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Equality of the Sexes and Gender Differences in Competition: Evidence from Three Traditional Societies

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Equality of the Sexes and Gender Differences in Competition: Evidence from Three Traditional Societies

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Abstract

Can gender-balanced social norms mitigate the gender differences in competitiveness that are observed in traditional patriarchic as well as in modern societies? We experimentally assess men's and women's preferences to compete in a traditional society where women and men have similar rights and entitlements alongside a patriarchic and a matrilineal society which have previously been studied. We find that, unlike in the patriarchic society, there is no significant gender difference in the inclination to compete in the gender-balanced society. We also find that women's decisions in our experiment are optimal more often than men's in the gender-balanced society - opposite to the pattern encountered in the patriarchic society. Our results highlight the importance of culture and socialization for gender differences in competitiveness and suggest that the large gender-differences in competitiveness documented for modern societies are a long-term consequence of a patriarchic heritage.

JEL Classifications: J16; D81; J15; K36; K38; C93
Keywords: Gender economics; Competition; Social norms; Traditional societies; Lab-in-the-field experiment

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1 Introduction

In most modern societies, women are under-represented in leadership positions in virtually all important sectors, including politics (Paxton and Hughes, 2014), corporates (Izraeli et al., 1994) as well as academia (Morley, 2014). One key factor held responsible for this asymmetry are systematic differences in the inclination to compete. While a willingness to compete is essential to advance to prominent positions in polities and economies organized around competition, men have been found to select into competitive environments about twice as often than women in several economic lab experiments (Niederle and Vesterlund, 2007, 2011). These gender differences have raised the concerns of policy makers and researchers alike and suggestions for institutional changes mediating them range from affirmative action (Niederle et al., 2013) and single-sex education (Booth et al., 2018) to priming of women with a feeling of power and control in competitive situations (Balafoutas et al., 2018).

There has been a debate about whether these behavioral differences are primarily attributable to biological differences or to the different social and economic roles men and women fill in society (Gneezy et al., 2009; Croson and Gneezy, 2009). This discourse is part of a broader nature versus nurture debate about gender differences in economic and social behavior and outcomes (Ridley, 2003). For competitive behavior, there is some evidence in favor of a biological basis from evolutionary biology and sociobiology (Turkheimer, 2004). In contrast, the respective literatures in psychology and sociology tend to support the view that the observed gender differences are primarily a result of a sociocultural construct of gender and gender roles (Feingold, 1994).

In experimental economics, a ground-breaking contribution to this subject is the cross-cultural study by Gneezy et al. (2009). They compare women's and men's choices to compete in a simple lab-in-the-field experiment conducted in two traditional societies which are selected so as to differ as much as possible in the social norms ruling men's and women's social and economic status. They describe the Maasai in Tanzania as "a textbook example of patriarchal society." Acknowledging that truly matriarchal societies do currently not exist, they contrast the Maasai with the Khasi of northeastern India, who practice matrilineage – inheritance and clan membership follow the female lineage – and matrilocality – upon marriage a husband joins the wife's parental household. Consistent with the hypothesis that patriarchy discourages women and suppresses their economic potential, Gneezy et al. (2009) find that Maasai men compete about twice as often as women, while women are more competitive than men among the matrilineal Khasi. These findings have been corroborated by Andersen et al. (2013) for adolescents in the Khasi and the Karbi communities, where the latter are a patriarchal society dwelling in an agro-climatically similar environment as the Khasi, in northeast India.

Our point of departure is that lab experiments in modern societies, where men and women have equal rights and entitlements, and traditional patriarchic societies have found strikingly similar gender patterns regarding selection into competition – men compete roughly twice as often as women (Niederle and Vesterlund, 2011; Gneezy et al., 2009; Andersen et al., 2013). On the other hand, the latter two studies also document that there is no or even an opposite gender difference in a traditional matrilineal society, where social norms ruling descent, inheritance and married couples' place of residence favor women. This pattern is consistent with the view of several feminist writers that contemporary western societies continue to be largely patriarchic (e.g. Walby, 1990). Alternatively, even if one accepts the view that gender norms are more balanced in a modern societies than in a traditional patriarchic society like the Maasai, socialization and gender behaviors may change more slowly than legal norms, implying that girls still learn from role models who behave less competitively than men, as in traditional patriarchy.

