

RESEARCH ARTICLE

Individualism, institutions, and patriarchal attitudes

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Abstract

This study examines how individualism influences patriarchal gender norms across 93 countries, using data from the Integrated Values Surveys. We hypothesize that individualism, emphasizing personal autonomy and egalitarian values, reduces patriarchal attitudes directly and indirectly through formal institutions. Our findings reveal a robust negative association between individualism and patriarchal attitudes, with a one-standard deviation increase in individualism linked to a 0.78 standard deviation decrease in patriarchal attitudes. This association holds across various controls and instrumental variable techniques addressing endogeneity. Mediation analysis shows that institutions, particularly liberal democracy and legal gender parity, mediate 5% to 37% of this association. These results underscore individualism's role in promoting egalitarian gender norms and suggest that culturally aligned institutional reforms, such as strengthening women's economic rights or democratic participation, can amplify these effects.

Keywords: culture; gender norms; individualism; institutions; patriarchy

Introduction

Patriarchal gender norms, which prioritize male authority and traditional gender roles, create barriers to women's economic and social opportunities, perpetuating gender inequalities in labour market participation, earnings, and leadership roles (Bertrand, 2020; Goldin, 2021). While historical factors such as agriculture practices (Alesina et al., 2013; Hansen et al., 2015), religion (Norris and Inglehart, 2002; Seguino, 2011; Davis and Gao, 2020), and gendered language (Davis and Reynolds, 2018; Mavisakalyan, 2015) are shown to influence contemporary patriarchal attitudes, the channels through which these historical legacies operate are not fully understood.

This study addresses this gap by examining how individualism influences patriarchal attitudes both directly and indirectly through formal institutions. Individualism-collectivism represents a society's perspective of the self, with individualistic cultures viewing the self as an autonomous entity and collectivist societies perceiving the self as interdependent, rooted within a network of social systems and obligations prioritizing group goals (Gorodnichenko and Roland, 2011, 2017).

We adopt individualism as our primary cultural lens due to its universalist implications, viewing it as a fundamental cultural orientation that shapes patriarchal attitudes, which prioritize group hierarchies and traditional gender roles. Moreover, individualism is empirically linked to formal institutions such as democracy and women's economic rights, which may further shape gender norms (Licht et al., 2007; Davis and Williamson, 2022). While alternative perspectives may view patriarchal norms as equally primordial or co-evolving independently with individualism, we hypothesize that individualism's emphasis on autonomy and universal rights directly reduces patriarchal attitudes and

indirectly influences them through formal institutions. By leveraging plausibly exogenous historical factors that influence individualism, such as climatic and epidemiological conditions, we explore associations between culture, institutions, and patriarchal attitudes.

Davis and Williamson (2019) argue that individualism promotes an understanding of women as autonomous agents who are the moral equals of men. This understanding supports gender egalitarian values and is directly at odds with norms that prioritize gender hierarchies. In contrast, collectivist cultures emphasize group obligations, reinforcing gender-based hierarchies and prioritizing women's roles within family and community. Consistent with this hypothesis, participation in collective religious activities (Seguino, 2011) and strong family ties (Alesina and Giuliano, 2014) predict traditional attitudes towards working women and the gender division of labour. Davis and Williamson (2020) provide evidence that individualism reduces the strength of family ties.

We view collectivism and patriarchy as distinct but reinforcing cultural constructs. Collectivist societies support social hierarchies, including gender-based hierarchies, which facilitate collective goal setting and action. Similarly, patriarchal values support collectivism via their impact on the acceptability of gender hierarchies. Patriarchy, as a specific cultural value centred on male dominance, is one of many potential hierarchies that collectivism may enable. Individualism is a broader cultural orientation empirically linked to a universalist perspective that promotes not only gender equality but also greater acceptance of racial minorities (Kramer, 2023), immigrants (Davis and Deole, 2021), and homosexuality (Davis, forthcoming).

Individualism is also linked to formal institutions, defined as integrated systems of rules that structure social interactions, enabling and constraining individual behaviour (Hodgson, 2006, 2025). For example, individualism promotes democracy and rule of law (Licht et al., 2007; Davis and Abdurazokzoda, 2016; Cline and Williamson, 2017), economic freedom (Nikolaev and Salahodjaev, 2017; Pitlik and Rode, 2017; Davis and Dutta, 2024), and women's economic rights (Davis and Williamson, 2022). These institutional structures may, in turn, influence support for patriarchal values. If individualism increases democratic rights, for example, this may increase the presence of women in society, altering perceptions of appropriate roles for women (Welzel et al., 2002). In addition, as women gain economic rights and increase labour force participation, gender norms can shift as it becomes commonly accepted that women work outside the home and hold jobs traditionally held by men.

The theoretical literature on institutions is of two minds on the association between formal and informal institutions. One perspective, advanced by North (1990) and Williamson (2000), posits a hierarchy where informal institutions, including culture, form the foundation for formal institutions. The other line of thought emphasizes the coevolution of culture and institutions, as modelled by Bisin and Verdier (2023), who draw on Putnam et al.'s (1993) work linking modern civic capital to mediaeval political institutions. Similarly, Greif and Tabellini (2017) argue that cultural traits and institutions are mutually reinforcing, showing that distinct historical conditions shape unique social organizations that perpetuate specific cultural values.

We examine the links between historical factors related to individualism and collectivism, formal institutions, and contemporary measures of patriarchal social values. We first hypothesize that individualism has a *direct negative effect* on patriarchal attitudes by promoting the legitimacy of individual goals and self-determination. Second, we anticipate that individualism may have an *indirect effect* on patriarchal attitudes, operating through formal institutional channels of influence.

