism has a positive causal effect on women's economic rights. The magnitude of the estimated effect is also 25% larger than that estimated in the corresponding OLS regression (Table 2, column 2). This is consistent with the presence of non-trivial attenuation bias in the OLS estimates.

The penultimate row of the table reports first-stage F-statistics, which are comfortably above the threshold for concerns over weak instrument bias. First-stage regressions for Table 4 are presented in Table A2 in the Appendix. In addition, the final row reports p-values for the over-identifying restrictions tests. Our results consistently indicate that we cannot reject the validity of our instruments at conventional confidence levels in any of the regressions, conditional on the presence of at

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[5] Linguistics provides a third instrument for individualism, *pronoun drop*, which refers to whether a speaker is required to express the subject pronoun, e.g. Kashima and Kashima (1998), Davis and Abdurazokzoda (2016). As seen in Table A3 in the appendix, our results in Table 4 are robust to adding pronoun drop to the instrument set. Doing so increases the size and significance of the coefficient on individualism, but it also significantly reduces the number of available observations and the first-stage F-statistic.

least one valid instrument in the instrument set. While this test has low power, the diverse nature of our instruments and the theoretical arguments that support them add confidence that this condition is, in fact, met.

Next, we consider a number of specific challenges to the validity of our instruments. One source of concern arises because rainfall variation and disease prevalence are functions of underlying climatic and geographical variables, which may be correlated with variables with an independent impact on women's economic rights. This is clearly the case, for example, of historical plow use and the timing of the agricultural transition. In addition, climate and disease ecology may affect women's economic rights through their impact on the development of the agricultural sector, a major locus of female economic activity. More generally, both climate and disease ecology are unevenly distributed in space and may thus be correlated with the international distribution of oil rents, communism, and dominant religious traditions, all of which potentially effect role of women in society.

To address these concerns, we consider a set of IV regressions in which proxies for possible alternative transmission channels are included as controls. Results are presented in the remaining columns of Table 4. Column 2 includes measures of two important dimensions of traditional agriculture, historical plow use and the timing of the agricultural revolution. To control for a more general relation between our instrument and agricultural development, in column 3 we include measures of the suitability of a country's climate and soil for agricultural production (Michalopoulos and Papaioannou, 2013). Column 4 includes oil rents, and column 5 includes a country's communist history and a set of dummy variables for its dominant religious tradition. As seen, the coefficient on individualism is positive and significant at the 5% level or better in each of these specifications, and it is relatively stable in magnitude across regressions.

In summary, results from our instrumental variable analysis strengthen the evidence in favor of our primary hypothesis, which holds that individualism has a positive effect on women's rights. In particular, we find a positive and statistically significant relation between the exogenous variation in individualism and women's rights using a diverse set of instruments related to climatic and epidemiological factors held to influence individualism. Our findings are robust to the inclusion of variables closely associated with patriarchal culture and plausibly correlated with our instruments, including a society's dominant religious tradition, history of communism, historical plow use, time in agriculture, and oil rents, as well as measures of the agricultural suitability of a country's climate and soil, and key dimensions of climate and geography.

5. How does individualism affect women's economic rights?

From a certain perspective, the positive association between individualism and women's economic rights that we demonstrate above is unremarkable. In particular, a substantial body of work finds that individualism is positively associated with the quality of a country's economic and political institutions, e.g. Licht et al. (2007), Klasing (2013), Davis and Abdurazokzoda (2016). It may, therefore, be the case that individualism matters for women's economic rights because it affects the quality of a country's institutions. We call this idea the *Institutional Channels Hypothesis*.

There are two possible mechanisms at work related to the quality of economic and political institutions. First, institutions may matter for women's economic rights because they determine the overall quality of economic rights. If this is the case, there may be nothing specifically gendered or egalitarian about the association between individualism and women's economic rights. This relation may simply reflect the fact that everyone enjoys greater economic rights in more individualist countries.