An important open question that remains is whether gender-balanced norms, for which modern societies strive, have the potential to close the gender gap in competitiveness in the long run. To unravel short versus long-term effects of social norms on the gender difference in competitiveness, we view modern societies in Europe and the Americas as ones with patriarchic traditional norms whereas their current norms may or may not be patriarchic. The above-cited studies by Gneezy, List and coauthors, in contrast, compare a society in which both past and current norms are patriarchic, to a society where both past and current norms assign a high social status to women.

To learn more about the effect of gender-balanced norms in the long run, in this paper we examine preferences for competition in a traditional society where both past and current norms are gender-balanced and compare them to two previously studied traditional societies, one with patriarchic and one with matrilineal norms, in the same area. With this research design we seek to contribute to the debate whether the gender pattern in competitiveness in modern societies is primarily due to a patriarchic heritage ('nurture'), or to innate gender differences ('nature'). To illustrate, if competitiveness is similar among men and women in the gender-balanced traditional society, this is evidence in favor of the importance of culture, because, in our perspective, the principal difference between a traditional gender-balanced and a modern society is that in the former traditional and current norms are balanced, whereas in the latter traditional and perhaps also current norms are patriarchic - even though current *de jure* norms are balanced. If, on the other hand, competitiveness in the balanced traditional society is similar to the one in the patriarchic traditional society, we take this as evidence in favor of the importance of biological factors since our research design "controls" for the nurture channel by holding traditional as well as current norms constant at a gender-balanced realization.

Following Andersen et al. (2013), we choose to study this question among traditional societies in India's northeast. This region is ideal for such a pursuit as, due to the hilly topography and remoteness and its location at the crossroads of South, East and Southeast Asia, there is a great deal of cultural diversity in an agro-climatically and politically homogeneous area of the size of Iceland.

Our research design comprises two steps. First, we identify a traditional society with gender-balanced norms by systematically coding social norms important for women's status in society for all major traditional communities dwelling in two neighboring states of India's northeast from the ethnographic atlas *People of India* (Singh, 1988). To the best of our knowledge, we are first to explore this important collection, which, for India, covers many more ethnic groups than the well-known ethnographic atlas by Murdock (1967). From these data, we construct a patriarchy index, which confirms that the two communities studied by Andersen et al. (2013), the Karbi and the Khasi, are indeed on the two extremes of this spectrum. Our analysis also shows that the distribution of this index is strongly bimodal with the humps at the extremes. Our original objective was to identify a traditional society in which men's and women's rights and entitlements are symmetric – as in modern societies. A detailed examination of the social norms in this sample, however, revealed that there is not a single society with roughly gender-symmetric norms. Regarding lineage, for example, there is no single case of bilateral descent – a child belongs to her father's and mother's clan to similar extents – or equigeniture – all children, regardless of their sex, inherit an identical share, the default rule in Indian law (Government of India, 2005). Hence we focus on societies in which both sexes have similarly important, albeit qualitatively different rights and entitlements.

Among the 26 societies whose norms we code, there is only a single one with balanced norms in each of the three dimensions we consider, the Dimasa. This society is duolineal, meaning that a son belongs to his father's clan and a daughter to her mother's clan. There is male equigeniture for paternal properties, which comprise agricultural assets and real estate, female equigeniture for maternal properties, which include clothes, jewelry and looms, and equigeniture for household public goods. Finally, the Dimasa practice neolocal residence, meaning that a couple founds a new residence after the birth of the first child. For comparison the Karbi, who live adjacent to the Dimasa, practice male primogeniture (the first-born son inherits all property), patrilineage (all children belong to their father's kin) and patrilocality (at least the oldest son stays with his parents and is joined by his wife), while the Khasi practice female ultimogeniture (the last-born daughter inherits all property), matrilineage and matrilocality, where at least the youngest daughter stays with her parents and is joined by her husband.