Our study contributes to the literature in several key ways. First, it provides robust evidence of a negative association between individualism and patriarchal attitudes across 93 countries. In the baseline model, a one-standard deviation increase in individualism is associated with a 0.78 standard deviation decrease in our patriarchal attitudes index (PAI). This association holds across various controls, alternative measures of individualism, and the use of instrumental variable techniques.

Second, we empirically identify institutional channels through which individualism may influence patriarchal attitudes. While individualism remains significant when controlling for institutions, we find that measures of democracy and women's legal rights exert a significant negative influence on patriarchal attitudes. Mediation analysis reveals that democracy, legal gender parity, and women's

political rights collectively account for 47% of the impact of individualism on patriarchal attitudes, with over half of that impact due to legal gender parity.

Third, our findings offer policy insights by identifying institutional pathways that can channel individualism's egalitarian effects. Attempts to treat culture directly as a policy variable often lead to human rights abuses, such as forced conversions during the Spanish Inquisition or the Westernization of indigenous peoples. However, if a substantial portion of individualism's influence operates through identifiable national institutions, these institutional channels offer policymakers an alternative pathway to shape patriarchal attitudes.

We build directly on Davis and Williamson (2019), who demonstrate a negative association between individualism and patriarchal attitudes at the individual level. Extending their analysis to the country level, as we do here, allows us to examine the role of formal institutions in mediating this relationship. By documenting the indirect effects of individualism on patriarchal attitudes, this paper advances our understanding of the cultural and institutional determinants of gender norms. It aligns with literature linking individualism to diverse outcomes, including income per capita (Davis, 2016; Gorodnichenko and Roland, 2011), innovation, and patenting rates (Gorodnichenko and Roland, 2017), regulation (Davis and Williamson, 2016, 2018; Cline and Williamson, 2017; Cline et al., 2021), the structure of the family (Davis and Williamson, 2020), and tolerance towards others (Davis and Deole, 2021; Kramer, 2023; Davis, forthcoming).

Data

To measure patriarchal attitudes, we use data from the Integrated Values Surveys (IVS), a combination of the European Value Survey and the World Value Survey (WVS), covering over 115 countries between 1981 and 2022 (Haerpfer et al., 2021); however, we include survey responses through 2019 to avoid biases from the COVID-19 pandemic.

Following the approach in Davis and Williamson (2019) and Fike (2024), we use three IVS survey questions to measure patriarchal attitudes across three areas of social life: work, politics, and education. The questions are: (1) When jobs are scarce, men should have more right to a job than women, (2) On the whole, men make better political leaders than women, and (3) A university education is more important for a boy than for a girl. Each question is coded as the share of respondents in a country who agree or strongly agree with each respective statement and aggregated to the country level. Thus, a higher score indicates a more traditional perception of the role of women in society.

The patriarchal attitudes index (PAI) is created from extracting the first principal component from the three IVS patriarchal attitudes questions, reflecting the common variance among the attitudes. For PAI, the eigenvalue of the first component is 2.64, explaining 88% of the total variation across the three questions. The component weights are similar and substantial, ranging from 0.56 to 0.59, confirming that all three variables contribute meaningfully to the first component. The Cronbach's alpha for the PAI is 0.93, indicating high internal consistency of the standardized components. The index is standardized for ease of interpretation. The PAI negatively correlates with measures of women's empowerment such as female labour force participation (−0.50), the Women Business and the Law (WBL) legal gender parity index (−0.79), and the Cingranelli–Richards women's political rights index (−0.52).

To measure individualism, we follow several recent papers using data from the WVS/IVS (Beugelsdijk et al., 2015; Davis, 2016; Cline and Williamson, 2017; Davis and Williamson, 2016, 2018, 2019, 2020, 2022; Pitlik and Rode, 2017; Kramer, 2023). This approach offers advantages over established national measures of individualism. Hofstede (1980, 2001) and Schwartz's (2006) measures are based on older data and may not capture current values (Beugelsdijk et al., 2015). The IVS expands the sample size and increases the representation of less developed countries. Compared to Hofstede's measure, using the IVS-based measure expands the sample from 62 to 93 countries, a 50% increase, and it almost doubles the number of low- and middle-income countries.

Our method for measuring individualism closely follows Beugelsdijk, Maseland, and van Hoorn (2015) (BMH), who replicate Hofstede's individualism measure. BMH chose four WVS questions

measuring preferences for private versus government business ownership, making one's parents proud, and views on homosexuality and abortion. While we use the first three questions, we omit the abortion question due to its potential link with patriarchal attitudes. Instead, we include a measure of individual versus government responsibility (Davis, 2016; Di Tella et al., 2007; Davis and Williamson, 2022).

Our questions capture individualistic values as described by Hofstede (2001), including self-reliance, personal independence, privacy, weaker family ties, reduced social conformity, and a preference for market competition. For instance, an individual who finds homosexuality justifiable expresses tolerance and the belief in a private life. Believing in private over government ownership reflects support for market competition and capitalism. Placing less importance on making parents proud indicates weaker family ties. Valuing individual over government responsibility highlights a belief in autonomy and individual incentives. Each question thus indirectly captures attitudes aligned with individualistic values.

The individualism index is created by extracting the first principal component from these four questions, reflecting common variation among the components. The eigenvalue of the first component is 2.56, explaining 64% of the total variation in the data. The component weights are all above 0.40 in absolute value, and Cronbach's alpha for the individualism index is 0.81, confirming strong internal consistency of the standardized components. A higher score reflects greater individualism. The index is standardized for ease of interpretation.