Second, individualism may increase political rights, or the quality of political institutions more broadly, which allows women or their advocates to effectively demand economic rights. This is a version of the hierarchy of institutions hypothesis forwarded by Davis and Williamson (2016) and draws on the work of North (1990), Williamson (2000) and Roland (2004), who posit a hierarchy of institutional layers. In this framework, cultural values and informal institutions form the most fundamental and persistent institutional layer, which serves as the foundation for formal political institutions that have a direct impact on the formation of laws and policies.

In the first three columns of Table 5 we control consecutively for three common measures of democracy, voice and accountability from the Worldwide Governance Indicators, described in Kaufmann and Kraay (2020), the Gastil index from Freedom in the World, and polity2 from the Polity5 dataset. Because political institutions may effect women's economic rights with a lag, we average all three variables from 2001 to 2010, and reorder the Gastil index for ease interpretation. As expected, all three variables are positively related to women's economic rights, though this relation is somewhat weaker for the polity2 variable. In addition, we see that the coefficient on individualism remains highly significant in each regression. The inclusion of these measures has a modest to moderate effect on the size of the estimated coefficient on individualism, reducing it by around 40%.

In the fourth column, we include CIRI's measure of women's political rights, *wpol*, which is averaged over the period 2001–2010. Not only is the coefficient on individualism robust to this inclusion, the coefficient on women's political rights is itself insignificant. Thus, our results provide no evidence that women's economic rights are systematically related to their political rights. While somewhat odd, this finding is in line with the argument in Fernández (2014), which posit a central role for men in determining the economic rights enjoyed by women.

Next, we control for two measures of the quality of economic institutions derived from the *rule of law* and control for *corruption* variables from the *Worldwide Governance Indicators*. As seen in columns 5 and 6, both measures are highly statistically significant, as expected. In addition, while still statistically significant, the coefficient on individualism is reduced by roughly 30–40% in these specifications relative to our baseline estimate.

Table 5
Individualism and women's economic rights: institutional channel hypothesis.

Dependent Variable:	(1) wecon	(2) wecon	(3) wecon	(4) wecon	(5) wecon	(6) wecon
idv_index	0.250*** (3.505)	0.289*** (4.420)	0.333*** (5.528)	0.394*** (7.676)	0.270*** (4.027)	0.245*** (3.451)
voice	0.294*** (2.805)					
gastil		0.060** (2.502)				
polity			0.024* (1.859)			
wpol				0.002 (0.412)		
rule of law					0.286*** (2.774)	
corruption						0.299*** (2.912)
Baseline controls	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.148*** (6.639)	0.657*** (2.664)	0.976*** (5.202)	1.104*** (6.115)	1.218*** (6.854)	1.162*** (6.719)
# Observations	93	93	92	93	93	93
Adj. R^2	0.60	0.59	0.58	0.56	0.60	0.60

Notes. All variables are described in Appendix 1. Baseline controls include British legal origin, landlocked, and latitude. Standard errors are clustered by country. T-statistics in parentheses *** $p < 0.001$, ** $p < 0.05$, * $p < 0.10$.

Our results indicate moderate support for the *Institutional Channels Hypothesis* with significant empirical associations between women's economic rights and the quality of a country's political and economic institutions (Inglehart et al., 2002). Taken together, institutional channels explain as much as half of the relation between individualism and women's economic rights. Because measures of the quality of economic and political institutions tend to be highly correlated, it is not possible in practice to distinguish empirically between the economic and political variants of this hypothesis. However, we can clearly reject a strict version of the *Institutional Channels Hypothesis*, which holds that cultural values *only* affect women's economic rights indirectly, through their impact on the quality of economic and political institutions. Instead, our results consistently indicate that countries with similar levels of institutional quality but different cultural values are expected to have significant differences in women's economic rights.

6. Do culture and institutions interact?

The argument made at the outset of this paper is that cultural values associated with individualism affect the preference for robust women's economic rights. However, we have said little about the degree to which those preferences are realized in terms of policy outcomes. According to Davis and Williamson (2016, p 1059), the degree to which cultural preferences influence policy depends on the nature of a country's formal institutions: "[O]ne function of political and legal institutions is to aggregate and channel social preferences in the formation of social policy. Moreover, some formal institutions are more responsive to social preferences and, as a result, cultural values have a greater influence on [social policy] in the presence of these formal institutions. Finally, the differential sensitivity of formal institutions to social preferences gives rise to important complementarities between cultural values and formal institutions." We build from this work to examine how legal and political institutions channel cultural values into policy outcomes related to women's economic rights.