In a second step we conduct the competition and risk experiments of Gneezy et al. (Gneezy et al., 2009) with men and women of the Dimasa, Karbi and Khasi communities.

In this experiment, a subject is rewarded for successful tosses of a ball into a bin. Before tossing, the subject chooses whether her reward shall depend on her own successes only or whether she competes and earns a reward only if she succeeds more often than her (anonymous) competitor.

Our experimental results support the hypothesis that gender-balanced norms remove gender differences in competitiveness. While, in accordance with earlier research, men compete almost twice as often as women in the patriarchic society, this gender gap melts down by two thirds to an insignificant eighteen percent in the gender-balanced society. In accordance with previous work, women compete 13 percent more often than men in the matrilineal society.

To assess whether patriarchy leads to worse economic outcomes for women through their choices, we also analyze the optimality of choices. In regression analyses, where we control for several potential confounders, we find that women among the patriarchic Karbi compete too little, making suboptimal choices 33 percent more often than men. In contrast, there is no 'under-entry' into competition among both Khasi and Dimasa women, who indeed make optimal choices more often than men.

To assess whether these differences in competitive behavior are due to differences in risk aversion, we also conduct a risk bearing experiment with each subject. While we find that women are somewhat less willing to bet in a gamble, this gender difference does not correlate with the social norms determining women's status across the three societies, as in Gneezy et al. (2009).

We conclude that, in line with the two studies that have inspired our work (Gneezy et al. 2009, Andersen et al. 2013), patriarchal norms suppress women's economic potential by making them compete too little. In addition, gender-balanced social norms rather than the extreme of matrilineage and matrilocality suffice to heal gender asymmetries in behavior and economic outcomes.

Our results support the view that gender-balanced norms predict no difference in competitiveness across the sexes and that the effect of norms favoring a particular sex are roughly symmetric. First, the small but positive difference in competitiveness between men and women, which we find among the Dimasa, is consistent with the ethnographic atlas' assessment that their norms still attach a slightly higher social status to men ("The position of women in the society is almost at par with men"). Second, the fact that the difference between women and men among the matrilineal Khasi is smaller than the difference between men and women among the patriarchic Karbi corresponds to the assessment that truly matriarchal societies no longer exist and that Khasi women do not generally assume the roles held by men in patriarchal societies (Gneezy et al., 2009). For example, in the political sphere, Khasi women have had active or passive voting rights for neither the village council nor the *Syiem*, the traditional ruler of the Khasi country

(Gerlitz, 1984).

Our results also support the view that a legacy of patriarchy in modern societies is primarily responsible for the stark gender differences in competitiveness. Among the traditional society that we study with gender-balanced norms, the gender difference in competitiveness is much smaller than in several lab experiments conducted in modern societies of Europe and North America (Niederle and Vesterlund, 2011). If a society's objective is to decrease this gender gap, our results underline, first, the importance of *de facto* social norms, by which we have classified the societies of our study, rather than provisions toward gender equality that are merely *de jure*. In this connection it is important to note that all three communities live under Indian law, which stipulates equigeniture as default, leaves the choice of first and last names of children entirely to the parents and makes no provisions for newlyweds' residence. Second, our findings stress the importance of the long term: while women's rights have improved significantly in western countries only over the last 150 years roughly, gender patterns in competitiveness are still similar to those in traditional patriarchic societies. In contrast, in the traditional society that we study, both past and current norms are balanced, and women compete almost as often as men.

This paper contributes to a literature on the underpinnings of gender differences in economic behavior by comparing traditional societies with different social norms. Comparing societies with stark differences in lineage, inheritance and household formation provides a unique opportunity to study the effects of social structure on gender differences in economic behavior and outcomes. With this approach, differences in altruism have been studied by Gong et al. (2015), risk preferences by Gong and Yang (2012), risk preferences and gender stereotypes by Pondorfer et al. (2017), public good contributions by Andersen et al. (2008), and bargaining behavior by Andersen et al. (2018), to mention just a few. Most closely related to our study are the papers by Gneezy et al. (2009) and Andersen et al. (2013), who compare gender differences in competitive behavior between a matrilineal and a patriarchal society.