Countries ranking highest on the PAI include Saudi Arabia, Egypt, and Iraq, suggesting these countries hold more traditional views of women in society. Ranking at the bottom of the PAI are Iceland, Denmark, and Sweden. Denmark, Switzerland, and Sweden are the most individualistic countries in our sample. Tunisia, Egypt, and Jordan rank at the bottom of the individualism index, representing more collectivist cultures.

Data are combined to create a cross-section for up to 93 countries from 1981 to 2019. The sample ends in 2019 to avoid biases from the COVID-19 pandemic. Summary statistics are reported in an online appendix, Appendix A.¹ Variable definitions and sources are listed in online Appendix B. Online Appendix C lists all countries included in the estimations.

Individualism and support for patriarchal attitudes

Our empirical analysis examines the link between individualism and patriarchal attitudes in three parts. This section evaluates the total effect of individualism on patriarchal attitudes, demonstrating a strong, negative robust association. Section *Addressing endogeneity and measurement error* addresses issues related to the endogeneity of individualism, and Section *Institutional channels of influence* investigates institutional factors that mediate the association between individualism and patriarchal attitudes.

Baseline estimations

To investigate the relation between individualism and patriarchal attitudes, we estimate a series of models that take the form:

$$attitude_c = \alpha + \beta individualism_c + \gamma X_c + \varepsilon_c$$

in which c indexes countries, $attitude_c$ is the patriarchal attitudes index or one of its components, $individualism_c$ is a measure of individualism, X_c is a vector of control variables, and ε_c is an error term. The focal variable in this specification is *individualism* and, as noted earlier, we expect the coefficient on individualism to be negative, so that individualism is associated with less support for patriarchal attitudes. We use both Ordinary Least Squares (OLS) and IV methods.

In the baseline specification, we include four control variables as proxies for institutional quality, *oil* (% of Gross Domestic Product (GDP)), a country's share of oil rents in 2019, *latitude*, the absolute value

¹The online appendix can be found at <https://doi.org/10.5281/zenodo.16937748>.

of latitude, *landlocked*, a dummy variable for landlocked status, and *common law*, a dummy variable for the common law tradition. Ross (2008) provides empirical evidence of a strong negative relationship between oil rents and women's economic and political empowerment. The absolute value of latitude is included as an exogenous measure of institutional quality (Hall and Jones, 1999). Being landlocked slows the spread of ideas (Voigt, 2024) and may insulate a country from international norms regarding gender roles. The common law tradition is associated with the protection of private property rights (La Porta et al., 2008).

Column 1 of Table 1 presents the baseline model. The coefficient on the individualism index is negative and significant at the one percent level, showing that individualism is associated with less support for patriarchal attitudes. The point estimate indicates that a one-standard deviation increase in individualism, equivalent to the cultural distance between Russia (individualism = -0.67) and Puerto Rico (individualism = 0.35) or Puerto Rico and Australia (individualism = 1.33), is associated with a decrease in the PAI of just over three-fourths of a standard deviation, which is roughly the difference in PAI between France (PAI = -1.31) and Guatemala (PAI = -0.56). Among the control variables, only oil rents are significant at conventional levels.

Next, we use individual components of the PAI as the dependent variable. As seen in columns 2–4, the coefficient on individualism is negative and highly significant in all three regressions. Columns 5–8 provide evidence on the relationship between the PAI and the components of the individualism index. The coefficient on each component variable is significant at the one percent level and has the expected sign. In column 9, all four components of the individualism index are entered simultaneously. The coefficients on these variables have the expected sign and are significant at the five percent level or higher. These findings suggest that the association between individualism and patriarchal attitudes is not driven by any single component of the PAI or individualism indices. The strong empirical associations between support for patriarchal attitudes and the tastes for *government ownership* and *government responsibility* are particularly noteworthy, as these variables primarily reflect economic preferences rather than gender-related attitudes. This suggests that individualism's influence on patriarchal attitudes stems from a broader cultural orientation that shapes both social and economic preferences.

In the final three columns, we consider the robustness of our results to using alternative measures of individualism from Beugelsdijk et al. (2015) and Hofstede (2001) and a measure of autonomy derived from Schwartz (2006). All three measures are negative and significant at the one percent level, indicating that our results are not driven by the construction of our measure of individualism. Our individualism index has a 0.95 and 0.74 correlation with the BMH and Hofstede individualism variables, respectively, and a 0.82 correlation with Schwartz's autonomy index. Going forward, we focus primarily on the individualism index, preferring it to the BMH measure on *a priori* grounds and to the Hofstede and Schwartz measures because it is available for a larger and more representative sample.

Robustness: historical patriarchy

To examine the robustness of the association between individualism and patriarchal attitudes found above, we introduce a variety of control variables that are conceptually or empirically linked to patriarchal attitudes or gender inequality. We introduce most controls sequentially due to sample size constraints. Time-varying controls are measured using 2019 data or as close to that year as possible. See online Appendix B for variable descriptions.

In column 1 of Table 2, we include variables associated with structural shifts in the economy that may influence the economic opportunities available to women. These include the natural log of per capita income and its square, which capture modernization (Inglehart and Norris, 2003) and the feminization U-Curve (Uberti and Douarin, 2023; Davis, 2024), sectoral shares of GDP (Boserup, 1970; Boelmann et al., 2021), and the share of exports in GDP (Chen and Hu, 2023). In column 2, we control for three variables that reflect the gender division of labour: women's educational attainment, the female labour force participation rate, and the fertility rate. As seen in columns 1 and 2, individualism is robust to the inclusion of these variables.

