Chastity at Work

Anke Becker*

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Abstract

This paper provides evidence that variation in and patterns of women's labor force participation partly reflects persistent concerns over women's chastity: a societal disapproval of women spending time around men they are not related to. I test this hypothesis by linking the employment status of 1.8 million people across 122 countries to a measure of how strongly people's ancestors practiced pastoralism, a subsistence mode linked to concerns over women's chastity. In within-country analyses, I find that women who descend from more pastoral societies are substantially less likely to be employed today, while there is no such relationship for men. Conditional on working, women of pastoral descent are both more likely to work for a family member and to work at home, consistent with a chastity concerns mechanism. Moreover, a direct measure of culturally-embodied chastity concerns derived from historical societies' folklore texts similarly correlates with employment outcomes today. Finally, regions whose populations descend from more pastoral societies have more gender-segregated friendship networks today, suggesting that concerns over women's chastity are visible in social and professional ties more broadly.

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1 Introduction

Women's labor force participation varies strongly across countries. While more than 70 percent of women in Bolivia, Liberia, Cambodia, or Uganda participate in the labor market, only a little more than half of them do in Russia, Germany, Ecuador, Zambia or Indonesia, and less than 15 percent in Sudan, Jordan, Iran, or Afghanistan.[1] The variation in female labor force participation is similarly strong within countries. These differences are economically consequential. Women's market work is a large share of a country's potential labor supply, and the misallocation of talent that results when parts of the population do not enter the labor market has been shown to be quantitatively important for aggregate productivity (Hsieh et al., 2019). Understanding why women work in some places and not in others has accordingly been a central question in development and labor economics at least since Boserup (1970) and Goldin (1995).

Prior work has shown that much of this variation occurs between populations that face similar economic conditions and similar legal institutions. For instance, legal restrictions on women's work explain a limited share of the cross-country variation (Hyland et al., 2020); business training and credit raise men's business outcomes more than women's (Field et al., 2010); and giving women control over their own earnings changes their labor supply mainly where norms are not already binding (Field et al., 2021). A growing body of work consequently points at social norms as a constraint on women's employment (Jayachandran, 2021; Bursztyn et al., 2020; Alesina et al., 2013).

This paper studies one specific trait that plausibly constrains women's employment: concerns over women's chastity, by which I mean a pronounced societal disapproval of women spending time around men they are not related to. Participation in the labor market almost always requires contact with unrelated men, such as male colleagues, male supervisors, or male customers. Where such contact is regarded inappropriate for a woman, market work is socially costly. The presence of concerns over women's chastity should therefore affect the likelihood that women work in formal employment and, if they do, how and where.

To test this idea systematically, I need a measure of chastity concerns that varies across populations and that is not itself a product of contemporary labor market conditions. I use ancestral (pre-industrial) reliance on pastoralism – the subsistence form of herding animals that need to be taken out to pasture. Pastoralism has been argued and shown to have fostered a culture of heightened concerns over women's chastity (Abou-Zeid, 1966; Peristiany, 1966; Schneider, 1971; Becker, 2025). Because herding animals have to be taken to grazing grounds and guarded there against predators and thieves, pastoralism implied frequent and often prolonged absences of men from the settlement, which made women's behavior much harder to monitor than in agriculture.[2] These

[1] Based on data from 2023 from the ILO (International Labour Organization), see `https://ilostat.ilo.org/data/`.

[2] Animals that are herded and need to be taken out to pasture include cattle, horses, donkeys, reindeer,

monitoring problems generated the need for ways of ensuring women's chastity even when monitoring was not possible, and hence favored the evolution of customs and norms that disapprove of women freely interacting with men outside of the family (Becker, 2025).[3]

To test these implications, I combine contemporary individual-level data on labor market outcomes with historical data on the ways of life of ethnic groups around the world. The contemporary data come from the Demographic and Health Surveys (DHS) and the World Values Survey (WVS), which between them record respondents' employment and, in most countries and waves, their ethnicity or the language they speak at home. Based on the latter, I match respondents to the historical society of their ancestors in the *Ethnographic Atlas* (Murdock, 1967), a tabulated collection of information from ethnographies on more than 1,200 ethnic groups, which documents their ways of life in pre-industrial times. From this database I construct the measure of reliance on pastoralism following Becker (2025).[4] The resulting dataset covers 1.78 million individuals who live in 122 countries today and descend from 532 ethnic groups.

My empirical strategy compares individuals who live in the same country today but differ in how strongly their pre-industrial ancestors relied on pastoralism. To get at the gender-specific effect of pastoralism, I ask whether the comparison between pastoral and non-pastoral groups looks different for women than for men. Holding fixed the country of residence, I regress an indicator for whether a respondent is currently employed on an indicator for being female, their ancestral reliance on pastoralism, and the interaction of the two. In line with the hypothesis, the coefficient on the interaction term is negative and statistically significant. A one standard deviation increase in ancestral reliance on pastoralism lowers a woman's probability of being employed by 5.6 percentage points relative to a man's, which corresponds to about 11 percent of the employment rate among the women in my sample. For self-employment, the corresponding figure is 3.9 percentage points, or 14 percent of the female self-employment rate. The pastoralism effect for men is close to zero and insignificant in both cases. This gender specificity is crucial for the interpretation: if the estimates reflected something about descent from pastoral groups in general, they should appear for men as well.

My estimates are unchanged when adding plausibly exogenous controls such as a respondent's age, year of interview fixed effects, and the year in which a society was observed by an ethnographer, and they remain negative and significant, at about half their size, once ancestral use of the plow in agriculture is interacted with the female indicator and a large set of potentially endogenous controls is added, including urban residence and fixed effects for religion, marital status and education. That the results survive conditioning on the plow is important, since ancestral use of the plow

camels, sheep and goats. In contrast, pigs, dogs, bees and poultry are domesticated animals that are not herded, and keeping them involves no comparable male absence.

[3]Potentially, other aspects about pastoralism further fostered concerns over women's chastity, such as patrilineal inheritance.

[4]For evidence on the validity of the *Ethnographic Atlas*, see Bahrami-Rad et al. (2021).

in agriculture has itself been shown to drive variation in today's female labor force participation (Alesina et al., 2013).

In a second step, I provide evidence for a causal interpretation. I make use of the fact that historical reliance on pastoralism was largely determined by local ecological conditions. Following Becker (2025) and using data from Beck and Sieber (2010), I leverage the suitability of a group's historical homeland for pastoralism as an instrument. The resulting 2SLS coefficients are statistically significant and about twice as large as the OLS coefficients, a pattern that is consistent with measurement error in the ethnographic measure of reliance on pastoralism.

Next, I study which type of work pastoral women take up, conditional on working. A chastity concerns mechanism makes clear predictions regarding the choice over where to work. In particular, concerns over women's chastity prescribe to preferentially seek out work that prevents women from having unmonitored contact with unrelated men. To explore this idea, I first use information in the DHS on whether a working woman works for a family member or for someone else. Chastity concerns should be a barrier to working for someone else, whereas they are alleviated by working for a family member who can monitor the woman and whose presence makes contact with unrelated men less concerning. In line with this, among women who work, those whose ancestors relied more strongly on pastoralism are more likely to work for a family member: a one standard deviation increase in ancestral pastoralism raises this probability by 4 percentage points, or 7 percent of its mean.

Following the same logic, I also study the prevalence of working at home, a type of work that again reduces contact with outside men. In line with my previous results, I find that, conditional on working, women of pastoral descent are significantly more likely to work at home. Thus, overall, pastoral women are less likely to be employed, and when they work they are more likely to do it at home or in the presence of a family member.

These results are arguably consistent with a chastity concerns mechanism. To make this link more direct, I construct a more direct measure of culturally-embodied ancestral chastity concerns from the oral traditions of ethnic groups. Michalopoulos and Xue (2021) digitize Berezkin's catalogue of 2,564 folklore motifs and record which motifs appear in the oral traditions of more than 1,200 ethnic groups. I use an LLM to score every motif for the degree to which it expresses or presupposes a culture of concern over women's chastity – punishment of female infidelity, guarding and testing of wives and daughters, valorization of virginity and fidelity, and control over whom women may meet or marry – with content that portrays women's sexual freedom approvingly lowering the score. In the historical folklore data, this direct textual measure of chastity concerns strongly increases in ancestral reliance on pastoralism. Moreover, the measure of chastity concerns itself is significantly correlated with women's employment outcomes today. In within-country analyses, women who descend from groups whose folklore is more concerned with women's chastity are 4 to 5 percentage points less likely to be employed and 3 to 4 percentage points less likely to be

self-employed per standard deviation of the measure, with no corresponding relationship for men.

Finally, I ask whether the same culture is visible outside the labor market. If chastity concerns limit women's contact with unrelated men, they should show up in the structure of social relationships in general, not only in employment. Using data from Bailey et al. (2025) on the gender composition of Facebook friendship networks in 2,073 subnational regions, I find that regions whose populations descend from more pastoral societies have more gender-segregated friendship networks. The association is large across regions and across regions on the same continent; within countries it is smaller and only marginally significant, plausibly because measurement error in ancestral pastoralism is much larger in these region-level analyses than in individual-level ones.

This paper relates to the literature in economics that seeks to understand the temporal, spatial and cultural variation in the gender gap in labor market outcomes around the world (Teso, 2016; Goldin, 1995; Fernandez, 2007; Carranza, 2014; Fogli and Veldkamp, 2011; Grosjean and Khattar, 2019; Olivetti and Petrongolo, 2016; Hyland et al., 2020; Kleven et al., 2019). Within this literature, it is most directly related to research on the historical origins of that variation, such as work showing that contemporary variation in women's labor force participation can be traced back to the use of the plow in agriculture (Alesina et al., 2013). It extends this work in two ways. First, it makes use of variation in ancestral pastoralism, a form of subsistence whose cultural legacy differs from that of the plow in a specific and testable way. Second, it provides evidence on concerns over women's chastity as the underlying mechanism. It also builds on Becker (2025) and Becker (2026), which use the same historical measure and the same ecological instrument to study chastity-guarding practices and the fertility outcomes that follow from them. Cao et al. (2024) link a tradition of pastoralism to a present-day culture of honor and global conflict.