Our main innovations relative to these papers are, first, that ours is the very first study to include a traditional society where the social status of the sexes is balanced in addition to the extremes of a patriarchic and a matrilineal society. We think this is particularly useful to learn more about the effect of social norms on economic behavior in modern societies. Second, we take seriously the choice of societies included in our experiments by showing how the norms in these communities compare to the universe of traditional societies in the study area.

The remainder of this paper is structured as follows. The next section provides an overview of social norms among the ethnic groups populating the western part of India's panhandle and describes in some detail the three societies among which we conducted our

experiments. Section 3 describes our experimental design. We proceed to a discussion of the experimental results in Section 4. Section 5 concludes.

2 Societal background

2.1 Social norms among ethnic groups in India's northeast

We take the two communities in Andersen et al.'s (2013) study as point of departure, whose members dwell in the two abutting states Assam and Meghalaya, and collect data on relevant social norms for all traditional communities in these two states. For this undertaking, we tabulate qualitative information from the ethnographic atlas *People of India* (Singh, 1988). This is a multi-volume compendium compiled by a team of anthropologists coordinated and sponsored by the Anthropological Survey of India, a government agency reporting to India's Ministry of Culture. It contains the findings of a systematic field campaign undertaken between 1985 and 1992, attempting to cover all distinct cultural and ethnic communities with at least 200 members in India, 4635 in total. The researchers spent an average of 5.5 days in each community and recorded various aspects of traditional and current social and economic organization obtained through first-hand interviews of key informants as well as participant observation. Unlike the well-known ethnographic atlas by Murdock (1967), in which various cultural and economic characteristics are tabulated for hundreds of traditional societies world-wide, the *People of India* (PoI) volumes include no tabulations.[1] Instead, in PoI's state series volumes, each community is portrayed in a chapter of three to five pages of text.

With the objective to identify communities whose lifestyles are relatively traditional and little affected by modernization, we focus on communities listed as "scheduled tribes" under the Indian Constitution. While India's constitution itself does not define characteristics of these groups, according to a report by a government commission, the criteria for classification of a community as scheduled tribe are "primitive traits, distinctive culture, geographical isolation, shyness of contact with the community at large, and backwardness" (Government of India, 1955). The Karbi and Khasi communities studied by Andersen et al. (2013) are scheduled tribes.

To ensure long-term stability of norms in our sample, we further choose to focus on communities which have traditionally dwelled in the two states, that is we exclude recently immigrated communities. Forty communities in the two PoI volumes on Assam and Meghalaya (Singh et al., 2003, 1994) satisfy this criterion. We further eliminate

[1]There is a large number of recent papers in economics using Murdock's Atlas. They all focus on Africa (Alesina et al., 2019, 2013; Michalopoulos et al., 2018). For India, in contrast, the coverage of Murdock's Atlas is far less complete than the *People of India*. Murdock lists less than 50 societies, while People of India contains 4635.

nine communities for which PoI does not mention a population figure. Finally, five communities are described twice, once for Assam and once for Meghalaya, leaving us with 26 distinct communities with a population of 3.06 million around the year 1981.[2] This compares to a total population of scheduled tribes in the two states of about 3.3 million in 1981.[3] Hence our sample covers the vast majority of these two states' population belonging to traditional societies thus defined.