Table 1. Individualism and patriarchal attitudes

Dep. Variable:	(1) PAI	(2) Men right to job	(3) Men better leaders	(4) University for boy	(5) PAI	(6) PAI	(7) PAI	(8) PAI	(9) PAI	(10) PAI	(11) PAI	(12) PAI
Individualism	−0.78*** (0.06)	−0.76*** (0.09)	−0.82*** (0.06)	−0.60*** (0.07)								
Gov ownership					0.43*** (0.09)				0.17** (0.08)			
Make parents proud						0.73*** (0.10)			0.17* (0.10)			
Justifiable: homosexuality							−0.70*** (0.07)		−0.42*** (0.09)			
Gov responsibility								0.54*** (0.08)	0.21** (0.09)			
Individualism BMH										−0.86*** (0.08)		
Hofstede Individualism											−0.64*** (0.12)	
Schwartz Autonomy												−0.51*** (0.07)
Oil (% GDP)	0.03*** (0.01)	0.04*** (0.01)	0.03*** (0.01)	0.03** (0.01)	0.05*** (0.01)	0.04*** (0.01)	0.04*** (0.01)	0.05*** (0.01)	0.03*** (0.01)	0.03*** (0.01)	0.06*** (0.01)	0.02 (0.06)
Latitude	0.01* (0.00)	0.01** (0.01)	0.02** (0.00)	0.00 (0.01)	−0.01 (0.01)	0.01** (0.01)	−0.00 (0.00)	−0.01** (0.00)	0.01 (0.01)	0.02** (0.01)	0.01 (0.01)	−0.01** (0.01)
Landlocked	0.23 (0.17)	0.15 (0.17)	0.29* (0.17)	0.26 (0.20)	0.43** (0.21)	0.22 (0.17)	0.07 (0.19)	0.24 (0.18)	0.20 (0.18)	0.25 (0.17)	0.08 (0.29)	0.05 (0.20)

(Continued)

Table 1. (Continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dep. Variable:	PAI	Men right to job	Men better leaders	University for boy	PAI	PAI	PAI	PAI	PAI	PAI	PAI	PAI
Common law	0.22	0.17	0.28*	0.18	0.24	0.07	0.01	0.09	0.19	0.17	0.57**	−0.35
	(0.17)	(0.17)	(0.14)	(0.24)	(0.23)	(0.21)	(0.17)	(0.21)	(0.17)	(0.17)	(0.26)	(0.21)
Constant	−0.52**	−0.56**	−0.72***	−0.25	−0.06	−0.65**	−0.14	0.10	−0.44*	−0.79**	−0.96**	0.15
	(0.22)	(0.23)	(0.21)	(0.27)	(0.27)	(0.27)	(0.22)	(0.23)	(0.23)	(0.26)	(0.39)	(0.28)
# observations	93	93	93	93	93	93	93	93	93	93	62	42
Adjusted R ²	0.69	0.64	0.68	0.46	0.39	0.50	0.62	0.51	0.69	0.65	0.46	0.61

Notes: Detailed variable descriptions are provided in online Appendix B. Robust standard errors are shown in parentheses.

***, **, and *denote significance at 1%, 5%, and 10%, respectively.

Table 2. Individualism and patriarchal attitudes, total effects

Dep. variable: PAI	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Individualism	−0.77***	−0.55***	−0.74**	−0.54***	−0.78***	−0.83***	−0.78***	−0.84***	−0.63***
	(0.09)	(0.06)	(0.06)	(0.11)	(0.06)	(0.10)	(0.06)	(0.13)	(0.08)
GDP per capita (log)	−1.95*								
	(1.05)								
GDP per capita (log) ²	0.10*								
	(0.06)								
Exports (% GDP)	0.00								
	(0.00)								
Services (% GDP)	0.02								
	(0.01)								
Manufacturing (% GDP)	0.06***								
	(0.01)								
Agriculture (% GDP)	0.04**								
	(0.02)								
Female schooling		−0.05							
		(0.05)							
Female LFP		−0.02***							
		(0.01)							
Fertility		0.06							
		(0.10)							
Plough			0.38*						
			(0.19)						
Agricultural revolution			−0.01						
			(0.03)						
Religious Affiliations				yes					
Communism					0.13				
					(0.21)				
Gender_noun						0.16*			
						(0.09)			
Gender_pronoun						−0.40**			
						(0.14)			
Political ideology							0.02		
							(0.12)		
Hofstede masculinity								−0.00	
								(0.01)	
Hofstede power distance								0.01	
								(0.01)	
Hofstede uncertain avoid								−0.01***	
								(0.00)	

(Continued)

Table 2. (Continued)

Dep. variable: PAI	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Regional controls									yes
Constant	6.50 (5.23)	0.91* (0.48)	-0.50* (0.29)	-0.03 (0.29)	-0.52** (0.22)	-0.55 (0.35)	-0.64 (0.77)	-0.35 (0.53)	0.43 (0.29)
# observations	88	82	89	91	93	49	89	51	93
Adjusted R ²	0.79	0.75	0.68	0.76	0.68	0.79	0.67	0.74	0.79

Notes: Detailed variable descriptions are provided in online Appendix B. All specifications include controls for share of oil rents, absolute value of latitude, a landlocked dummy variable, and common law. Robust standard errors are shown in parentheses.