The paper also speaks to research in development economics that points to the role of concerns over women's chastity, and the resulting preference for keeping women segregated from men, in understanding why a gender gap in labor force participation exists and why it varies across groups. The extremely low female employment rate in the Middle East and parts of Africa is often attributed to the doctrine of 'purdah' – strict female seclusion (Jayachandran, 2021). Similarly, in Hindu tradition, men outside of the family are viewed as a source of 'pollution' for women, and the resulting norm of female seclusion is cited as a reason why lower-caste women in India often have more professional autonomy than higher-caste women, to whom the purity norm applies more strictly (Field et al., 2010; Jayachandran, 2021; Dean and Jayachandran, 2019).[5] This paper advances that literature in two ways: by measuring chastity concerns independently of the labor market outcomes they are meant to explain, and by showing that they account for part of the variation in the gender gap in employment across cultures. It also contributes to research on social norms and

[5]Using data from central rural India, Agte and Bernhardt (2023) show that the labor force participation of Hindu women varies with the presence of Adivasis, a non-Hindu group that does not adhere to purity norms.

women's labor supply (Bursztyn et al., 2020; Jayachandran, 2021; Bursztyn et al., 2017; Field et al., 2021; Kleven, 2023) and to the literature on occupational segregation (Fischbacher et al., 2023; Fernandez-Mateo and King, 2011).

Section 2 describes the data and the empirical strategy, section 3 the main results, section 5 the evidence on mechanisms, and section 6 the extension to the gender composition of social ties. Section 7 concludes.

2 Data and Empirical Strategy

Testing the hypothesis requires two different kinds of data: historical, ethnic group level information on how pre-industrial societies made a living, and contemporary, individual level information on labor market outcomes. This section describes both sources, explains how my main explanatory variable is constructed, details the procedure that links historical societies to present-day survey respondents, and lays out the regression specification that I use throughout the paper.

2.1 Historical Data on Ancestral Pastoralism

My historical data come from the *Ethnographic Atlas*, an anthropological database that collects information from ethnographies on more than 1,200 ethnic groups worldwide (Murdock, 1967). It records, at the ethnic group level, a society's subsistence, kinship organization, religious beliefs, settlement patterns, political organization, and institutional complexity. It is intended to reflect ancestral ways of living before colonization and industrialization, even though the exact timing at which a group was observed differs across groups. Most of the underlying ethnographies were written in the nineteenth and early twentieth century: in my sample, the median ethnic group was observed in 1920 and 82% of groups before 1950. The database was compiled by George Peter Murdock (Murdock, 1967; Murdock and White, 1969) and later extended by other authors. I use the version provided by D-PLACE (Kirby et al., 2016), which incorporates these extensions.[6]

Following Becker (2025), I construct my main explanatory variable – an ethnic group's historical reliance on pastoralism – by combining two variables from the *Ethnographic Atlas*: (i) the degree to which a society depended on animal husbandry for its subsistence (0–100%) and (ii) which animal was the predominant type in that society. I create an indicator that takes the value one if the predominant animal in a society classifies as a herding animal, i.e., sheep, cattle, horses, reindeer, alpacas, or camels, and zero otherwise, such as when the predominant animal is a non-herding species like pigs, dogs, or poultry, or when there are no domesticated animals at all. Multiplying

[6]See Bahrami-Rad et al. (2021) who show that the historical group-level accounts correlate with contemporary survey data.

this indicator with a society's reliance on animal husbandry yields the measure of historical reliance on pastoralism. Formally,

$$\text{pastoralism}_j = \text{animal husbandry}_j \times \mathbb{1}_j^{\text{herded animal}},$$

where $\text{animal husbandry}_j$ denotes society j's reliance on animal husbandry and $\mathbb{1}_j^{\text{herded animal}}$ indicates whether the predominant animal in that society was a species that needs to be taken out to pasture.

Across the ethnic groups in my sample, historical reliance on pastoralism averages 22% (±16%), with 4% of groups relying on pastoralism not at all, and a maximum of 93% reliance.[7] Throughout the analysis, I standardize the measure to have mean zero and a standard deviation of one, so that coefficients can be read as the effect of a one standard deviation increase in ancestral reliance on pastoralism.

The *Ethnographic Atlas* also provides other historical variables I use, which play three distinct roles. The first is the year in which an ethnic group was observed by ethnographers, which I control for throughout so that the estimates do not confound ancestral subsistence with the historical period from which the ethnographic record stems. The second is an indicator for the ancestral use of the plow in agriculture, the explanatory variable in Alesina et al. (2013), coded as one for around 20% of the ethnic groups in my sample. The plow matters twice in what follows: as a potential confounder, since plow agriculture is itself a determinant of women's employment today and is negatively correlated with pastoralism, and, in section 5.1, as a comparison case whose cultural legacy runs through a gendered division of labor rather than through concerns about women's contact with unrelated men. The third group comprises the jurisdictional hierarchy above the local community, settlement patterns, and the tightness of kinship structure (Enke, 2019). These are features of ancestral social organization that pastoralism itself may have shaped, so that they are potential mediators as much as potential confounders; they therefore enter only the third specification described in section 2.4. Finally, the *Ethnographic Atlas* entry on which sex participated in pastoralism is the basis of the test in section 5.2.

2.2 Contemporary Data on Labor Market Outcomes

The contemporary individual-level data come from the Demographic and Health Surveys (DHS) and the World Values Survey (WVS).

The DHS are nationally representative household surveys that have been conducted in more than 90 countries, predominantly in the developing world. Their central focus is the health, empowerment, and living situation of women, and the main samples therefore consist of women of

[7] Weighted by the number of respondents, the mean is 26% (±15%). See Becker (2025) for the distribution across all 1,202 societies in the *Ethnographic Atlas*.

reproductive age (15 to 49); a subset of surveys fields a parallel, and much smaller, questionnaire for men. The country samples are large, with typically between 5,000 and 30,000 households being surveyed in each wave. For my purposes, the DHS surveys have two advantages. First, they ask about respondents' employment in a way that is comparable across countries and waves. Second, they ask working respondents who they work for, which allows me to distinguish employment inside and outside the family in section 5.1.

The WVS are nationally representative surveys conducted in almost 100 countries that ask a wide range of questions about the "beliefs, values and motivations of people throughout the world", among them a basic question on employment status. Their country samples are considerably smaller than those of the DHS, with a median of about 1,000 respondents per wave and country, but they cover a much broader set of countries, including high-income countries that the DHS do not survey. Taken together, the two sources span survey years from 1986 to 2020.

My first outcome variable is an indicator for whether a respondent is currently employed. Neither survey allows me to separate the unemployed who are actively looking for work from those who are out of the labor force in a way that is comparable across countries and waves, so my outcome is current employment rather than labor force participation in the strict sense, and I use the two terms accordingly throughout. The DHS ask respondents directly whether they are currently working (yes/no). The WVS instead ask for a respondent's employment status, coded as full time, part time, self-employed, retired, housewife, student, unemployed, or other. I code the employment indicator as one if a DHS respondent states that they are currently working, or if a WVS respondent states that they work full time, part time, or are self-employed, and as zero otherwise. In the resulting sample of 1,782,243 respondents, 58% are employed; among men the employment rate is 75%, among women 51%.

My second outcome variable is an indicator for whether a respondent is self-employed. In the DHS, respondents who are coded as currently working are asked who they work for, with the response categories being a family member, someone else, or self-employed. I code the self-employment indicator as one for respondents who are coded as self-employed, either in this DHS question or in the WVS question on employment status, and as zero for all other respondents whose employment status is known, i.e., for respondents who work for a family member or for someone else as well as for respondents who do not currently work. Of the 1,501,986 respondents for whom this information is available, 27% are self-employed, with a higher rate among women (29%) than among men (19%). The denominator here is all respondents with a known employment status, so that the rate is unconditional and the comparison group includes both employees and respondents who do not work; table 9 in the appendix reports two alternative codings that restrict the comparison group in turn to non-workers and to employees. The prominence of self-employment, and in particular the fact that it is more common among women than among men, reflects the major role that small-scale own-account work plays in the developing countries in which most respondents in

this sample live.

Finally, for the subsample of working women in the DHS who report whether they work for a family member or for someone else, I construct an indicator for working for a family member. This variable is available for 255,541 women from 433 ethnic groups in 47 countries, of whom 55% work for a family member. I use it in section 5.1 to test the chastity-concerns mechanism directly.

2.3 Matching Respondents to Their Ancestral Society

Linking the two sources of data requires assigning each survey respondent the historical ethnic group from which they descend. Following the language-based matching procedure used by Alesina et al. (2013), Giuliano and Nunn (2016), and Bahrami-Rad et al. (2021), I rely on information on respondents' ethnicity or on the language that they speak at home.

For many countries and waves, the DHS directly elicit respondents' ethnicity. In these cases, each present-day ethnicity is first assigned its language through Glottolog (Hammarström et al., 2021), and a society from the *Ethnographic Atlas* is then assigned to that ethnicity if the two speak the same language. Where several societies in the *Ethnographic Atlas* spoke the same language, all of them are matched to the present-day ethnicity and their characteristics are averaged, reflecting the idea that societies speaking the same language are potentially closely related and should not be treated as independent observations. The match is unique in more than 90% of cases (Becker, 2025). Because averaging reduces the variation in the explanatory variable for the remaining cases, it works against finding the relationships documented below. For the remaining DHS surveys, which record the language a respondent speaks rather than their ethnicity, I assign respondents directly to the societies in the *Ethnographic Atlas* that speak the same language. The same is true for the WVS, which for most countries and waves does not record information on ethnicity that could be used to construct a match, but does record the language a respondent speaks at home.[8]

The resulting dataset comprises 1,782,243 individuals, 88% of whom come from the DHS and 12% from the WVS. They live in 122 countries today and descend from 532 different ethnic groups. For my empirical strategy, 103 of these 122 countries contain respondents from more than one ethnic group, and the within-country variation in ancestral pastoralism is substantial: regressing the standardized measure on country fixed effects yields an R^2 of 0.42, so that well over half of the variation in ancestral reliance on pastoralism is between ethnic groups who live in the same country today. In Kenya, for example, reliance on pastoralism was about 20% among the ancestors of today's Luo speakers and about 30% among the Kikuyu, compared with 50% among the Borana and more than 90% among the Maasai and the Somali. In Nigeria, the figure is about 10% for the

[8]Where the WVS does elicit ethnicity, the response categories are typically too coarse to be matched to a historical society, taking values such as "Black", "White", or "Hispanic". Respondents for whom neither ethnicity nor language is recorded, and respondents whose ethnicity or language cannot be matched to a society in the *Ethnographic Atlas*, are not part of my sample.

ancestors of today's Igbo and Yoruba speakers, 30% for the Hausa, and above 90% for the Fulani. Similar contrasts exist in Ethiopia, Cameroon, and Namibia.