6.1. Legal institutions

Because of the adaptability of common law, we argue that a country's cultural values will matter more for social policy outcomes in countries with a common law legal tradition. As Glaeser and Schleifer (2002) note, in the common law tradition adjudication is relatively decentralized, an institutional structure that Ostrom (1990) finds fosters institutional innovation. In addition, Hayek (1945, 1960) argues that the central role of judge-made law in the common law tradition makes it inherently evolutionary, generating new law in response to legal conflicts, including those that arise from the gap between informal cultural values and formal law. Beck et al. (2003) provide evidence of the greater adaptability of law in common law countries. According to these arguments, we expect individualism to have greater influence on women's economic rights in common law than civil law countries.

Table 6 provides evidence for this hypothesis. In columns 1 and 2 we present subsample analysis for common law and civil law countries using the baseline model. While individualism matters for women's economic rights in both sets of countries, the coefficient on individualism is 60% larger in the common law sample, which is consistent with the contention that cultural values matter more for social policy in common law countries.

Table 6
Individualism, legal origin and women's economic rights: split samples.

	(1) OLS Common	(2) OLS Civil	(3) OLS All	(4) IV Common	(5) IV Civil	(6) IV All
idv_index	0.565***	0.354***	0.347***	0.639***	0.283***	0.307***
	(5.391)	(6.103)	(6.285)	(5.361)	(2.829)	(3.306)
British			0.078			0.085
			(0.480)			(0.510)
idv*British			0.214**			0.312**
			(2.078)			(2.505)
latitude and landlocked	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.357***	1.080***	1.108***	1.450***	0.985***	1.088***
	(5.297)	(5.487)	(6.229)	(5.774)	(4.412)	(5.435)
# Observations	22	66	89	22	65	88
Adj. R^2	0.79	0.50	0.59	0.79	0.49	0.58
First stage F-stat				15.81	14.82	10.30
Overid p-value				0.96	0.65	0.77

Notes. All variables are described in Appendix 1. *idv*British* is the interaction term created by multiplying the individualism index with British legal origin. We instrument individualism using rainfall variation and historical prevalence of infectious disease and *idv*British* with these two instruments interacted with British legal origin. Standard errors are clustered by country. T-statistics in parentheses *** $p < 0.001$, ** $p < 0.05$, * $p < 0.10$.

Next, we consider the entire sample, augmenting the baseline model to include an interaction term for individualism and the common law tradition. As seen in column 3, the coefficients on both individualism and the interaction term are positive and significant, confirming our results from columns 1 and 2. The point estimates for these coefficients imply that the effect of individualism on women's economic rights is 40% higher in common law than civil law countries. We also note that the coefficient on the common law variable is not significant.

Our results suggest that the common law tradition does not have an independent effect on women's economic rights. Instead, it serves to magnify the role of cultural values. Thus, common law tends to reduce women's economic rights in Nigeria, Pakistan and Malaysia, all of which have negative values for the individualism index. Common law, however, increases women's economic rights in more individualist countries, like Cyprus, South Africa and Singapore.[6]

Columns 4 and 5 present results for the two subsamples using a two-stage least squares estimator and instrumenting for individualism using rainfall variation and historical prevalence of infectious disease (see Table A4 in the Appendix for first stage results for Table 6). The results confirm our findings using OLS, in that the coefficient on individualism is positive and significant in both subsamples, but significantly larger for common law countries. Finally, in column 6, we instrument for both individualism and the interaction term using rainfall variation, historical prevalence of infectious disease and these two instruments interacted with the common law dummy variable. Again, both individualism and the interaction term are positive and significant in this specification. Thus, IV analysis supports the differential impact of individualism in common and civil law countries.