We follow Gneezy et al. (2009) and Andersen et al. (2013) and focus on lineage and residence norms as predictors of women's competitiveness. Lineage has two not necessarily congruent aspects, descent and inheritance. Descent indicates to whose kin, the mother's or the father's, the children of a couple belong. Cultural anthropologists specify kinship as how an individual is related to another set of individuals in a society and what their social duties and obligations toward these individuals are. According to Gneezy et al. (2009) as well as Chakraborty and Kim (2010) and Dyson and Moore (1983), kinship affiliations which are based on the mother strengthen a woman's position in the marriage and society. According to Dyson and Moore (1983), who are in turn citing Fox (1967), "anthropologists believe that the bargaining power of family members is likely to be influenced by the restrictions on the alliance formation within and across families and kin groups as defined by different kinship systems. [...] In a patrilineal society, because consanguine women cannot reproduce the lineage, they are less valuable as allies; however, in matrilineal societies, because sisters reproduce lineages, they are likely to form strong bonds. [...] In patrilineal systems, men attempt to gain rights over sexual, domestic and reproductive services of the wife; in matrilineal systems, men do not have an incentive to do so because they cannot control lineage reproduction." If power relations and agency affect competitiveness, women in matrilineal societies will be more competitive than their peers in patrilineal ones.

Inheritance norms specify how material possessions are transferred from one generation to the next (Murdock, 1949). Under patrilineal (matrilineal) inheritance, sons or a son (daughters or a daughter) inherit the bulk of the parents' possessions. According to Gneezy et al. (2009), matrilineal inheritance stimulates greater parental investment and competitiveness in daughters because "women are in a position to pass on accumulated wealth, and if competitiveness is differentially rewarded, women who learn competitiveness from their mothers will benefit both from their own efforts and from those of their mothers. [...] The household can gain directly from the long-term successes of their

[2]For each of the five communities that are portrayed twice, once in the Assam and once in the Meghalaya volume of PoI, we only consider the set of norms of the more populous of the two subpopulations.

[3]The precise population figure for scheduled tribes in the two states is not available from India's 1981 census because affiliation to scheduled tribes was not recorded for Assam due to political factors. We arrive at 3.3 million by adding to the 1981 census figure of 1.08 in Meghalaya the geometric mean of 1.60 and 2.87 million, the scheduled tribe population figures for Assam according to the 1971 and 1991 censuses.

daughters."

Residence norms specify where a newly-wed couple takes residence. Under patrilocality (matrilocality) the couple settles in or near the residence of the groom's (bride's) parents. Under neolocality the couple founds a new residence. There is also ambilocality, under which husband and wife continue to live with their respective parents and the husband visits the wife in her home. For matrilocal societies, Gneezy et al. (2009) point out that "women [...] may choose to imitate the behavior of older women in their households or successful women in their social circles." Combined with matrilineal inheritance, "the fact that women can be raised exclusively for the benefit of their mothers' and grandmothers' households may mean that innate competitiveness does not need to be discouraged or competitiveness is encouraged." On the other hand, according to Chakraborty and Kim (2010), "women tend to live farther from their natal homes and have less support of their natal family when residence is patrilocal."

Based on these observations and our own reading of the People of India volumes, we developed a coding manual as well as a codebook with the objective to derive an ordinal score for women's status with respect to each of the three sets of norms just discussed.[4] The coding manual contains 18 specific coding assignments (eight for residence, seven for descent and three for inheritance) for each community, while the codebook maps the entries resulting from these assignments into three scores, one for each set of norms. Following the arguments given above as well as the tabulations in Dyson and Moore (1983) and Chakraborty and Kim (2010), we classified as unfavorable for women (score of -1) descent and inheritance norms that are patrilineal as well as patrilocal residence norms. We classify as favorable for women (score of +1) descent and inheritance norms that are matrilineal as well as matrilocal residence norms. We classify as neutral (score of 0) double descent systems and inheritance norms which specify either equigeniture (daughters and sons inherit to equal extents) or entitle daughters to more than just the mother's personal belongings in regimes where sons inherit the household's agricultural assets. Finally, neolocal and ambilocal residence are also classified under this category.