***, **, and *denote significance at 1%, 5%, and 10%, respectively.

We augment the baseline model with two variables related to the history of traditional agriculture, *plough*, which equals the share of a country's population with ancestors that used the heavy plough (Alesina et al., 2013), and *agriculture revolution*, which equals the number of years elapsed between the neolithic revolution and the year 2000 for the ancestors of a country's contemporary population (Hansen et al., 2015). Results are shown in column 3. While neither agricultural variable is significant, the coefficient on individualism is both negative and highly significant.

Next, we consider religion, which is empirically related to both patriarchal attitudes (Davis and Gao, 2020; Davis, 2024) and individualism (Davis, 2021) and thus may confound the relationship between the two. To address this concern, we include shares of each country's population that adhere to eight major religious traditions: Catholic, Protestant, Orthodox Christian, other Christian, Judaism, Islam, Hinduism, and Buddhism. As seen in column 4, individualism is robust to the inclusion of these variables.²

Communism is empirically linked to both gender equality (Klasen, 2019) and collectivist attitudes (Alesina and Fuchs-Schundeln, 2007), raising the possibility that our earlier results are biased. To address this issue, we include a measure of a country's history of *communism*, which equals the share of the 20th century during which a country had a communist government. As seen in column 5, its inclusion does not appreciably affect the estimated relationship between individualism and support for patriarchal attitudes.

Speaking a gendered language – one in which biological sex plays a significant role in the grammar of nouns or pronouns – is associated with significant consequences for gender equality and women's empowerment (Mavisakalyan, 2015; Davis and Reynolds, 2018; Santacreu-Vasut et al., 2013, 2014; Hicks et al., 2015; Davis et al., 2024). To see if this omission biases our results, we include measures that reflect the gender intensity of the grammar for nouns and pronouns in a country's dominant language. As seen in column 6, the empirical relation between individualism and patriarchal attitudes is robust to the inclusion of these variables.

Finally, we consider the influence of additional cultural forces that might influence both individualism and patriarchal values. Columns 7–9 control for political ideology, three additional Hofstede cultural dimensions (power distance, uncertainty avoidance, and masculinity), and regional dummies. The coefficient on individualism is negative and highly statistically significant in all three specifications, reducing concern over cultural omitted variable bias.

Collectively, we find a strong negative association between individualism and support for patriarchal attitudes, robust to the use of alternative measures of key variables and to the inclusion of controls for factors that play an important role in determining patriarchal attitudes or gender inequality.

²Catholicism's (negative) coefficient is the only religion that is statistically significant at conventional levels in the estimation. Religious shares' coefficients are not displayed in the table to save space.

Addressing endogeneity and measurement error

This section presents instrumental variable analysis addressing two concerns regarding the results presented above. First, as is often the case with survey-based variables, the measurement of individualism is subject to considerable error. Classical measurement error tends to bias coefficient estimates towards zero, and survey-based measures are subject to additional sources of bias (Bertrand and Mullainathan, 2001). The second concern is that cultural variables are likely to be endogenous (Bowles, 1998). In particular, attitudes towards traditional gender roles may be codetermined with attitudes towards homosexuality or the subjective importance of making one's parents proud, giving rise to simultaneity bias in our estimates of the coefficient on individualism.

We address these concerns by instrumenting for individualism using climatic and epidemiological instruments common in the literature. Davis (2016) contends that rainfall variability enhances the value of collectivist social bonds, strengthening informal risk-sharing mechanisms and increasing the benefits of collectivism in high-risk environments, and provides evidence of a robust negative relationship between historical rainfall variation and contemporary measures of individualism. Thus, our first instrument, *ancestral rainfall variation*, is a measure of rainfall variation experienced by the ancestors of a county's contemporary population (Davis, 2016).

The second instrument, *historical disease*, is a measure of the historical prevalence of infectious disease from Murray and Schaller (2010), which is theoretically and empirically linked to collectivism. Thornhill and Fincher (2014) argue that exposure to disease tends to empower authoritarian leaders and undermines social support for individual rights, which may be seen as conflicting with public health efforts. In addition, Nikolaev and Salahodjaev (2017) argue that exposure to disease increases the intensity of insider-outsider distinctions, leading to greater group identification.

Table 3 presents second-stage results for two-stage least squares regressions in which we instrument for individualism using *ancestral rainfall variation* and the *historical disease*. Corresponding first-stage regression results are presented in online Appendix D. We begin with our baseline IV specification, including the four baseline controls. As seen in column 1, the coefficient on individualism is large, negative, and significant at the one percent level, suggesting there is a negative association between support for patriarchal attitudes and the exogenous variation in individualism identified by our instruments. As seen in column 2, we obtain similar results using Hofstede's measure of individualism.

Note also that the IV coefficient is roughly 30% larger than the corresponding OLS coefficient from column 1 of Table 2. This finding is consistent with significant attenuation bias in the OLS estimates arising from error in the measurement of individualism and is a common finding in the empirical literature investigating the impact of individualism on a wide array of social outcomes, including per capita income (Gorodnichenko and Roland, 2011), business regulation (Davis and Williamson, 2016), and Lesbian, Gay, Bisexual and Transgender rights (Davis, forthcoming).