6.2. Political institutions

A country's political institutions may also influence the degree to which preferences of its population are transferred into policy. As Davis and Williamson (2016, p. 1060) note, "Democracy is widely interpreted as an institution for communicating and aggregating policy preferences (Rodrik, 2000; Caplan, 2007), with a particular emphasis on the preferences of the median voter or middle class (Downs, 1957). In contrast, in oligarchic societies policy choices are relatively insulated from popular pressure, with policies chosen to benefit political and economic elites." According to this argument, we expect individualist cultural values to matter more for women's economic rights in countries with democratic political institutions.

Evidence on this hypothesis is presented in Table 7. We focus the analysis on the average level of *voice*, which is the measure of democracy found to have the strongest empirical association with women's economic rights in Table 5. [7] In our first regression, we augment the baseline specification to include a term that interacts individualism and *voice*. As seen in column 1, the coefficients on both individualism and democracy are positive and statistically significant, indicating that both variables are associated with greater women's economic rights. In addition, the interaction term is positive and significant.

Taken at face value, the point estimates indicate that democracy is associated with greater women's economic rights for countries with an individualism index greater than −3.90, a threshold significantly below the minimum value of this variable. Similarly, individualism is associated with greater women's economic rights for a democracy score greater than −2.02, a threshold exceeded by all but a one country in our sample, Myanmar.

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[6] Aldashev et al. (2012) demonstrate that progressive legal reform in areas such as inheritance, marriage, and divorce can shift custom to improve welfare of disadvantaged populations.

[7] See Table A4 in the Appendix for first stage results for Table 7. The results in Table 7 are robust to using the Gastil to measure political rights. See Table A5 in the appendix.

Table 7

Individualism, democracy, and women's economic rights: split samples.

	(1) OLS All	(2) OLS High Voice	(3) OLS Low Voice	(4) IV High Voice	(5) IV Low Voice
idv_index	0.188**	0.433***	0.172	0.520**	0.359**
	(2.428)	(5.205)	(1.433)	(2.345)	(2.043)
Idv*voice	0.093*				
	(1.906)				
voice	0.363***				
	(3.316)				
Baseline controls	Yes	Yes	Yes	Yes	Yes
Constant	1.140***	1.554***	0.826***	1.697***	0.973***
	(6.686)	(5.318)	(3.695)	(4.030)	(4.047)
# Observations	93	48	45	46	45
Adj. R^2	0.62	0.54	0.08	0.53	0.02
First stage F-stat				3.20	15.19
Overid p-value				0.32	0.67

Notes. All variables are described in Appendix 1. *idv*voice* is the interaction term created by multiplying the individualism index with *voice*. We instrument individualism using rainfall variation and historical prevalence of infectious disease. Baseline controls include British legal origin, landlocked, and latitude. Standard errors are clustered by country. T-statistics in parentheses *** $p < 0.001$, ** $p < 0.05$, * $p < 0.10$.

While the predicted marginal effects of democracy are positive for most of the sample, the expected impact of democratic political reforms differ significantly depending on a country's cultural values. For example, a one-standard deviation increase in democracy in relatively individualistic Vietnam (individualism index = 0.57) is expected to produce a 0.41 point increase in the women's economic rights index, whereas the same degree of political reform in highly collectivist Egypt (individualism index = −2.68), generates a gain of only 0.11 points.

Columns 2 and 3 present subsample analysis and confirm our initial findings. There is a strong, positive and statistically significant relation between individualism and women's economic rights in the high democracy subsample. In contrast, the coefficient on individualism is insignificant for the low democracy subsample. The final two columns present subsample analysis using a two-stage least squares estimator and instrumenting for individualism using rainfall variation and historical prevalence of infectious disease. While the coefficient on individualism is significant in both regressions, it is 45% larger in the high democracy subsample.

Taken alone, each of the findings in Table 7 is subject to some reservations. The first three columns are subject to endogeneity bias, and confidence in the IV regressions would be greater with larger subsamples and stronger first stage results. It is notable, however, that our results all tell a consistent story. In particular, they are consistent with the argument that democratic political institutions play an important role in translating individualist cultural values into legal rights for women.