2.4 Empirical Strategy

My empirical strategy compares the labor market outcomes of individuals who live in the same country today but whose ancestors differed in how strongly they relied on pastoralism, and it asks whether this comparison looks different for women than for men. Throughout, I estimate

$$y_{i,j} = \alpha + \beta \times \text{female}_i + \gamma \times \text{pastoralism}_j + \delta \times \text{female}_i \times \text{pastoralism}_j + \sum_c \eta_c \times \text{country}_i^c + \varepsilon_{i,j}, \quad (1)$$

where $y_{i,j}$ is an indicator for whether respondent i, who descends from ethnic group j, is employed or self-employed, female_i is an indicator for whether respondent i is a woman, pastoralism_j is the standardized measure of ethnic group j's historical reliance on pastoralism, and country_i^c is an indicator for the country in which respondent i lives. I include country fixed effects throughout because institutional differences across countries are an important determinant of women's labor force participation (Doepke and Tertilt, 2009; Anderson, 2018; Hyland et al., 2020). Since variation in the main explanatory variable occurs at the ethnic group level, the outcomes of individuals from the same ethnic group are not independent. I therefore cluster standard errors at the *Ethnographic Atlas* group level.

The coefficient of interest is δ, the coefficient on the interaction between ancestral pastoralism and the female indicator. It measures how much more strongly a one standard deviation increase in ancestral reliance on pastoralism is associated with the employment outcomes of women than with those of men. The hypothesis that pastoralism gave rise to norms and values that impose barriers on women's market work implies that δ is negative. The main effect γ captures the association for men, for which the hypothesis makes no prediction and which serves as a specificity test.

As in Becker (2025) and Becker (2026), I report three specifications for each outcome. The first is the baseline specification above, which includes only country fixed effects. The second adds plausibly exogenous controls: a respondent's age, year of interview fixed effects, the year in which their ancestral ethnic group was observed by ethnographers, and the ancestral use of the plow in agriculture, each of the last two also interacted with the female indicator where the specification is estimated on the pooled sample of women and men. The third adds a large set of further controls, all of which are potentially endogenous and some of which are plausibly a function of ancestral pastoralism itself and hence "bad controls". At the individual level, these are an indicator for living in an urban area and fixed effects for educational attainment, religion, and marital status; at the ethnic group level, they are the jurisdictional hierarchy above the local community,

settlement patterns, and the tightness of kinship structure (Enke, 2019). The three specifications estimate different things. The first two provide the association between ancestral pastoralism and the gender gap in employment among people who live in the same country. The second specification adds covariates that pastoralism cannot plausibly have caused. The third specification conditions on characteristics that a persistent culture of chastity concerns would itself be expected to shape, and therefore estimates a different quantity: the association that remains once those channels are controlled for. The first two are the specifications that I view as most appropriate, while the third serves as a sensitivity check, and its coefficient should not be read as a bound on the association in the first two.

3 Results

3.1 Descent from Pastoralism and Labor Force Participation

I begin by regressing the employment indicator on ancestral reliance on pastoralism separately for women and for men, holding fixed the country of residence. Table 1 presents the results; columns 1 to 3 report the estimates for women and columns 4 to 6 the estimates for men.

For women, descent from pastoralism is negatively associated with contemporary participation in the labor force. As column 1 shows, a one standard deviation increase in ancestral reliance on pastoralism lowers the probability that a woman is employed by 3.7 percentage points (s.e. 0.007), which corresponds to about 7% of the employment rate among the women in my sample. For men, in contrast, the point estimate is 0.002 (s.e. 0.009) and thus both economically and statistically indistinguishable from zero (column 4). The difference between the two is not a matter of precision: the estimate for men is bounded well away from the one for women, and the two samples are sufficiently large.

The two additional sets of controls described in section 2.4 leave these patterns intact. With plausibly exogenous controls, the coefficient for women is −0.038 (s.e. 0.006) and that for men 0.001 (s.e. 0.008); see columns 2 and 5. Adding the large set of further, potentially endogenous controls reduces the coefficient for women by a modest amount, to −0.033 (s.e. 0.010); for men it is −0.013 (s.e. 0.007), smaller in absolute value than the estimate for women and significant only at the ten percent level (columns 3 and 6). The association thus survives the inclusion of education, religion, marital status, and urban residence. Since these characteristics may themselves be shaped by ancestral culture, this specification is best read as a sensitivity check rather than as the preferred estimate of the overall relationship. The estimates are also unaffected by controlling for ancestral plow use, which Alesina et al. (2013) have been shown to shape contemporary female labor force participation, so the relationship documented here is not a restatement of theirs.

Figure 1 summarizes these patterns graphically. It plots employment against ancestral reliance

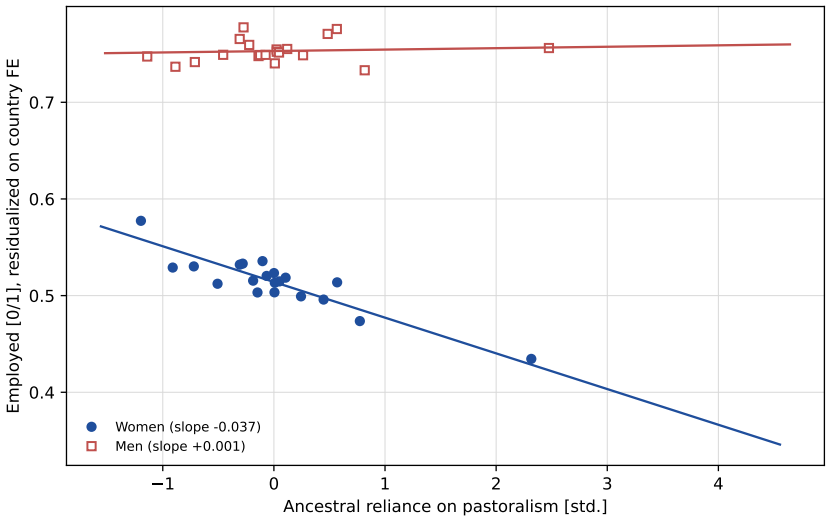

Figure 1: Binned scatter plot of the employment indicator against standardized ancestral reliance on pastoralism, separately for women (circles) and men (squares). Within each gender, both variables are residualized of country fixed effects and the sample mean is added back, so that only within-country variation is used. Each marker is one of 20 equal-sized bins; lines are the corresponding linear fits.

on pastoralism, separately for women and men, after residualizing both variables of country fixed effects within each gender, so that the comparison is strictly between individuals of the same gender who live in the same country.[9] For women, the relationship is negative and close to linear across the entire support of ancestral pastoralism, which indicates that it is not driven by a small number of extreme pastoralists such as the Somali or the Maasai. For men, the relationship is flat. The corresponding pooled regression with country × gender fixed effects yields a coefficient on the interaction between pastoralism and the female indicator of −0.038 (s.e. 0.011). This specification is the appropriate benchmark for the pooled estimates discussed next, since it allows the gender gap in employment to differ freely across countries.

Table 2 makes the comparison between women and men formal by estimating the pooled specification of section 2.4, in which the female indicator is interacted with ancestral reliance on pastoralism. Columns 1 to 3 use the employment indicator as the outcome and columns 4 to 6 use the self-employment indicator as the outcome. In line with my hypothesis, δ, the coefficient on the interaction term, is significantly negative. In the baseline specification of column 1, a one standard deviation increase in ancestral reliance on pastoralism lowers the probability that a woman is employed by 5.6 percentage points (s.e. 0.011) relative to a man, which corresponds to about 11% of the employment rate among the women in my sample. The main effect of pastoralism, which

[9]Residualizing of country fixed effects separately by gender is equivalent to residualizing the pooled sample of country × gender fixed effects.

captures the association for men, is 0.014 (s.e. 0.009) and insignificant. The pooled regression thus confirms that the relationship differs between women and men within the same specification. The interaction term remains negative and significant with the exogenous controls, which here include the interaction of plow use with the female indicator (−0.044, s.e. 0.011), and with the full set of potentially endogenous controls, though it shrinks to about half its baseline size in that specification (−0.029, s.e. 0.014).[10]

I next turn to self-employment. Columns 4 to 6 of table 2 show that the results carry over: a one standard deviation increase in ancestral reliance on pastoralism lowers a woman's probability of being self-employed by 3.9 percentage points (s.e. 0.010) relative to a man, or about 14% of the self-employment rate among women. Again, the main effect is close to zero, and again the interaction term remains negative and statistically significant at the 1% level with both the exogenous controls (−0.022) and the full set of controls (−0.020). Figure 2 displays the coefficients on ancestral pastoralism from the separate regressions for women and men, for both outcomes and all three specifications, and makes the overall pattern visible at a glance: a consistently negative and precisely estimated set of coefficients for women, and a set of coefficients indistinguishable from zero for men.

A natural question is whether the lower self-employment of women of pastoral descent reflects their lower employment overall or a shift out of self-employment and into wage or family work. Two alternative codings of the outcome speak to this, and table 9 in the appendix reports both. When self-employment is compared to not working at all, that is, when employees are excluded from the sample, the interaction term is −0.049 (s.e. 0.015), somewhat larger than in the baseline. When self-employment is compared to being an employee, that is, when non-working respondents are excluded, the interaction term is small and insignificant once controls are added. Descent from pastoralism therefore appears to lower women's employment overall rather than to reallocate working women across types of employment. The composition of employment among women who do work is the subject of section 5.1.

3.2 Instrumental Variable Results

The results so far establish a robust conditional correlation. In this section, I explore the extent to which it reflects a causal relationship. The identification problem is that ancestral reliance on

[10]It is worth being precise about where that reduction comes from, since it is not the potentially endogenous controls. Estimated on the sample on which column 3 is identified, the baseline coefficient is −0.044; adding age, year of interview fixed effects and the year of observation leaves it at −0.046; adding ancestral plow use and its interaction with the female indicator moves it to −0.029; and the urban indicator and the fixed effects for education, religion and marital status then change it by less than 0.001. Plow agriculture and pastoralism are alternative ancestral subsistence regimes, so their interactions with gender are correlated, and column 3 can be interpreted as the association that survives holding ancestral plow use fixed. The pattern is the same for self-employment.