The quality of our instruments is assessed using first-stage F-statistics and Sargan's (1958) overidentifying restrictions test, reported in the final two rows of Table 3. In column 1, the first-stage F-statistic is 29.2, exceeding the Stock and Yogo (2005) critical value of about 20 for 5% maximal IV size distortion with two instruments and one endogenous regressor, indicating strong instruments. Across models 6–11, most exceed this threshold, except column 7 and column 11, which are still above the critical value for 10% distortion. In column 2, when using Hofstede's measure, the lower F-statistic suggests weaker instruments. Column 5 also reports an F-statistic slightly below the critical value, indicating potential weakness. Thus, these results should be interpreted with caution. Sargan's test *p*-values (0.94 in column 1) suggest that we cannot reject instrument validity, conditional on at least one valid instrument.

Next, we consider a variety of specifications motivated by concerns regarding the exclusion restriction. We consider two specifications in which we exclude one instrumental variable and include the other instrument as a control. As seen in columns 3 and 4, neither instrument is significant when included as a control variable and the coefficient on individualism remains highly significant and is nearly identical in value to that in column 1. While not conclusive, these regressions fail to support the claim that the instruments in our baseline specification are invalid.

Table 3. Individualism and patriarchal attitudes, instrumental variable analysis

Panel A: 2SLS											Panel B: 3SLS	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dep. Variable: PAI	PAI	PAI	PAI	PAI	PAI	PAI	PAI	PAI	PAI	PAI	PAI	Indv
Individualism	−1.02***		−1.00**	−1.03***	−0.92***	−1.15***	−0.57**	−1.05***	−0.99***	−1.03***	−0.99***	
	(0.13)		(0.32)	(0.18)	(0.11)	(0.17)	(0.23)	(0.16)	(0.14)	(0.15)	(0.13)	
Hofstede Individualism		−2.15**										
		(0.80)										
Historical disease			0.03									−0.46
			(0.35)									(0.32)
Ancestral rainfall variation				−0.02								−0.38
				(0.30)								(0.27)
Trust						2.70**						
						(0.91)						
Religious Affiliations							yes					
Religious attendance								0.06				
								(0.09)				
Plough									0.37*		0.31	
									(0.20)		(0.20)	
Agricultural revolution									−0.02		0.001	
									(0.03)		(0.02)	
Climate										0.05		
										(0.29)		
Soil										−1.36**		
										(0.48)		

(Continued)

Table 3. (Continued)

Panel A: 2SLS										Panel B: 3SLS		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dep. Variable: PAI	PAI	PAI	PAI	PAI	PAI	PAI	PAI	PAI	PAI	PAI	PAI	Indv
PAI												−0.45
												(0.33)
Constant	−0.88***	−3.64**	−0.89***	−0.90**	−0.87**	−1.21***	0.02	−1.06**	−0.82**	−0.14	−0.92***	−0.52*
	(0.26)	(1.44)	(0.26)	(0.29)	(0.27)	(0.33)	(0.36)	(0.48)	(0.27)	(0.33)	(0.24)	(0.31)
# observations	83	61	83	83	73	83	83	83	83	75	83	83
Adjusted R ²	0.63	−0.36	0.64	0.63	0.70	0.70	0.77	0.62	0.65	0.70	0.68	0.74
First-stage F-stat	29.18	4.04	12.20	19.70	18.72	33.77	7.19	22.75	28.50	19.90	28.50	2.10
Overid p-value	0.94	0.99	−	−	0.57	0.61	0.86	0.97	0.93	0.98	0.93	0.11

Notes: Instruments are historical disease and ancestral rainfall variation in columns 1, 2, 6, 7, 8, 9, 10, and 11; ancestral rainfall in column 3; historical disease in column 4. In column 5, instruments are historical disease, ancestral rainfall variation, pronoun drop, and LIFE. Column 12 instruments PAI with plough and ancestral agriculture revolution. First stage results for Panel A are presented in online Appendix D. Detailed variable descriptions are provided in online Appendix B. All specifications include controls for share of oil rents, absolute value of latitude, a landlocked dummy variable, and common law. Robust standard errors are shown in parentheses.

***, **, and *denote significance at 1%, 5%, and 10%, respectively.

The fact that the two instruments for individualism used in column 1 are motivated by starkly different theoretical arguments makes it more likely that at least one of these instruments is valid and, thus, that conditions for Sargan's test to provide information on instrumental validity are met. To bolster the claim that we have at least one valid instrument, we consider a specification in which we employ two additional instruments, *pronoun drop* (Davis and Abdurazokzoda, 2016) and labour intensity of traditional agriculture (*LIFE*) (Ang, 2019). As first pointed out by Kashima and Kashima (1998), the ability to drop subject pronouns reduces the importance of the speaker relative to the predicate of a sentence and is, thus, associated with collectivism. Ang (2019) provides evidence that labour-intensive farming practices are associated with collectivism.

As seen in column 5, the use of these additional instruments has little effect on the coefficient on individualism or the implications of the overidentifying restrictions test. Thus, the use of additional instruments motivated by very different theoretical arguments, based in linguistics and agricultural economics, bolsters empirical support for the notion that our primary instruments are in fact valid.

Next, we address a series of challenges to the exclusion restriction motivated by the existing empirical literature. Rainfall variation has been linked to social trust, church membership, and the values of religious traditions, each of which may have independent influence on patriarchal attitudes (Buggle and Durante, 2017; Davis, 2021). Rainfall variation may also affect patriarchal attitudes through its impact on agricultural development. A final concern is that our instruments may be correlated with aspects of traditional agriculture that are known to affect patriarchal values. We address these issues by controlling for measures of social trust, religious affiliation, the frequency of attendance at religious services, the suitability of a country's climate and soil for agricultural production, historical plough use, and time in agriculture. As seen in columns 6–10, the coefficient on individualism is negative and significant in each of these specifications.