These results also suggest that democratic reforms may produce significant gains in women's economic rights for countries with relatively high levels of individualism. Specifically, democratizing may produce significant gains in women's economic rights for countries with relatively higher levels of individualism, such as Vietnam, Singapore, Uganda, Haiti and Nicaragua. However, democratic reforms in relatively collectivist societies, such as Egypt, may have very little impact on women's economic rights.

Our results from Tables 6 and 7 indicate that taken alone, highly individualist values may be insufficient to generate high levels of women's economic rights. Underlying cultural values interact with the structure of formal institutions to generate social policy outcomes. In particular, individualism has a greater impact on women's economic rights in countries with a common law legal system and democratic political institutions.

7. Conclusion

We advance and empirically support the hypothesis that individualism is an important determinant of women's economic rights. This association is robust to controls for the level economic development, key determinants of the level women's economic activity, proxies for patriarchal culture, and the use of IV techniques to address the endogeneity and measurement of individualism. We interpret our findings as support for the idea that individualist societies are more likely to view and value women as autonomous individuals, with a legitimate claim to independent goals and lives, rather than simply as members of various collectives. As a result, these countries are more likely to adopt legal structures that enhance and support women's economic rights.

Our findings also lead us to reject a strict version of the *Institutional Channels Hypothesis*, which holds that individualism only affects women's economic rights through its impact on the quality of economic and political institutions. In particular, the higher level of women's economic rights in more individualist countries is not simply a reflection of the fact that all individuals enjoy greater economic rights in these countries. Nor do we find that higher levels of democracy found in more individualist countries fully account for the level of economic rights afforded to women. Individualist values, and their

related preferences over social policy, appear to affect women's economic rights directly, and not simply indirectly through their influence on the quality of a country's economic and political institutions.

Finally, our analysis provides insight into how culture and institutions interact to shape laws that affect women's economic opportunities. In particular, we find evidence suggesting that individualism has a greater effect in common law and democratic countries. Our results indicate that without a common law legal heritage or democratic political institutions, there may be no formal mechanism through which the cultural preference for greater economic rights for women will find expression in actual policy outcomes. Our results also suggest that institutional reforms can be expected to affect women's economic rights differently depending on a country's underlying cultural values. The benefits from democratic transition are expected to vary considerably depending on a country's underlying cultural values.

In closing, we wish to note a number of promising areas for related research. First, and most broadly, there is much we do not know about the relation between culture and women's rights. Do other measures of patriarchal values predict women's economic rights, for example, and does individualism matter for women's political, reproductive or marital rights?

Second, the empirical literature on culture and gender inequality finds that markers of patriarchy dating back hundreds or even thousands of years, such as historical plow use or the timing of the agricultural revolution, affect the lives of contemporary women. Our work suggest that this remarkable persistence may in part reflect the influence of institutional factors related to women's economic rights. In keeping with this, there may be gains from attempts to disentangle the roles of cultural and institutional factors.

Third, our results suggest the need for historical and empirical research into the associations between political arrangements, cultural values and women's economic rights. In particular, our findings regarding the relation between democracy and women's economic rights may stand as something of a warning to those who see democracy as inexorably leading to greater gender equality. Given the close empirical relation between individualism and democracy (Licht et al., 2007; Davis and Abdurazokzoda, 2016), it may be that the historical experience of the West, in which the development of democratic political institutions played a critical role in the economic and social advancement of women, should not be interpreted as an inexorable rule.

Declaration of Competing Interest

We hereby declare that no situation of real, potential or apparent conflict of interest is known to us.

Appendix

Table A1
Data description and source.