Table 1: Descent from Pastoralism and Employment: Women and Men

	Dependent variable: Respondent is Employed [0/1]					
	Women			Men		
	(1)	(2)	(3)	(4)	(5)	(6)
Ancest. rel. on pastoralism [std.]	-0.037***	-0.038***	-0.033***	0.0015	0.0010	-0.013*
	(0.007)	(0.006)	(0.010)	(0.009)	(0.008)	(0.007)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Exogenous controls	No	Yes	Yes	No	Yes	Yes
Add. endogenous controls	No	No	Yes	No	No	Yes
Observations	1,259,720	1,252,545	874,669	522,518	515,979	396,026
R^2	0.105	0.143	0.167	0.044	0.092	0.198
No. of clusters	532	530	412	477	472	380

Notes. OLS estimates, standard errors in parentheses. Standard errors are clustered at the ethnicity level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Each column is a separate regression on the sample of women (columns 1–3) or of men (columns 4–6). Exogenous controls are respondents' age, year of interview fixed effects, the year an ethnic group was observed, and ancestral use of the plow in agriculture. Additional endogenous controls are, at the historical ethnic group level, the institutional hierarchy above the local level, settlement patterns, and a measure for the kinship structure, and, at the individual level, an indicator for whether a respondent lives in an urban versus rural area and fixed effects for educational attainment, religion, and marital status. Table 8 in the appendix reports the corresponding regressions for self-employment.

pastoralism is not randomly assigned: societies that herded animals may have differed from their agricultural neighbors in ways that matter for their descendants' labor market outcomes today. To address this, I make use of the idea that the degree to which pre-industrial societies relied on different types of subsistence was to a large extent determined by local environmental conditions such as soil composition, climate, and altitude. How strongly a society relied on pastoralism depended on how well animals that need to be herded could survive in its region, relative to how well crops could be grown there.[11] Following Becker (2025), who builds on data from Beck and Sieber (2010), I use a measure of the suitability of the land for pastoralism relative to agriculture within a 25 kilometer radius of an ethnic group's historical homeland centroid as an instrument for its reliance on pastoralism.

The exclusion restriction requires that the ecological suitability of a group's historical homeland for herding rather than agriculture affects the gender gap in employment among its descendants only through the subsistence that it induced. This is a strong assumption, since ecology also shaped settlement patterns, population density, property and inheritance institutions, and long-run access to markets, all of which could in principle have gender-specific consequences. Two features of the design make the assumption more palatable here than in a cross-sectional comparison of levels. First, country fixed effects absorb everything that these historical differences have produced at the

[11] See Becker (2025) for a more detailed discussion of this relationship and for the construction of the suitability measure.

Table 2: Descent from Pastoralism and the Gender Gap in Labor Force Participation

	Dependent variable:		
	Respondent is Employed [0/1]		
	(1)	(2)	(3)
Female	-0.15***	-0.11***	-0.16***
	(0.027)	(0.024)	(0.025)
Hist. Rel. on Pastoralism [Std.]	0.014	0.0042	-0.0068
	(0.009)	(0.008)	(0.009)
Pastoralism x Female	-0.38***	-0.30***	-0.20**
	(0.073)	(0.076)	(0.096)
Country FE	Yes	Yes	Yes
Year of Interview FE	No	Yes	Yes
Add. Exogenous Controls	No	Yes	Yes
Add. Endogenous Controls	No	No	Yes
Educ. Attainm. FE	No	No	Yes
Religion FE	No	No	Yes
Marital Status FE	No	No	Yes
Observations	1782243	1768524	1270494
R^2	0.114	0.152	0.181

Notes. OLS estimates, standard errors in parentheses. Standard errors are clustered at the ethnicity level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Data from *DHS* and *WVS*. Columns 1–3 use the employment indicator, columns 4–6 the self-employment indicator. Exogenous controls are respondents' age, year of interview fixed effects, the year an ethnic group was observed, ancestral use of the plow in agriculture, and ancestral use of the plow in agriculture interacted with the indicator for being female. Additional endogenous controls are, at the historical ethnic group level, the institutional hierarchy above the local level, settlement patterns, and a measure for the kinship structure, and, at the individual level, an indicator for whether a respondent lives in an urban versus rural area and fixed effects for educational attainment, religion, and marital status.

national level. Second, and more importantly, the coefficient of interest is on an interaction: a channel that violates the exclusion restriction has to operate on women differently than on men to generate the estimate, and the main effect of land suitability in the reduced form is in fact small and positive rather than negative.

Since the coefficient of interest is the one on the interaction between pastoralism and the female indicator, both pastoralism and its interaction with the female indicator have to be treated as endogenous, and both are instrumented: the former with land suitability, the latter with land suitability interacted with the female indicator.[12] The first stages, reported in table 10 in section B.2 of the appendix, behave as expected. A one standard deviation increase in land suitability for pastoral-

[12]The sample for this analysis is slightly smaller than the one in section 3.1, with 520 instead of 532 ethnic groups, because the land suitability data are not available for the Americas.

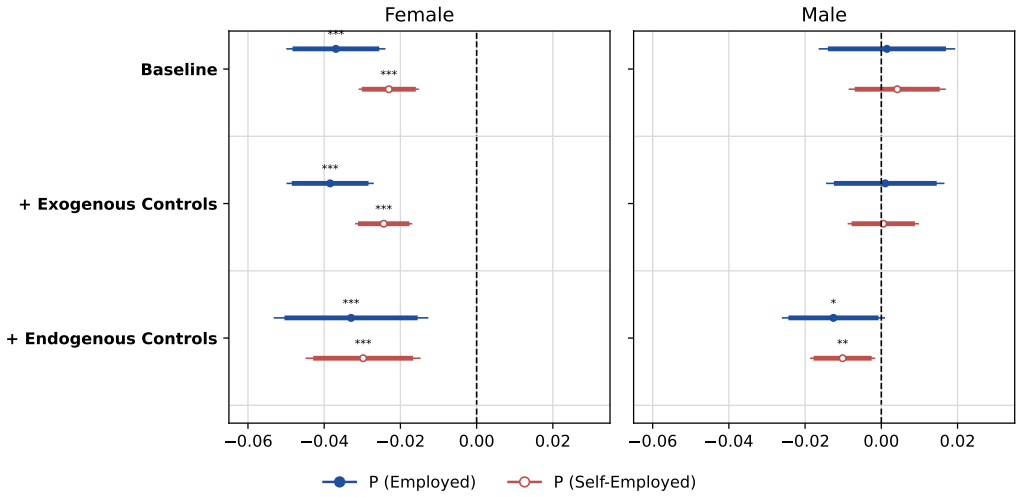

Figure 2: Coefficients on standardized ancestral reliance on pastoralism from separate regressions for women (left panel) and men (right panel), with 90% (thick) and 95% (thin) confidence intervals, for the outcome variables 'Respondent is employed [0/1]' (blue) and 'Respondent is self-employed [0/1]' (red). Baseline: country fixed effects only. Exogenous controls: age, year of interview fixed effects, the year an ethnic group was observed, and ancestral use of the plow in agriculture. Endogenous controls: at the historical group level, the institutional hierarchy above the local level, settlement patterns, and a measure for the kinship structure, and at the individual level, an indicator for whether a respondent lives in an urban versus rural area and fixed effects for marital status, religion, and educational attainment. Standard errors are clustered at the ethnicity level. Table 8 in section B.1 in the appendix reports the underlying coefficients, sample sizes and numbers of clusters.

ism raises standardized ancestral reliance on pastoralism by 0.41 (s.e. 0.101), and the interaction of land suitability with the female indicator predicts the interaction of pastoralism with the female indicator with a coefficient of 0.48 (s.e. 0.084); the cross-terms are small and insignificant, so that each instrument predicts its own endogenous regressor. The first-stage F-statistics on the excluded instruments range from 8.7 to 18.4 across the two first stages and two samples. These are not large, and with two endogenous regressors the conventional first-stage F-statistic is in any case not a sufficient diagnostic for the strength of identification of the interaction coefficient. The 2SLS estimates below should be read with that in mind; the reduced form, which does not require the first stage to be strong, carries the same message.

The reduced form is reported in table 11 in the appendix and already contains the main result. Ancestral land suitability for pastoralism *per se* does not depress contemporary labor market outcomes – its main effect is in fact slightly positive – but its interaction with the female indicator is negative and significant for both outcomes: −0.057 (s.e. 0.016) for employment and −0.037 (s.e. 0.014) for self-employment, and −0.038 and −0.033 respectively with the full set of controls. Women from ethnic groups whose historical homelands were better suited to herding than to crop-

Table 3: Instrumental Variable Approach: OLS and 2SLS Estimates

	Dependent variable:			
	Employed [0/1]		Self-Employed [0/1]	
	OLS	IV	OLS	IV
	(1)	(2)	(3)	(4)
Female	-0.25***	-0.25***	0.068***	0.070***
	(0.017)	(0.018)	(0.015)	(0.014)
Ancest. rel. on pastoralism [std.]	0.016*	0.032	0.019**	0.049*
	(0.009)	(0.024)	(0.009)	(0.029)
Pastoralism [std.] x Female	-0.059***	-0.12***	-0.044***	-0.079**
	(0.011)	(0.031)	(0.009)	(0.031)
Country FE	Yes	Yes	Yes	Yes
Observations	1,718,857	1,718,857	1,439,142	1,439,142
R^2	0.061	0.056	0.006	0.005
No. of clusters	520	520	520	520
First-stage F: pastoralism		8.74		10.58
First-stage F: pastoralism x female		16.02		18.43

Notes. OLS and 2SLS estimates, standard errors in parentheses. Standard errors are clustered at the ethnicity level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. In the 2SLS columns, standardized ancestral reliance on pastoralism and its interaction with the female indicator are instrumented with standardized land suitability for pastoralism relative to agriculture and its interaction with the female indicator. The OLS columns use the same sample as the corresponding 2SLS columns. First-stage F-statistics refer to the excluded instruments in each first stage.

ping are less likely to be employed and less likely to be self-employed today.