For the 26 communities characterized above, we had these three sets of norms coded independently from the two state volumes of PoI (Singh et al., 2003, 1994) by two coders with backgrounds in economics and archeology, respectively. The coders, who were not informed about the details of our research project, were also given the option to code a norm as missing from the PoI text. The rate of disagreement between the two coders in this exercise was 14 percent, 11 out of 78 ($= 26 * 3$) cases. In a second step, the coders were instructed to jointly discuss among themselves and - if possible - resolve the disagreement cases. This lead to an unanimous resolution of each of these cases; for

[4]Three flowcharts illustrating the coding and scoring are contained in the online appendix to this paper. The full coding manual is accessible through Heidelberg University's data repository heiDATA, https://heidata.uni-heidelberg.de/dataverse/awiexeco.

three of them (two communities' residence norms and one community's descent norm) the coders agreed that the text does not specify sufficiently clearly the respective norm and hence these were coded as missing.

Table 1 summarizes the resulting scores together with a patriarchy index, which we calculate for each community as the sum of the scores assigned for each of the three sets of norms. Congruent with Andersen et al. (2013), who portray the Karbi and Khasi communities as archetypes of a patriarchic and a matrilineal society, respectively, our analysis yields the extreme scores of -3 and 3 for them.

Figure 1 depicts the distribution of the patriarchy index for the 23 communities for which all three scores are non-missing. The left panel is a histogram of the number of communities for each value of the index. It shows that the bulk of communities in our study area is patrilocal and patrilineal with index values of -3 and -2 (17 of 23 communities). On the other hand, there are five matrilineal/matrilocal societies, a well-known peculiarity of India's northeast, one of them the Khasi. The distribution as a whole is strongly bimodal with index values of -1 or $+1$ occurring for none of the 23 communities, and there is only a single community, the Kachari Dimasa of Assam, or Dimasa for short, with an index value of zero.

The right panel of Figure 1 is a histogram of the populations belonging to each of the seven realizations of our patriarchy index. It confirms the bimodality encountered in the left panel and demonstrates that the matrilineal/matrilocal groups are on average more populous than the patriarchic communities. The population share of the gender-balanced Dimasa is just a little more than one percent implying that they are a comparatively small community.

Inspection of the Kachari Dimasa entry in Table 1 shows that, with double descent, a mixture of duolineal inheritance and equigeniture and neolocality, their norms are balanced for each of the three categories considered here. In sum, the Dimasa of Assam are the only society with gender-balanced norms in our sample. We hence choose to include this group in our experimental sample in addition to the patriarchic Karbi and the matrilineal/matrilocal Khasi.

2.2 The Dimasa, Karbi and Khasi societies

In this section, we discuss similarities and differences of the communities in our experimental sample in more detail. All of them are quite similar in numerous characteristics other than the social norms relevant for women's status and competitiveness. First, all three are ethnically Mongoloids (Kumar et al., 2004) and also genetically relatively close (Walter et al., 1987; Das and Deka, 1985; Sikdar, 2016). Second, they live in close geographic proximity in similar agro-climatic environments. The three villages in which we have carried out the experiments are located at an altitude of around 900 meters above

sea level in the hills between central Assam and Meghalaya within a 100-kilometer radius. Third, all three communities pursue similar economic activities for subsistence. According to Singh (1988), all are primarily engaged in agriculture. This is also confirmed by our exit survey, according to which close to 90 percent of respondents' principal activity is farming (see Table 3).

The Khasi are distinct from the Karbi and Dimasa in two respects. First, the Khasi speak an Austro-Asiatic language while the Karbi and Dimasa each have a language that belongs to the Tibeto-Burman group (Kumar et al., 2004). Second, even though spatially very close to Assam's Karbi and Dimasa, they settle in the state of Meghalaya. In sum our impression is that the Karbi and Dimasa are very similar, in all five dimensions just discussed. The Khasi are similar to the Karbi and Dimasa regarding ethnicity, genetics, environment and mode of subsistence, but somewhat differentiated regarding language and the surrounding political regime.

The three communities differ vastly in their social organization. The social norms of the matrilineal/matrilocal Khasi and patriarchic Karbi are described in detail in Andersen et al. (2008, 2013) and Gneezy et al. (2009), as well as in Banerjee et al. (2015) and Mukherjee (2018). Table 2 summarizes the lineage and residence norms of these two communities. Andersen et al. (2018) confirm that, in the 2010s, Karbi and Khasi people continue to follow their traditional lineage and residence norms as recorded 30 years ago for *People of India*. In addition, from our own circumstantial observations, the Dimasa appear no less traditional than the neighboring Khasi and Karbi. This gives us confidence that, in our study societies, ancestral and contemporary norms are largely congruent and in accordance with the accounts in *People of India*.