Variable	Definition and Source
wecon	Index of women's economic rights reflects the de jure and de facto rights of women regarding a number of internationally recognized rights, including "Equal pay for equal work; Free choice of profession or employment without the need to obtain a husband or male relative's consent; The right to gainful employment without the need to obtain a husband or male relative's consent; Equality in hiring and promotion practices Job security (maternity leave, unemployment benefits, no arbitrary firing or layoffs, etc...); Non-discrimination by employers; The right to be free from sexual harassment in the workplace; The right to work at night; The right to work in occupations classified as dangerous; The right to work in the military and the police force." Cingranelli, Richards and Clay (Cingranelli et al., 2014).
wbl_index	Index reflecting gender equality in eight domains that affect women's economic opportunities, including mobility, work, pay, marriage, entrepreneurship, parenthood, assets, and pension. World Bank (2020) and Hyland et al. (2020).
idv_index	Index created by extracting the first principal component from the following four WVS questions: (1) Private ownership of business and industry should be increased vs. government ownership of business and industry should be increased, (2) People should take more responsibility vs. the government should take more responsibility to ensure that everyone is provided for, (3) whether a main goal is life is to make parents proud and (4) whether homosexuality is justified. A higher score reflects a greater level of individualism. Index is standardized with a mean of 0 and standard deviation of 1. Averaged across all respondents for a given country.
private_own	Based on a WVS question, coded from 1 to 10, where 10 indicates completely agree that government ownership of business and industry should be increased vs. private ownership of business and industry should be increased. Answers are reordered and averaged for respondents in a given country.
indv_resp	Based on a WVS question, coded from 1 to 10, where 10 indicates completely agree that government ownership of business and industry should be increased vs. private ownership of business and industry should be increased. Answers are reordered and averaged across respondents in a given country.
just_homo	Based on a WVS on whether homosexuality is justifiable, coded from 1 (never justifiable) to 10 (always justifiable), and averaged across respondents in a given country.
parents_proud	Based on a WVS dummy variable = 1 if agree or strongly agree that "One of my main goals in life has been to make my parents proud," is reordered and averaged across respondents in a given country.
rainvar	The natural log of the coefficient of intertemporal variation of monthly rainfall from 1900 to 2009. Davis (2016).

Table A1 (*continued*)

Variable	Definition and Source
disease	The number of seven infectious diseases historically prevalent in a country. Fincher et al. (2008).
pronoundrop	The share of a country's population speaking a language in which the expression of nominal pronouns is not required. From Davis and Abdurazokzoda (2016).
Controls	
British	Dummy variable coded 0 or 1: 1 indicates a country has English legal traditions. La Porta et al. (2008).
latitude	The absolute value of latitude of a country's capital. Easterly (2001).
landlocked	A dummy variable that takes a value of 1 if a country is landlocked. Easterly (2001).
income per capita	The natural log of real GDP per capita, PPP (constant 2011 international $). WDI (2020).
service	The share of the labor force in the service sector in 2010. WDI (2020).
industrial	The share of the labor force in the industrial sector in 2010. WDI (2020).
fertility	Total fertility rate (births per woman) in 2010. WDI (2020).
female edu	Average years of education, female, WDI (2020).
plow	The share of a country's population whose ancestors used the heavy plow. Alesina et al. (2013).
ag_revolution	The average years elapsed since the agricultural revolution in 2000, measured in millennia, for a country's ancestors. Borcan et al. (2018), adjusted for migration in the modern era using Putterman and Weil (2010).
climate	The suitability of a country's climate for agricultural production. Michalopoulos and Papaioannou (2013).
soil	The suitability of a country's soil for agricultural production. Michalopoulos and Papaioannou (2013).
oilrents	Oil rents (% of GDP) 2010. WDI (2020).
Religion dummies	Dummy variables that equal one if more than half of a country's population affiliated with Hinduism, Catholicism, Protestantism, Orthodox, Muslim, Buddhism, and Eastern religion, in 1900, respectively. Barro and McCleary (2003) and authors' calculations.
communism	The share of the 20th century that a country was communist. Authors' calculations and Barro and McCleary (2003)
gender_noun	One point is given to languages in which nouns are classified as either masculine or feminine and an additional point to languages in which the rules of gender assignment are both formal and semantic. Based on a country's dominant language. Davis and Reynolds (2018).
gender_pronoun	Measures the role of gender in the grammar of pronouns of a of the gender intensity of the pronouns of We also assign points to measure gender intensity of pronouns, assigning one point to languages in which there are gender distinctions in the third-person singular and a second point if there are also gender distinctions in the first- or second-person singular pronouns. We add these two measures together to create a gendered language index, which is matched to survey respondents using the language an individual speaks at home (Mavisakalyan 2015).
voice	The average of *Voice and Accountability*, 2001–2010. Kaufmann and Kraay (2020).
gastil	The average of the reordered sum of the Gastil Civil Liberties and Political Rights indices, 2001–2010 (Freedom House, 2000).
polity	The average of the *polity2* variable, 2001–2010. Polity V dataset.
wpol	The average of the CIRI WOPOL variable, which measures women's political rights, 2001–2010. Cingranelli, Richards and Clay (Cingranell et al,. 2014).
rule of law	The average of rule of law, 2001–2010. Kaufmann and Kraay (2020).
corruption	The average of control of corruption, 2001–2010. Kaufmann and Kraay (2020).