Table 3 presents the second-stage estimates alongside the OLS estimates on the same sample, so that the two are directly comparable. The 2SLS coefficient on the interaction term is −0.12 (s.e. 0.031) for employment and −0.079 (s.e. 0.031) for self-employment, in both cases negative, statistically significant, and about twice the size of the corresponding OLS estimates of −0.059 and −0.044 on the same sample. One explanation for the gap is measurement error: the *Ethnographic Atlas* measure of actual reliance on pastoralism is a noisy proxy for the ancestral way of life on which the cultural transmission operates, which attenuates OLS (Becker, 2025). It is not the only explanation. The instrument identifies a different source of variation than OLS, the effect may be heterogeneous across groups, and the exclusion restriction may fail. I therefore read the 2SLS estimates as evidence that the OLS association is not driven by whatever makes some groups choose pastoralism, rather than as a measurement of the undiluted effect. As in the OLS specifications, the main effect of pastoralism remains small, so that the instrumented variation, too, moves women's employment without moving men's.

4 Which Work?

Section 3 established an extensive-margin result: women who descend from more pastoral societies are less likely to work at all. This section turns to the women who do work and asks what kind of employment they are in. Chastity concerns make a prediction here that a general norm against women working does not. If what is costly is a woman's contact with men she is not related to, then among women who work, those of more pastoral descent should be concentrated in the work arrangements in which such contact is limited or monitored.

Two questions in the *DHS* speak to this. The first asks working respondents who they work for: themselves, a family member, or someone outside the family. The second question asks whether a working respondent works at home or away from home. Among the 146,569 women who answer both questions, the two outcomes are positively but only weakly related, with a correlation of 0.14.

Working for a Family Member. Working for a family member is an employment relationship in which a woman's contact with unrelated men is limited and in which her conduct can be observed by her own kin. I therefore hypothesize women of more pastoral descent to be more likely to work for a family member than for someone outside the family. The subsample consists of 255,541 women in 433 ethnic groups and 47 countries, 55% of whom work for a family member and 45% for someone else.

In line with my hypothesis, women who descend from ethnic groups that relied more strongly on pastoralism are more likely to work for a family member, conditional on working. As column 1 of table 4 shows, a one standard deviation increase in ancestral reliance on pastoralism raises this probability by 4.2 percentage points (s.e. 0.014), which corresponds to about 8% of the unconditional probability of working for a family member rather than for someone else. The relationship survives the full set of additional controls at 3.0 percentage points (s.e. 0.012) in column 2.

Working at Home. The second outcome asks whether a working woman works at home or away from it, which speaks more directly to whether her work brings her into contact with people outside her household. It is available for 316,887 women in 249 ethnic groups and 40 countries, 27.5% of whom work at home.

I find that, conditional on working, a one standard deviation increase in ancestral reliance on pastoralism raises the probability of working at home by 2.9 percentage points (s.e. 0.013), about 10% of the mean, and by 4.1 percentage points (s.e. 0.022) with the full set of additional controls; see columns 4 and 5 of table 4.

This result is distinct from the one on whether the employer is a family member. Controlling for fixed effects for the employer leaves the result unaffected. The reason is that the working-at-home result is concentrated entirely among the self-employed: within that group the pastoralism estimate

Table 4: Which Work, Given Work? Working for a Family Member and Working at Home

	Dependent variable:					
	Works for a Family Member [0/1]			Works at Home [0/1]		
	OLS (1)	OLS (2)	2SLS (3)	OLS (4)	OLS (5)	2SLS (6)
Ancest. rel. on pastoralism [std.]	0.042***	0.030**	0.15***	0.029**	0.041*	0.14**
	(0.014)	(0.012)	(0.042)	(0.013)	(0.022)	(0.068)
Ancestral plow use [0/1]	-0.084	0.0058	-0.13	0.022	0.059	0.033
	(0.072)	(0.045)	(0.116)	(0.070)	(0.063)	(0.173)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Full set of add. controls	No	Yes	No	No	Yes	No
Observations	255,541	229,058	249,652	316,887	282,253	307,354
R^2	0.222	0.373		0.055	0.073	
No. of clusters	433	365	425	249	212	243
First-stage F			24.8			12.0

Notes. OLS and 2SLS estimates, standard errors in parentheses. Standard errors are clustered at the ethnicity level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Sample: women in the *DHS* who currently work. In columns 1–3 the dependent variable takes value 1 if a woman works for a family member and 0 if she works for someone outside the family; the self-employed are not asked this question. In columns 4–6 it takes value 1 if she works at home and 0 if she works away from home. In columns 3 and 6, standardized ancestral reliance on pastoralism is instrumented with standardized land suitability for pastoralism relative to agriculture; the reported first-stage F-statistic refers to the excluded instrument. The full set of additional controls comprises respondents' age, an indicator for whether they live in an urban versus rural area, the year an ethnic group was observed, the institutional hierarchy above the local level, settlement patterns, a measure for the kinship structure, and fixed effects for the year of interview, educational attainment, and religion. It is the set used elsewhere in the paper minus marital status, which is not recorded in the source file for the works-at-home question; the same set is applied to both outcomes so that the two halves of the table are comparable.

is 5.0 percentage points (s.e. 0.011), against −0.2 percentage points (s.e. 0.017) among employees taken together. The self-employed are precisely the women whom the employer question leaves out, so the two results rest on close to disjoint parts of the working population.

A general gendered division of labor? Table 4 includes ancestral plow use in every column. This applies the specificity test of section 3 to the composition of employment rather than to its level. Alesina et al. (2013) show that descent from societies that historically used the plow in agriculture depresses women's labor force participation today, but in their account the mechanism is a gendered division of labor and the resulting view that the appropriate place for women is the home. This is distinct from a disapproval of women's contact with men outside the family. Ancestral plow use should therefore *not* predict whom a working woman works for or where she works. Indeed, it does not: the plow coefficient is statistically insignificant in all six columns, and the pastoralism coefficients are unaffected by its inclusion. This difference between the two forms of ancestral subsistence is difficult to reconcile with an account in which pastoralism operates through a general norm against women working.

IV estimates. Columns 3 and 6 instrument ancestral reliance on pastoralism with the suitability of a group's historical homeland for pastoralism relative to agriculture, exactly as in section 3.2. Both second-stage estimates are positive and statistically significant, at 0.15 (s.e. 0.042) for working for a family member and 0.14 (s.e. 0.068) for working at home, with first-stage F-statistics of 24.8 and 12.0. As in the main analysis, the instrumented estimates exceed their OLS counterparts, here by a factor of three to five rather than the roughly twofold gap in section 3.2. The same caveats about the exclusion restriction apply, and I read these columns for the sign and the significance of the estimates rather than for their magnitudes.

5 Mechanisms

Two features of pastoralism could account for the estimates in sections 3 and 4. The first is the culture of chastity concerns that pastoralism generated. The second is the near-absence of women from pastoral subsistence itself: in the vast majority of societies herding was done by men, which may have established the view that the appropriate place for women is around the home. They differ in what else they imply. The composition of women's employment, examined in section 4, is one such implication, and it favors the first account. Section 5.1 turns to a second: a measure of chastity concerns constructed directly from the oral traditions of ethnic groups. Section 5.2 tests the subsistence channel.

5.1 Chastity Concerns in Folklore

To measure culturally-embodied chastity concerns more directly I make use of information on the presence of such concerns in the oral traditions of ethnic groups. Michalopoulos and Xue (2021) digitize Berezkin's catalogue of 2,564 folklore motifs – short descriptions of narrative elements, such as *Test of chastity*, *Man mistakes his son for his wife's lover*, or *Chastity rewarded* – and record which of them are present in the oral traditions of more than 1,200 ethnic groups in the *Ethnographic Atlas*. I score every motif description from 0 to 10 for the degree to which it expresses or presupposes a culture of concern over women's chastity and control over women's sexuality – punishment of female infidelity, guarding and testing of wives and daughters, valorization of virginity and fidelity, and control over whom women may meet or marry – with content that portrays women's sexual freedom approvingly lowering the score.[13] For each ethnic group, the measure is the average

[13]The scoring was carried out by a large language model (Claude Opus, Anthropic), which was given a written rubric and the motif descriptions. Each motif was scored twice, in two independent runs that did not have access to each other's output, and the two scores were averaged; the correlation between the two runs' scores across motifs is 0.96. This establishes that the scoring is reproducible, not that it is valid; the group-level evidence below speaks to the latter. Of the 2,564 motifs, 13% receive a non-zero score, 3% a score of 3 or above, and 1.4% a score of 5 or above. The rubric, the motif-level scores from both runs, and

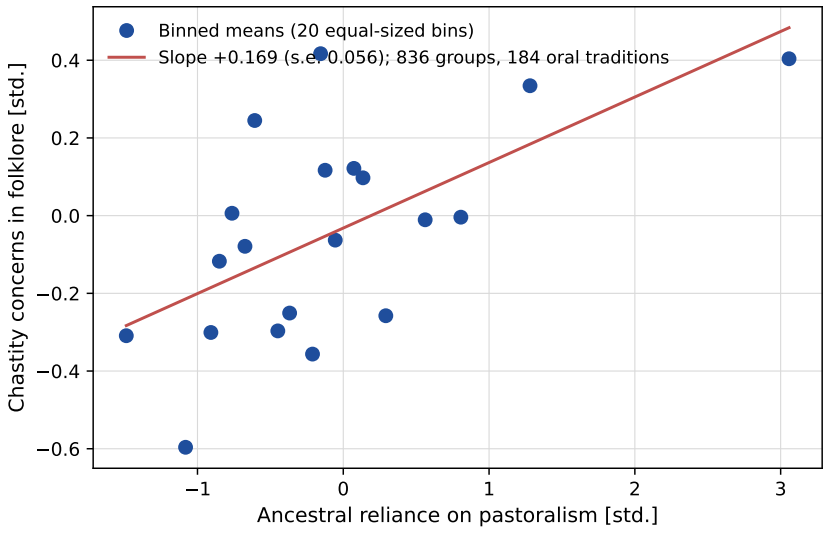

Figure 3: Binned scatter plot of the standardized measure of chastity concerns in a group's folklore against standardized ancestral reliance on pastoralism, at the level of the historical ethnic group. Both variables are residualized on the natural logarithms of the number of motifs recorded for the group, the number of publishers of the underlying sources, and the year of first publication, with the sample mean added back. Each marker is one of 20 equal-sized bins; the line is the corresponding linear fit. The reported slope and standard error are from the underlying group-level regression, in which standard errors are clustered on the oral tradition.

score over the motifs present in its oral tradition, which I assign to respondents through the same language-based matching used for the subsistence data.