To the best of our knowledge, the Dimasa have not yet been the subject of any study in economics. We therefore discuss their social norms that are of interest here in some detail. As elaborated in Singh et al. (2003), the Dimasa have a double descent system, where the simultaneous existence of both male and female clans is the outstanding characteristic. A son belongs to his father's clan and a daughter to her mother's clan. Among the Dimasa, there are 42 patri-clans (*sengphong*) and 40 matri-clans (*jaddi* or *juluk*), which strictly observe clan exogamy in their arranged, monogamous marriages (see also Ghosh, 1965b). The inheritance norm has elements of a duolineal system as well as equigeniture: male property, which comprises real estate, agricultural assets and cattle, is equally inherited by the sons; for female property, comprising clothes, jewelry and looms, there is female equigeniture (see also Danda, 1978, and Ghosh, 1965a); finally, household assets such as cooking utensils and dishes count as common property and are inherited equally by sons and daughters. The rule regarding post-marital residence is neolocality with a temporary matrilocality component: the couple founds a new home after residing with the bride's family till the birth of the first child.

The classification of the three societies emerging from our patriarchy index as patriarchic, balanced and close-to-matriarchic is also confirmed by circumstantial remarks in the respective chapters of *People of India*, which for the Karbi say "the status of woman is held to be a little lower than that of man" and "a male child is preferred", while among the Khasi "women enjoy a relatively high social position. The birth of a female child is hailed with great joy." For the Dimasa, the respective chapter points out that "the position of women in the society is almost at par with men" and makes no statement on gender preferences for children.

3 Experimental design and hypotheses

Guided by local government officials' advice, whom we requested to name villages that are safe and conveniently located while hosting sufficient numbers of our target population, we identified two Karbi and six Dimasa villages in Assam's Karbi-Anglong district and one Khasi village in Meghalaya's Ri-Bhoi district, on the border of Assam.[5] The experiments with the Karbi were conducted in the block administration office of Manja town and with the Dimasa in various public buildings, one in each of the six Dimasa villages. The experiments with the Khasi took place in a school building of the Khasi village we had identified, near the town of Nongpho.

We choose to carry out the experiments with representative samples of parents of school-aged children for two reasons. First, they are prime-aged adults standing in the phase of their lives where they are economically most productive (Fulford, 2014). Therefore the economic behavior of this segment of the population is of particular importance for the economy as a whole. Second, parallel to the experiment reported here, we employed the subjects to elicit the effects of social norms on sex-specific investments in children, the subject of a companion paper.[6]

Regarding sample size, we conducted power calculations taking the estimates in Andersen et al. (2013) for adolescent Karbi and Khasi as reference. We focus on the double difference in competitiveness, between men and women in two communities. For detecting a value of this statistic of 57 percentage points, which is Andersen et al.'s point estimate, with a power of 90 percent (two-sided test with type I error of five percent), we calculated a sample size of 64, 32 men and 32 women, per community. We therefore

[5]For the two communities in Assam, the Karbi and Dimasa, we consulted the administration of the Lumbajong development block in Manja and selected the Karbi and Dimasa villages close to the town of Manja in that block. For the Khasi in Meghalaya, we consulted the administration of Ri-Bhoi district in Nongpho and selected a village in the Umling development block, which surrounds the town of Nongpho. The different numbers of villages for the three communities result from the villages' different sizes close to our two operating bases Manja and Nongpho.

[6]A crucial feature of that exercise is that subjects have both a school-aged son and daughter and hence we selected our subject pool accordingly.

fixed the size of our experimental sample at 192.[7]

We started out with a demographic census of each of the nine villages. We visited all 355 households in these villages and recorded the age and sex of all household members as well as the household members' kinship relations. We identified 166 households with at least one parent of a daughter who is between 6 and 18 years old and a son in the same age range. From these households, we randomly drew 32 households for the male and 32 households for the female sample from each community without replacement – to ensure that the subject pool does not comprise both spouses of a couple.