Table A2
First stage regressions for Table 4.

Dependent Variable:	(1) idv_index	(2) idv_index	(3) idv_index	(4) idv_index	(5) idv_index
rainvar	−1.316***	−1.285***	−1.447***	−1.014***	−0.926***
	(−4.831)	(−4.571)	(−3.617)	(−3.355)	(−3.720)
disease	−0.750**	−0.708**	−0.841**	−0.835***	−0.373
	(−2.464)	(−2.300)	(−2.473)	(−2.774)	(−1.580)
latitude	0.011	0.020	0.006	0.009	0.034***
	(0.961)	(1.582)	(0.467)	(0.871)	(3.829)
landlocked	−0.340	−0.465	−0.301	−0.392	0.340
	(−1.278)	(−1.635)	(−1.031)	(−1.494)	(1.615)
British	0.526*	0.492*	0.518*	0.480*	0.330
	(1.868)	(1.733)	(1.683)	(1.732)	(1.470)
plow		−0.432			
		(−1.214)			
ag_revolution		−0.033			
		(−0.496)			
climate			0.071		
			(0.113)		

Table A2 (*continued*)

Dependent Variable:	(1) idv_index	(2) idv_index	(3) idv_index	(4) idv_index	(5) idv_index
soil			−0.614		
			(−0.745)		
oilrents				−0.027**	
				(−2.122)	
religion and communism	No	No	No	No	Yes
Constant	−0.586	−0.362	−0.139	−0.359	−1.106***
	(−1.404)	(−0.704)	(−0.219)	(−0.850)	(−3.129)
# Observations	91	90	84	91	90
Adj. R^2	0.50	0.52	0.52	0.53	0.80

Notes: Each column of Table A2 provides the first stage regression results for the IV regressions presented in the corresponding column of Table 4. All variables are described in Appendix 1. We instrument individualism using rainfall variation and historical prevalence of infectious disease. Baseline controls include British legal origin, landlocked, and latitude. Standard errors are clustered by country. T-statistics in parentheses *** $p < 0.001$, ** $p < 0.05$, * $p < 0.10$.

Table A3
IV regressions with three instruments.

Dependent Variable:	(1) wecon	(2) wecon	(3) wecon	(4) wecon	(5) wecon
idv_index	0.500***	0.481***	0.441***	0.502***	0.516***
	(5.382)	(4.927)	(4.075)	(4.607)	(2.679)
latitude	0.003	0.007	0.006	0.003	−0.003
	(0.526)	(0.917)	(0.694)	(0.477)	(−0.338)
landlocked	−0.344	−0.397*	−0.372*	−0.346	−0.322
	(−1.621)	(−1.825)	(−1.715)	(−1.600)	(−1.564)
British	0.088	0.077	0.0319	0.086	−0.010
	(0.490)	(0.434)	(0.165)	(0.474)	(−0.052)
plow		−0.146			
		(−0.655)			
ag_revolution		−0.019			
		(−0.452)			
climate			−0.079		
			(−0.206)		
soil			0.195		
			(0.375)		
oilrents				−0.001	
				(−0.072)	
religion and communism	No	No	No	No	Yes
Constant	1.324***	1.430***	1.187***	1.332***	1.482***
	(5.671)	(5.119)	(2.800)	(5.687)	(4.248)
# Observations	73	73	68	73	73
Adj. R^2	0.60	0.60	0.63	0.60	0.65
First stage F-stat	12.29	10.71	8.21	9.21	5.60
Overid p-value	0.77	0.85	0.39	0.75	0.68

Notes: All variables are described in Appendix 1. We instrument individualism using rainfall variation, historical prevalence of infectious disease and pronoun drop. Baseline controls include British legal origin, landlocked, and latitude. Standard errors are clustered by country. T-statistics in parentheses *** $p < 0.001$, ** $p < 0.05$, * $p < 0.10$.