First, I ask whether the measure captures what it is meant to capture. At the ethnic group level, descent from pastoralism predicts chastity-concerned folklore: a one standard deviation increase in ancestral reliance on pastoralism is associated with a 0.169 standard deviation increase in the folklore measure (s.e. 0.056), estimated across 836 ethnic groups and holding fixed how extensively a group's oral tradition was documented. Figure 3 plots this relationship. Thus, ancestral reliance on pastoralism is associated with a higher prevalence of chastity-related motifs in recorded oral traditions, alongside the customs documented in Becker (2025).

Then, I turn to asking whether the labor market results documented above reflect chastity concerns as measured through folklore motifs. For some historical groups, the folklore dataset contains only a very small number of motifs, leading to concerns over measurement error in the construction of the chastity concerns measure and resulting attenuation bias. The sample for my analysis thus consists of the 944,642 women whose ancestral group's oral tradition contains at least 50 motifs, which covers 80 percent of respondents. Because Berezkin's catalog records motifs at the level of oral traditions rather than individual ethnic groups, and because several of the *Ethnographic Atlas*

the resulting group-level measure are available in the replication package.

Table 5: Chastity Concerns: Folklore and Women's Labor Force Participation

	Dependent variable:					
	Employed [0/1]			Self-Employed [0/1]		
	(1)	(2)	(3)	(4)	(5)	(6)
Chastity concerns in folklore [std.]	-0.051**	-0.051**	-0.040**	-0.029***	-0.031***	-0.041***
	(0.023)	(0.023)	(0.020)	(0.010)	(0.011)	(0.012)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Folklore controls	Yes	Yes	Yes	Yes	Yes	Yes
Exogenous controls	No	Yes	Yes	No	Yes	Yes
Add. endogenous controls	No	No	Yes	No	No	Yes
Observations	944,642	937,474	651,129	929,578	922,410	655,137
R^2	0.108	0.142	0.169	0.180	0.227	0.248
No. of clusters	117	115	98	118	116	99

Notes. OLS estimates, standard errors in parentheses. Standard errors are clustered at the level of the oral tradition in Berezkin's catalogue. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Sample: women whose ancestral ethnic group's oral tradition contains at least 50 motifs. 'Chastity concerns in folklore' is the average, over the motifs present in the ancestral group's oral tradition, of a 0–10 score of the degree to which a motif expresses concern over women's chastity and control over women's sexuality, standardized. Folklore controls are the natural logarithms of the number of motifs, the number of publishers of the sources, and the year of first publication of the oral tradition (Michalopoulos and Xue, 2021). Exogenous controls are respondents' age, year of interview fixed effects, the year an ethnic group was observed, and ancestral plow use. Additional endogenous controls are, at the historical ethnic group level, the institutional hierarchy above the local level, settlement patterns, and a measure for the kinship structure, and, at the individual level, an indicator for whether a respondent lives in an urban versus rural area and fixed effects for educational attainment, religion, and marital status.

societies in my sample share an oral tradition, standard errors in these regressions are clustered on 117 oral traditions rather than on 532 ethnic groups, which is why they are larger than in the main analysis.

Table 5 regresses women's employment and self-employment on the standardized folklore measure, holding fixed the country and the characteristics of the oral tradition – the number of motifs recorded, the number of publishers of the underlying sources, and the year of first publication – with the same sets of additional controls as in the main analysis.

I find that women who descend from groups with more chastity-concerned folklore are substantially less likely to work: a one standard deviation increase in the folklore measure is associated with a 4 to 5 percentage point lower probability of being employed and a 3 to 4 percentage point lower probability of being self-employed. The coefficients are stable across specifications. Importantly, and as with pastoralism, the relationship is specific to women – the corresponding coefficients for men are small and statistically insignificant (−0.006 to −0.012 for employment and −0.013 to 0.005 for self-employment) – and it is specific to the content that captures chastity concerns, as neither the share of motifs that approve of women's sexual freedom nor the share that depict men's infidelity predicts women's employment. Figure 4 displays the underlying relationships.

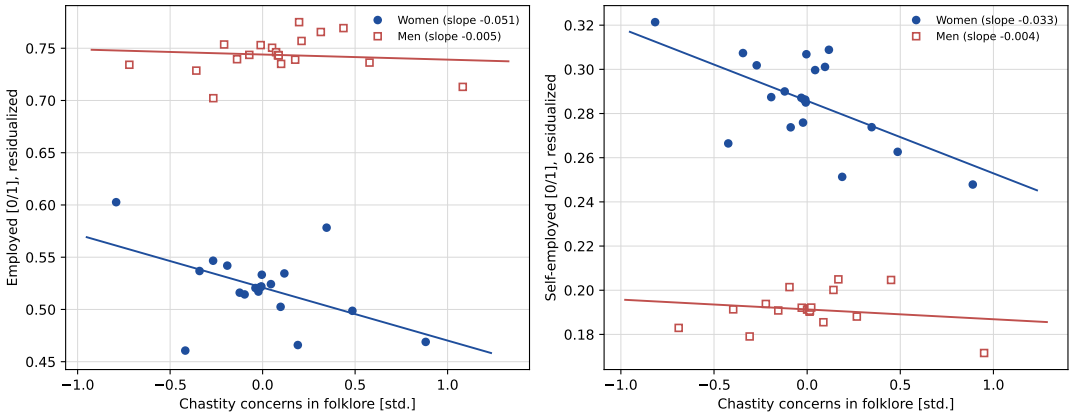

Figure 4: Binned scatter plots of employment (left) and self-employment (right) against the standardized measure of chastity concerns in a group's folklore, separately for women (circles) and men (squares). Within each gender, both variables are residualized on country fixed effects and the sample mean is added back. Sample: respondents whose ancestral group's oral tradition contains at least 50 motifs. Each marker is one of 20 equal-sized bins; lines are the corresponding linear fits.

5.2 Women's Involvement in Subsistence

Pastoralism was characterized by an absence of women in work related to subsistence: in the vast majority of societies, pastoralism was predominantly or exclusively practiced by men. If this resulted in the view that it is more appropriate for women to work around the house, e.g., in caretaking, and if such views persisted, this could also explain why we see descent from pastoralism negatively affecting women but not men. To explore the potential role of this channel empirically, I make use of the fact that pastoralism *occasionally* was done by women or with women's involvement alongside men. Using information in the *Ethnographic Atlas* on which sex participated in pastoralism, I generate an indicator that takes value 1 if pastoralism was done exclusively or predominantly by women, or if women and men were both involved equally in pastoralism, and 0 otherwise.[14] If the historical exclusion of women from subsistence is the mechanism through which descent from pastoralism depresses women's employment today, the negative effect of ancestral pastoralism should be absent or at least weaker among women whose ancestral group practiced pastoralism *with* women's involvement. I therefore regress women's employment on ancestral reliance on pastoralism, the indicator for women's involvement, and the interaction of the two, holding fixed the country.[15]

[14]This information is available for 259 of the 532 ethnic groups in my sample; for 84 of them, women were involved in pastoralism. Ethnic groups with and without women's involvement are very similar in their average reliance on pastoralism (28 versus 26 percent).

[15]An earlier version of this analysis regressed women's employment on the product of the involvement indicator and reliance on pastoralism alone, without the main effect of pastoralism. Such a regression compares pastoral groups with women's involvement to all other groups, including pastoral groups without women's involvement, and therefore does not identify whether women's involvement attenuates the effect of pastoral-

The test is run on the 259 ethnic groups for which the *Ethnographic Atlas* records which sex participated in animal husbandry, 84 of which involved women. The restriction halves the number of groups but retains 71 percent of the women in the employment sample, and it does not select on the relationship of interest: regressing women's employment on ancestral pastoralism with country fixed effects yields −0.036 (s.e. 0.007) in this subsample, against −0.037 (s.e. 0.007) in the full sample. Within it, the data do not bear out the prediction. Columns 1 and 2 in table 6 show that the negative relationship between ancestral pastoralism and women's employment is, if anything, *more* pronounced among descendants of groups in which women participated in pastoralism: the coefficient on the interaction between pastoralism and the involvement indicator is −0.028 (s.e. 0.011) in the baseline specification and −0.032 (s.e. 0.011) with the full set of controls, in both cases statistically significant. Estimated separately, the association between ancestral pastoralism and women's employment is −0.023 (s.e. 0.011) among descendants of groups in which women did not herd and −0.048 (s.e. 0.005) among descendants of groups in which they did. Columns 3 and 4 estimate the corresponding triple interaction with the female indicator in the pooled sample of women and men. The point estimate of the triple interaction is negative as well (−0.017 and −0.060), but imprecisely estimated, which is unsurprising given that the involvement variable is available for only 259 ethnic groups. The estimates therefore do not support the specific prediction that women's participation in herding should attenuate the negative association.

6 Pastoralism and Gender-Segregated Social Ties

The labor market is only one of the domains in which contact between unrelated men and women occurs. If the interpretation in sections 4 and 5 is correct, descent from pastoral societies should leave a trace not only in whether women work but in the structure of social relationships more generally: in cultures of pronounced chastity concerns, men and women should simply know fewer people of the opposite sex. This may partly be due to the gendered pattern of labor market participation documented in this paper, but should similarly come from gender segregation in leisure. This section examines that implication using data on the gender composition of friendship networks. It is an extension rather than a fourth test of the same weight as those in section 5: the data are regional rather than individual, which makes ancestral pastoralism much more coarsely measured and makes it harder to hold fixed the characteristics with which it is correlated.

6.1 Data

The measure of gender segregation in social ties comes from Bailey et al. (2025), who use anonymized and aggregated data on Facebook friendship links to characterize cross-gender social ties around

ism.