As noted earlier, the acceptance of a gender hierarchy may serve to legitimize social hierarchies more broadly and, thus, support collectivist social values. In keeping with this perspective, we consider a two-equation model in which both individualism and patriarchal attitudes are treated as determinants of the other cultural variable. To identify this system of equations, we exclude *ancestral rainfall variation* and *historical disease* from the equation with the patriarchal attitudes index as the dependent variable and *plough* and *agriculture revolution* from the equation with the individualism index as the dependent variable. This system of equations is estimated using generalized least squares, which controls for the potential correlation of the error terms across equations.

Results are presented in Panel B, columns 11 and 12. As seen in column 11, our findings confirm the existence of a strong negative relationship between the exogenous component of the individualism index and patriarchal attitudes. In contrast, exogenous variation in the PAI does not have a significant impact on individualism, though given the low first-stage F-statistic in column 12, this finding may in part reflect the weakness of our instruments for the PAI. That said, given the absence of empirical evidence of reverse causation, we employ a single equation model for the remainder of the analysis.

This section provides evidence of a strong, negative, statistically significant relationship between the exogenous component of individualism and the patriarchal attitudes index. We consider a variety of specifications to address concerns over the exclusion restriction. While it is not possible to prove the validity of any particular set of instruments, none of the specifications we consider provides evidence that calls the exclusion restriction into question. Thus, our findings are consistent with individualism having a causal effect on patriarchal attitudes.

Institutional channels of influence

Individualism likely influences patriarchal attitudes through direct cultural mechanisms, promoting egalitarian values, and indirect institutional pathways that influence gender norms. This dual influence is rooted in the coevolution of culture and institutions, where cultural values shape institutional quality, and institutions, in turn, reinforce or modify social norms (Bisin and Verdier, 2023; Greif and Tabellini, 2017). Societies choose institutions to balance private disorder and state control, reflecting cultural

preferences (Djankov et al., 2003). In individualistic societies, there is a preference for formal institutions that protect individual freedoms, such as liberal democracies.

When formal institutions are perceived as legitimate, they influence behaviour as individuals conform to norms deemed appropriate within their cultural context (March and Olsen, 1998; Tyler, 1990). Thus, formal institutions gain legitimacy when aligned with individualism, encouraging norm internalization through repeated exposure to egalitarian practices. For example, democratic institutions increase women's visibility in public roles, signalling gender equity (Welzel et al., 2002), while legal protections erode traditional views by equalizing economic opportunities.

We examine formal institutions with theoretical and empirical links to both individualism and patriarchal attitudes: liberal democracy (Coppedge et al., 2023), economic freedom (Gwartney et al., 2024), rule of law and control of corruption (Worldwide Governance Indicators, 2021), the Women, Business, and the Law (WBL) index of legal gender parity (World Bank, 2024), and women's political rights (WPR) (Cingranelli et al., 2014).

As a first step in our empirical analysis, we add each of these institutions to our baseline OLS regression to determine which are empirically related to PAI. Results are presented in online Appendix E. Individualism is negative and significant at the 1% level across all specifications. Liberal democracy, legal gender parity, and women's political rights exhibit significant negative associations with the PAI. In contrast, control of corruption, economic freedom, and rule of law are insignificant, suggesting that they play a limited role in linking individualism to patriarchal attitudes. Given these findings, going forward, we focus the institutional analysis on liberal democracy, legal gender parity, and women's political rights.

To quantify the extent to which institutions mediate the association between individualism and patriarchal attitudes, we turn to mediation analysis, which decomposes the total effect of individualism on PAI into the *average direct effect* and the *average causal mediation effect* (ACME), which captures the indirect effect of individualism operating through institutions. Thus, we quantify the proportion of individualism's association with patriarchal attitudes that operates through institutions. We employ both OLS and instrumental variable (IV) mediation analyses, instrumenting individualism with ancestral rainfall variation and historical disease prevalence to address its endogeneity.

Table 4 reports the results.³ In Panel A (OLS), the total effect of individualism on PAI is consistent, with coefficients around -0.77 . The ACME varies by mediator, ranging from -0.06 to -0.17 . Liberal democracy mediates 13.3% of the effect, the legal gender parity 22.2%, and women's political rights 7.8%. Importantly, individualism's direct effect remains statistically and economically significant.

Endogeneity most likely biases these estimations. Thus, we turn to IV mediation, estimating a series of equations using structural equation modelling (SEM), instrumenting for individualism, as presented below.

(1) First-Stage Regression (Instrumenting Individualism):

$$individualism_c = \alpha_0 + \alpha_1 Z_{1c} + \alpha_2 Z_{2c} + \alpha_3 W_c + \epsilon_{1c}$$

where Z_{1c} is ancestral rainfall variation, Z_{2c} is historical disease, W_c is a vector of baseline controls, and ϵ_{1c} is the error term.

(2) Mediator Equation:

$$institution_c = \beta_0 + \beta_1 \hat{X}_c + \beta_2 W_c + \epsilon_{2c}$$

where $\hat{X}_c$ is instrumented individualism, and ϵ_{2c} is the error term.

(3) Outcome Equation:

$$PAI_c = \delta_0 + \delta_1 \hat{X}_c + \delta_2 M_c + \delta_3 W_c + \epsilon_{3c}$$

³OLS mediation analysis is conducted using the medeff command in Stata by Hicks and Tingley (2011). IV mediation analysis is conducted in Stata using structural equation modelling (sem command in Stata) with bootstrapped standard errors.