Table A4
First Stage results for Tables 6 and 7.

	(1)	(2)	(3)	(4)	(5)	(6)
Table, Column	T6, C4	T6, C5	T6, C7	T6, C7	T7, C4	T7, C5
Sample	Common	Civil	All	All	High Voice	Low Voice
Dependent Variable:	idv_index	idv_index	idv_index	idv*British	idv_index	idv_index
rainvar	−1.368***	−1.517***	−1.529***	−0.0002	−0.100	−0.958***
	(−3.302)	(−4.412)	(−4.654)	(−0.002)	(−0.171)	(−5.058)
disease	−0.926*	−0.528	−0.466	0.0957	−0.996**	−0.154
	(−1.873)	(−1.422)	(−1.359)	(0.796)	(−2.246)	(−0.626)
British*rain			0.459	−1.030***		
			(0.759)	(−4.865)		
British*disease			−0.826*	−1.572***		
			(−1.886)	(−10.26)		
latitude	0.035	0.008	0.011	0.004	0.024	−0.012
	(1.607)	(0.636)	(1.005)	(1.094)	(1.355)	(−1.430)
landlocked	0.554	−0.408	−0.277	0.074	−0.224	0.033
	(1.138)	(−1.317)	(−1.002)	(0.761)	(−0.534)	(0.158)
British			0.727**	0.373***	0.369	0.250
			(2.398)	(3.516)	(0.885)	(1.123)
Constant	−0.649	−0.527	−0.663	−0.168	−0.280	−0.732**
	(−1.074)	(−1.114)	(−1.562)	(−1.132)	(−0.413)	(−2.450)
# Observations	22	69	89	89	46	45
Adj. R²	0.80	0.45	0.53	0.76	0.49	0.51

Notes: Each column of Table A4 provides the first stage regression results for the IV regressions presented in Tables 6 and 7. All variables are described in Appendix 1. We instrument individualism using rainfall variation and historical prevalence of infectious disease. Baseline controls include British legal origin, landlocked, and latitude. Standard errors are clustered by country. T-statistics in parentheses *** $p < 0.001$, ** $p < 0.05$, * $p < 0.10$.

Table A5
Individualism, gastil democracy, and women's economic rights.

	(1)	(2)	(3)	(4)	(5)
	OLS	OLS	OLS	IV	IV
Dependent Variable:	All	High Gastil	Low Gastil	High Gastil	Low Gastil
idv_index	0.0222	0.446***	0.200*	0.554**	0.325**
	(0.144)	(5.398)	(1.783)	(2.281)	(2.088)
Gastil	0.083***				
	(3.155)				
Idv*Gastil	0.029*				
	(1.945)				
landlocked	−0.111	−0.533**	0.116	−0.534**	0.084
	(−0.739)	(−2.265)	(0.602)	(−2.239)	(0.445)
latitude	0.005	−0.001	0.010*	−0.006	0.012**
	(1.227)	(−0.106)	(1.758)	(−0.428)	(2.035)
Constant	0.524**	1.630***	0.749***	1.753***	0.837***
	(2.149)	(7.196)	(4.030)	(5.113)	(4.257)
# Observations	93	47	46	45	46
Adj. R²	0.61	0.57	0.13	0.54	0.11
First stage F-stat				2.70	19.72
Overid p-value				0.24	0.57

Notes: Countries in the High Gastil sample have a Gastil index of 7.9 or above. All variables are described in Appendix 1. In columns 4 and 5, we instrument individualism using rainfall variation and historical prevalence of infectious disease. Standard errors are clustered by country. T-statistics in parentheses *** $p < 0.001$, ** $p < 0.05$, * $p < 0.10$.

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