Table 6: Women's Involvement in Pastoralism and Women's Employment

	Dependent variable: Respondent is Employed [0/1]			
	Women only		Women and men	
	(1)	(2)	(3)	(4)
Ancest. rel. on pastoralism [std.]	-0.022**	-0.0097	0.015	-0.023
	(0.010)	(0.014)	(0.023)	(0.018)
Pastoralism [std.] x Female			-0.047	0.013
			(0.028)	(0.020)
Women involved in pastoralism [0/1]	0.074***	0.069***	0.020	0.035
	(0.020)	(0.025)	(0.039)	(0.030)
Women involved x Female			0.055	0.026
			(0.050)	(0.041)
Pastoralism [std.] x Women involved	-0.028**	-0.032***	-0.00085	0.019
	(0.011)	(0.011)	(0.027)	(0.025)
Pastoralism [std.] x Women involved x Female			-0.017	-0.060
			(0.034)	(0.038)
Female			-0.29***	-0.20***
			(0.026)	(0.020)
Country FE	Yes	Yes	Yes	Yes
Full set of add. controls	No	Yes	No	Yes
Observations	891,342	592,412	1,262,692	872,895
R^2	0.116	0.179	0.129	0.194
No. of clusters	259	213	259	215

Notes. OLS estimates, standard errors in parentheses. Standard errors are clustered at the ethnicity level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. 'Women involved' is an indicator that takes value 1 if pastoralism was practiced exclusively or predominantly by women, or by women and men equally, in the respondent's ancestral ethnic group. Columns 1 and 2 use the sample of women; columns 3 and 4 use the sample of women and men. The full set of controls includes respondents' age, year of interview fixed effects, an indicator for whether they live in a rural versus urban area, religion fixed effects, educational attainment fixed effects, marital status fixed effects, and, at the historical ethnic group level, plow use (in columns 3 and 4 also interacted with the female indicator), the institutional hierarchy above the local level, the year an ethnic group was observed, settlement patterns, and a measure for the kinship structure.

the world. For each user, they compute the share of that user's k closest friends in the same country who are female. The *cross-gender friending ratio* (CGFR) of a region is the average of this share among the region's male users divided by the average among its female users. A value of one indicates that the average female share of a man's friendship circle equals the average female share of a woman's; values below one indicate that men's friendship circles are less female than women's, and a value of one half means that the average man's friendship circle is only half as female as

the average woman's. The ratio is therefore a measure of gender asymmetry in the composition of friendship circles, not a complete description of the network: several network structures, including some with substantial homophily, are consistent with a ratio of one. I use the ratio computed over the 100 closest friends, which captures both close friends and weaker acquaintances. Results are very similar for the other thresholds that Bailey et al. (2025) report.[16] In the sample used here, the average region has a cross-gender friending ratio of 0.59 (±0.22).

To measure ancestral reliance on pastoralism at the level of subnational regions, I use the data of Cao et al. (2024), who assign the subsistence variables of the *Ethnographic Atlas* to contemporary administrative regions by matching the languages spoken in a region to the languages of the historical societies and weighting by population. Merging the two sources through a spatial join of their respective administrative boundaries yields a sample of 2,073 regions in 196 countries.[17] Two features of this sample should be kept in mind. First, the friendship data describe Facebook users rather than the population at large. Second, and more importantly for what follows, the measure of ancestral pastoralism is considerably coarser than the one used in the individual-level analysis, a point I return to below.

6.2 Results

Table 7 reports regressions of the standardized cross-gender friending ratio, computed over the 100 closest friends, on standardized ancestral reliance on pastoralism, with standard errors clustered at the country level throughout. The three columns progressively narrow the comparison: across all regions, within continents, and within countries.

Regions whose populations descend from societies that relied more strongly on pastoralism have more gender-segregated friendship networks today. A one standard deviation increase in ancestral reliance on pastoralism is associated with a reduction in the cross-gender friending ratio of 0.23 standard deviations across regions, and of 0.24 standard deviations among regions on the same continent. Within countries, the association is smaller but of the same sign: the coefficient is −0.058 ($p = 0.09$), which in raw units corresponds to a reduction of about 0.013 in a ratio whose mean is 0.59.[18]

The sign of the association is the one the chastity-concerns interpretation predicts, in a domain

[16]The estimates with country fixed effects range from −0.047 for the five closest friends to −0.058 for the 100 closest and −0.057 for the 200 closest, with precision increasing in the number of friends considered.

[17]The friendship data are reported for the first-level administrative regions of the GADM database; the pastoralism data use a different set of subnational units, which I match to the GADM regions by their geographic centroids. Where several of the latter fall within the same GADM region, I use their average reliance on pastoralism.

[18]Cao et al. (2024) report survey-based regional characteristics for a subset of these regions, which allows a specification that additionally controls for religious composition, education, income, age, marital status, agricultural employment, geography and biome. On that smaller sample of 737 regions in 56 countries, the within-country coefficient is −0.112 (s.e. 0.078) without those controls and −0.077 (s.e. 0.057) with them.

Table 7: Ancestral Pastoralism and Gender Segregation in Friendship Networks

	Dependent variable:		
	Cross-Gender Friending Ratio [std.]		
	(1)	(2)	(3)
Ancest. rel. on pastoralism [std.]	-0.23**	-0.24**	-0.058*
	(0.109)	(0.106)	(0.034)
Continent FE	No	Yes	No
Country FE	No	No	Yes
Observations	2,073	2,073	1,914
R^2	0.055	0.305	0.943
No. of countries	196	196	133

Notes. OLS estimates, standard errors in parentheses. Standard errors are clustered at the country level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The unit of observation is a first-level subnational administrative region. The dependent variable is the cross-gender friending ratio computed over the 100 closest friends (Bailey et al., 2025), standardized; higher values indicate less gender-segregated friendship networks. Ancestral reliance on pastoralism is measured at the level of subnational regions following Cao et al. (2024) and standardized. Column 3 is estimated on the regions in countries that have within-country variation in ancestral pastoralism and therefore contribute to the estimate; the number of such countries is reported in the last row.

that is not solely determined by employment: the friendship data record who people are connected to, not whether they work. The within-country estimates are, however, considerably smaller than their cross-regional counterparts, and two considerations pull in opposite directions when interpreting that gap.

The first is measurement error in the explanatory variable, which is far more severe here than in the individual-level analysis. There, each respondent is matched to the historical society of their own ethnic group or language, so that the measure varies across individuals who live in the same place. In the regional data a single population-weighted value is assigned to an entire subnational region, averaging over populations that are often ethnically heterogeneous, and the resulting variable takes only a handful of distinct values within the typical country.[19] Regressing the regional measure on country fixed effects yields an R^2 of 0.83, against 0.42 for the individual-level measure (section 2.3). Aggregation of this kind reduces the signal in the explanatory variable, and it does so most severely in the specification that absorbs the between-country variation. How much of the gap between the cross-regional and within-country estimates this accounts for cannot be determined here: a population-weighted average is not a classically mismeasured version of individual ancestry, and the direction of the resulting bias depends on how the aggregation error relates to the country

[19]On average, a country in this sample has 6.6 distinct values of regional reliance on pastoralism.

fixed effects.

The second concerns what the cross-regional estimates include. Because the comparison in columns 1 and 2 is between regions in different countries, it may partly reflect characteristics that vary across countries and are correlated with ancestral pastoralism, religious composition and economic development in particular. Controlling for those characteristics directly, where they are available, reduces the within-country coefficient by about a third. The friendship measure also describes Facebook users rather than the population at large.

Taken together, the regional data provide suggestive evidence of a relationship between ancestral pastoralism and gender segregation in friendship networks. They do not establish that chastity concerns are the mechanism, and at this level of aggregation they cannot separate ancestral pastoralism from the religious and economic characteristics with which it is correlated as cleanly as the individual-level analysis of the preceding sections can. In combination with the labor market results, they are consistent with a culture that limits contact between unrelated men and women inside the labor market and outside of it.

7 Conclusion

This paper asks how much of the gender gap in employment can be understood as the legacy of a specific cultural trait: concerns over women's chastity. Market work almost always requires contact with unrelated men, and where such contact is deemed undesirable or even fully inappropriate, working carries a cost that falls on women and not on men. Using ancestral reliance on pastoralism as a proxy for the strength of these concerns, and comparing individuals who live in the same country but descend from different historical societies, I find that women of pastoral descent are substantially less likely to be employed and less likely to be self-employed, while there is no corresponding relationship for men. Instrumental variable estimates that exploit the ecological determinants of ancestral subsistence point in the same direction.

Three further results speak to the mechanism. Among women who work, those of pastoral descent are more likely to work for a family member than for someone outside of the family, and more likely to work at home than away from home. Thus, conditional on working, they are more likely to take up ways of work that are much less prone to chastity concerns as contact with unrelated men is either limited or supervised. Moreover, a measure of chastity concerns constructed from the oral traditions of ethnic groups predicts women's but not men's employment. And the same ancestral variation predicts gender segregation in friendship networks today, a domain that captures both labor and leisure relations.

My results suggest that the pastoralism effect is not a general feature of male-dominated ancestral subsistence, since it does not extend to the plow and does not weaken where women participated in subsistence. Instead, it likely reflects, at least in part, concerns over women's chastity.

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A Data Sources and Variable Construction

This section describes the sources of all variables used in the paper and how each variable is constructed.

Historical Data

Ethnographic Atlas. All historical, ethnic group level variables are taken from the *Ethnographic Atlas* (Murdock, 1967; Murdock and White, 1969) in the version provided by D-PLACE (Kirby et al., 2016), which includes the extensions of the original database by later authors.

Reliance on pastoralism. The product of (i) a society's dependence on animal husbandry for its subsistence, measured in percent, and (ii) an indicator for whether the predominant domesticated animal in that society is a herding animal, i.e., sheep, cattle, horses, reindeer, alpacas, or camels. The indicator is zero if the predominant animal is a non-herding species such as pigs, dogs, or poultry, or if the society kept no domesticated animals. The variable is standardized in all regressions. See Becker (2025) for a detailed discussion.

Plow use. An indicator for whether a society used the plow in agriculture, the explanatory variable of Alesina et al. (2013).

Women involved in pastoralism. An indicator that takes value one if, according to the *Ethnographic Atlas* entry on which sex participated in animal husbandry, animal husbandry was practiced exclusively or predominantly by women, or by women and men equally, and zero if it was practiced exclusively or predominantly by men. The variable is available for 260 of the ethnic groups in my sample.

Year of observation. The year in which the ethnographic information on a society was collected. Included as a control throughout.

Jurisdictional hierarchy, settlement patterns, kinship tightness. The number of jurisdictional levels above the local community; the type of settlement pattern, ranging from nomadic to complex settlements; and the measure of the tightness of kinship structure constructed by Enke (2019). All three enter only the specifications with additional, potentially endogenous controls.