Table 4. Individualism, institutions, and patriarchal attitudes, mediation analysis

Panel A: Single Mediation, OLS			
Mediator:	Liberal democracy	WBL index	WPR index
ACME	-0.10	-0.17	-0.06
	(-0.19 - -0.02)	(-0.27 - -0.09)	(-0.14 - 0.01)
Average direct effect	-0.66	-0.60	-0.71
	(-0.79 - -0.52)	(-0.71 - -0.48)	(-0.84 - -0.57)
Total effect	-0.76	-0.77	-0.77
	(-0.87 - -0.64)	(-0.88 - -0.64)	(-0.88 - -0.66)
Proportion Mediated	13.3%	22.2%	7.8%
	(0.16 - 0.22)	(0.20 - 0.27)	(0.07 - 0.09)
Panel B: Single Mediation, IV			
Mediator:	Liberal democracy	WBL index	WPR index
ACME	-0.22	-0.38	-0.13
	(-0.38 - -0.07)	(-0.62 - -0.14)	(-0.28 - 0.03)
Average direct effect	-0.80	-0.64	-0.89
	(-1.11 - -0.50)	(-0.90 - -0.38)	(-1.19 - -0.59)
Total effect	-1.02	-1.02	-1.02
	(-1.30 - -0.73)	(-1.30 - -0.73)	(-1.28 - -0.75)
Proportion Mediated	21.4%	37.3%	12.3%
	(0.07 - 0.37)	(0.17 - 0.57)	(-0.04 - 0.28)
Instrument F-stat	29.18***	29.18***	29.18***
Panel C: Simultaneous Mediation, IV			
Mediator:	Liberal democracy	WBL index	WPR index
ACME	-0.13	-0.30	-0.05
	(-0.26 - -0.004)	(-0.52 - -0.08)	(-0.15 - 0.04)
Average direct effect	-0.54		
	(-0.84 - -0.23)		
Total effect	-1.02		
	(-1.28 - -0.75)		
Proportion Mediated	12.70%	29.50%	5.20%
	(0.003 - 0.25)	(0.10 - 0.49)	(-0.05 - 0.15)
Instrument F-stat	29.18***		

Notes: ACME is Average Causal Mediation Effect. Panel A reports OLS single mediation analysis. Panel B shows instrumental variable single mediation analysis. Panel C shows instrumental variable simultaneous mediation analysis. Individualism is instrumented with historical disease and ancestral rainfall variation. Detailed variable descriptions are provided in online Appendix B. 95% confidence intervals are reported in parentheses.

where $\hat{X}$ is instrumented individualism, M_c is the institutional mediator, and ϵ is the error term. The indirect effect (ACME) is $\beta_1\delta_2$, and the average direct effect is δ_1 . The total effect is estimated via: $PAI_c = \pi_0 + \pi_1\hat{X}_c + \gamma_4W_c + \epsilon_4c$

Our IV mediation analysis instruments individualism with ancestral rainfall variation and historical disease prevalence, ensuring that the direct effect of individualism on patriarchal attitudes (δ_1) is robust

to measurement error and reverse causality. Lacking valid instruments for formal institutions, indirect effects through institutions like democracy may be upwardly biased, as institutions likely correlate with unobserved factors (e.g., modernization) that also reduce patriarchal attitudes, inflating the mediation effect. Patriarchal attitudes may also affect institutions, introducing reverse causality. Thus, the direct effect is robust to endogeneity concerns, but indirect effects remain associational due to unaddressed institutional endogeneity.

The IV mediation results are presented in Panel B. The total effect is larger (-1.02), consistent with reduced measurement error. The proportion mediated also increases. Liberal democracy mediates 21.4%, legal gender parity mediates 37.3%, and women's political rights mediates 12.3%, although women's political rights are no longer statistically significant. Individualism's direct effect also increases, ranging from -0.64 to -0.89 .

To account for correlations among the institutional mediators, we estimate a simultaneous IV mediation model (Panel C, Table 4). Legal gender parity significantly mediates 29.5% and liberal democracy significantly mediates 12.7% of individualism's effect on patriarchal attitudes. The direct effect remains statistically significant (-0.54), indicating individualism's influence beyond institutions.

These findings clarify how individualism reduces patriarchal attitudes. The robust direct effect supports its role in promoting gender equality by reducing adherence to patriarchal norms, while indirect effects align with culture-institution coevolution, where culture shapes institutions that reinforce egalitarian norms.

Conclusion

Our findings underscore the critical role of individualism in shaping patriarchal attitudes, both directly and indirectly through institutional channels. Importantly, we find that nearly half of the impact of individualism on patriarchal attitudes operates through formal institutions, the most important of which is legal gender parity.

From a policy perspective, our results suggest that institutional reforms, like strengthening democracy or women's economic rights, can amplify individualism's egalitarian effects, but success hinges on cultural legitimacy. Reforms are most effective in individualistic societies where universal rights are valued. Rwanda's post-1994 gender quotas succeeded by aligning with inclusive cultural narratives, leveraging local values to legitimize institutional change (Burnet, 2011). Conversely, reforms misaligned with cultural values, like Afghanistan's externally imposed women's rights efforts, risk backlash and reversal due to weak local cultural support (Kandiyoti, 2007). In collectivist societies, where group hierarchies are prioritized, adopting democratic or legal reforms may fail to shift patriarchal norms. Policymakers aiming to reduce patriarchal norms should pursue culturally aligned institutional reforms, ensuring legitimacy and minimizing resistance.

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