Land suitability for pastoralism. The average suitability of the land for pastoralism relative to agriculture within a 25 kilometer radius of a society's historical homeland centroid, constructed by Becker (2025) from the grid-level crop and livestock suitability data of Beck and Sieber (2010). The variable is standardized and used as the instrument in section 3.2.

Contemporary Individual-Level Data

Employed. An indicator that takes value one if a DHS respondent reports that they are currently working, or if a WVS respondent reports that they work full time, work part time, or are self-employed, and zero otherwise, i.e., if a DHS respondent reports that they are not currently working or if a WVS respondent reports being retired, a housewife, a student, unemployed, or other.

Self-employed. An indicator that takes value one if a DHS respondent who is currently working reports being self-employed rather than working for a family member or for someone else, or if a WVS respondent reports being self-employed, and zero for all other respondents whose employment status is known, including respondents who do not currently work. Table 9 reports two alternative codings that exclude, respectively, employees and non-working respondents from the comparison group.

Works for a family member. An indicator that takes value one if a currently working woman in the DHS reports working for a family member and zero if she reports working for someone else. Respondents who are self-employed or who do not work are not part of this sample.

Works at home. An indicator that takes value one if a currently working woman in the DHS reports working at home and zero if she reports working away from home. Unlike the employer question, this question is put to the self-employed as well, and the variable is available for 316,887 women in 249 ethnic groups and 40 countries. It is asked of men in only three countries, which is why no corresponding estimates for men are reported.

Individual-level controls. Age in years; year of interview fixed effects; an indicator for living in an urban rather than a rural area; fixed effects for the highest level of educational attainment; fixed effects for religion; and fixed effects for marital status. All are taken directly from the DHS and WVS.

Matching. Respondents are matched to the historical society of their ancestors using either the ethnicity they report or the language they speak at home, following the language-based matching procedure described in Alesina et al. (2013), Giuliano and Nunn (2016), and Bahrami-Rad et al. (2021). Reported ethnicities are assigned a language through Glottolog (Hammarström et al., 2021), and societies in the *Ethnographic Atlas* are matched to a present-day ethnicity or language if they speak the same language. Where several societies match, their characteristics are averaged. See section 2.3.

Folklore

Chastity concerns in folklore. Constructed from the folklore data of Michalopoulos and Xue (2021), who digitize Berezkin's catalogue of 2,564 motifs and record which motifs are present in the oral

tradition of each ethnic group. Each motif description was read and scored from 0 to 10 for the degree to which it expresses or presupposes a culture of concern over women's chastity and control over women's sexuality, by a large language model (Claude Opus, Anthropic) following a written rubric. Each motif was scored in two independent runs and the two scores averaged; the correlation between runs is 0.96. The group-level measure is the average score over the motifs present in a group's oral tradition, standardized. Two further measures constructed from the same scoring serve as specificity checks: the share of motifs in which women's sexual freedom is portrayed approvingly and without sanction, and the share in which men's own infidelity is a theme. The folklore controls used throughout are the natural logarithms of the number of motifs recorded for a group, the number of publishers of the underlying sources, and the year of first publication. The rubric, the motif-level scores from both runs, and the group-level measures are part of the replication package.

Regional Data

Cross-gender friending ratio. From Bailey et al. (2025), who use anonymized and aggregated data on Facebook friendship links. For each user, the share of their k closest friends in the same country who are female is computed; the cross-gender friending ratio of a region is the average of this share among male users divided by the average among female users. The paper uses $k = 100$ and standardizes the measure.

Regional reliance on pastoralism and regional controls. From Cao et al. (2024), who assign the subsistence variables of the *Ethnographic Atlas* to contemporary subnational administrative regions by matching the languages spoken in a region to the languages of historical societies and weighting by population. Regional controls for religious composition, education, income, age, marital status, agricultural employment, geography and biome, used in the robustness check reported in section 6, are from the same source. Regions are matched to the first-level administrative units of the GADM database used by Bailey et al. (2025) through their geographic centroids.

B Additional Regression Tables

This section collects the regression tables that are referenced in the main text but not reproduced there.

B.1 Main Results

Table 8 reports the separate regressions for women and for men, for both the employment and the self-employment indicator and for all three specifications. These are the coefficients displayed in

figure 2; columns 1 to 6 reproduce table 1 in the main text. Table 9 reports the two alternative codings of the self-employment indicator discussed in section 3.1: self-employment versus not working, and self-employment versus being an employee.

B.2 Instrumental Variable Results

Table 10 reports the two first stages of the instrumental variable analysis of section 3.2, in which standardized ancestral reliance on pastoralism and its interaction with the female indicator are the dependent variables. Table 11 reports the reduced form, in which the labor market outcomes are regressed directly on land suitability for pastoralism and its interaction with the female indicator.

Table 8: Main Results: Separate Regressions for Women and Men

	Dependent variable:											
	Employed [0/1]						Self-Employed [0/1]					
	Women			Men			Women			Men		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Ancest. rel. on pastoralism [std.]	-0.037***	-0.038***	-0.033***	0.0015	0.0010	-0.013*	-0.023***	-0.024***	-0.030***	0.0042	0.00052	-0.010**
	(0.007)	(0.006)	(0.010)	(0.009)	(0.008)	(0.007)	(0.004)	(0.004)	(0.008)	(0.006)	(0.005)	(0.004)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Exogenous controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Add. endogenous controls	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Observations	1,259,720	1,252,545	874,669	522,518	515,979	396,026	1,240,657	1,233,482	879,162	261,324	254,785	187,904
R^2	0.105	0.143	0.167	0.044	0.092	0.198	0.166	0.215	0.233	0.112	0.214	0.287
No. of clusters	532	530	412	477	472	380	532	530	413	450	445	357

Notes. OLS estimates, standard errors in parentheses. Standard errors are clustered at the ethnicity level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Each column is a separate regression on the sample of women or of men, as indicated. Columns 1, 4, 7 and 10 include country fixed effects only; columns 2, 5, 8 and 11 add the exogenous controls (age, year of interview fixed effects, the year an ethnic group was observed, and ancestral plow use); columns 3, 6, 9 and 12 add the endogenous controls (institutional hierarchy above the local level, settlement patterns, kinship structure, an urban indicator, and fixed effects for educational attainment, religion, and marital status). These regressions underlie figure 2.

Table 9: Self-Employment: Alternative Codings

	Dependent variable:			
	Self-Employed vs. Not Working [0/1]		Self-Employed vs. Employee [0/1]	
	(1)	(2)	(3)	(4)
Female	0.066***	0.072***	0.059***	0.11***
	(0.021)	(0.019)	(0.018)	(0.021)
Ancest. rel. on pastoralism [std.]	0.014	-0.014	0.023**	0.00076
	(0.013)	(0.009)	(0.010)	(0.012)
Pastoralism [std.] x Female	-0.049***	-0.027***	-0.022*	-0.0057
	(0.015)	(0.010)	(0.013)	(0.014)
Country FE	Yes	Yes	Yes	Yes
Full set of add. controls	No	Yes	No	Yes
Observations	1,147,174	809,622	790,119	595,700
R^2	0.176	0.295	0.245	0.301
No. of clusters	530	412	501	402

Notes. OLS estimates, standard errors in parentheses. Standard errors are clustered at the ethnicity level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. In columns 1 and 2, the dependent variable takes value 1 if a respondent is self-employed and 0 if the respondent does not currently work; respondents who work for a family member or for someone else are excluded. In columns 3 and 4, the dependent variable takes value 1 if a respondent is self-employed and 0 if the respondent works for a family member or for someone else; respondents who do not currently work are excluded. The full set of controls comprises the exogenous and endogenous controls listed in the notes to table 2.

Table 10: Instrumental Variable Approach: First Stages

	Dependent variable:			
	Employment sample		Self-employment sample	
	Past. [std.]	Past. x Fem.	Past. [std.]	Past. x Fem.
	(1)	(2)	(3)	(4)
Female	0.0090	0.020	0.0070	0.016
	(0.009)	(0.089)	(0.017)	(0.091)
Land suitability for pastoralism [std.]	0.41***	-0.051	0.37***	-0.067
	(0.101)	(0.051)	(0.122)	(0.066)
Land suitability [std.] x Female	-0.011	0.48***	0.022	0.48***
	(0.021)	(0.084)	(0.043)	(0.080)
Country FE	Yes	Yes	Yes	Yes
Observations	1,718,857	1,718,857	1,439,142	1,439,142
R^2	0.498	0.411	0.499	0.443
No. of clusters	520	520	520	520

Notes. OLS estimates, standard errors in parentheses. Standard errors are clustered at the ethnicity level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The dependent variables are the two endogenous regressors of the second stage: standardized ancestral reliance on pastoralism and its interaction with the female indicator. Land suitability for pastoralism relative to agriculture is measured within a 25 kilometer radius of an ethnic group's historical centroid, standardized. Samples correspond to the employment and self-employment samples with non-missing land suitability.

Table 11: Reduced Form: Land Suitability for Pastoralism and Labor Market Outcomes

	Dependent variable:			
	Employed [0/1]		Self-Employed [0/1]	
	(1)	(2)	(3)	(4)
Female	-0.25***	-0.20***	0.069***	0.091***
	(0.018)	(0.015)	(0.014)	(0.012)
Land suitability for pastoralism [std.]	0.019*	0.014*	0.024*	0.016**
	(0.011)	(0.008)	(0.013)	(0.008)
Land suitability [std.] x Female	-0.057***	-0.041***	-0.037***	-0.032***
	(0.016)	(0.012)	(0.014)	(0.009)
Country FE	Yes	Yes	Yes	Yes
Full set of add. controls	No	Yes	No	Yes
Observations	1,718,857	1,234,788	1,439,142	1,031,700
R^2	0.115	0.188	0.151	0.238
No. of clusters	520	404	520	405

Notes. OLS estimates, standard errors in parentheses. Standard errors are clustered at the ethnicity level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The full set of controls includes respondents' age, year of interview fixed effects, an indicator for whether they live in a rural versus urban area, religion fixed effects, educational attainment fixed effects, marital status fixed effects, and, at the historical ethnic group level, plow use (as a main effect and interacted with the female indicator), the institutional hierarchy above the local level, the year an ethnic group was observed, settlement patterns, and a measure for the kinship structure. 'Land suitability' captures the average suitability of the land for pastoralism relative to agriculture within a 25 kilometer radius of the historical centroid of an ethnic group in the *Ethnographic Atlas*, standardized; the interaction term uses the standardized measure as well.