We visited each subject in his/her home to convey the invitation. This included information about the participation fee of Indian Rupees (Rs.) 200, which equals $2.80, and the place and time of the experiment. Each subject was requested to report at a specified time at the experimental site, the village school or a public meeting hall, and we arranged individual transport for each subject. There was no single case of no-show; all subjects that we had invited participated in the experiments. We are hence confident that our experimental results are fully representative of the target populations.

We followed the procedures laid out in Gneezy et al. (2009), with the risk task followed by the competition task. In the risk task, a subject chooses the amount to invest in a lottery out of an endowment of Rs. 50. The lottery outcome is determined by tossing of a fair coin with payoffs of zero and three times the stake chosen by the subject, respectively.

In the competition task, the subject throws a tennis ball into a bucket placed 10 feet away five times. Beforehand she chooses whether her monetary reward for successful tosses shall depend only on her performance at a rate of Rs. 10 per successful toss or, in addition, on winning against an anonymous competitor. For a competition's winner, the reward per successful toss under the competitive scheme is three times as large as under the non-competitive one. In case of a tie the payoff under the competitive scheme is equal to the one under the non-competitive regime.[8]

To rule out experimenter gender effects, in each session both a male and a female facilitator was present. The outcome of the risk task was not revealed to the subject until he/she had made a choice regarding competition and completed the ball-tossing.

[7]We also calculated the sample size for detecting a double difference of 28.5 percent, which we hypothesize for the Dimasa and Karbi, or Dimasa and Khasi, respectively. For 80 percent power, this would have required a sample size of 192 individuals per community, which was beyond our logistic and budgetary means. For a double difference of 28.5 percent, with 64 subjects per community we have a power of 36 percent in a two-sided, and of 49 percent in a one-sided test with $\alpha = 0.05$.

[8]In addition, to elicit sex-specific investment propensities regarding sons and daughters, we gave each subject the option to allocate a self-chosen fraction of the participation fee, which would be paid after completion of all experimental tasks, to schooling items for their children and to state the identity of the beneficiary child or children. In this process, we were careful not to make gender salient. First, subjects were not aware that they were invited because of being the parent of both a school-aged boy and girl. Second, before entering the risk and competition tasks, each subject declared merely the fraction of the participation fee to be allocated to schooling items. Only in the exit survey, after completion of the risk and competition tasks, did we record all the subject's children, including name, age and sex. Subsequent to that, we asked the subject for the name(s) of the beneficiary child(ren) and choice of schooling items.

The experiments were carried out in concurrent parallel sessions. To calculate subject A's payoff who has chosen to compete in the competition task, her/his performance is assessed relative to that of subject B concurrently performing the ball-tossing in the room next door, of whose identity, gender and choice A is not aware.

After accomplishing both tasks, each subject was privately communicated the outcome and payoffs of the risk and ball-tossing tasks and taken to another location to respond to an exit survey, followed by payments in cash and in kind.[9] Inclusive of the participation fee, subjects earned Rs. 285 on average, which equals roughly half the official minimum agricultural daily wage, with a minimum of Rs. 210 and a maximum of Rs. 430.[10] Throughout the experiment, the subjects were not informed about the choices of any other subject. The detailed experimental instructions are contained in the online appendix to this paper.

Emerging from our main research question we have several ex-ante hypotheses to be tested with the above designs, relating to the effect of social norms on competitive behavior and optimality of decisions across gender. As in Gneezy et al. (2009) the first behavioral prediction is that males will compete more often than females in the patriarchal society (hypothesis C1). Second, we expect that this result will be reversed, or at the least there will be no significant difference in the matrilineal/matrilocal society (hypothesis C2). Third, going with the view that women's and men's attitudes toward competitiveness are primarily socially formed, we expect no significant gender difference in the balanced Dimasa society (hypothesis C3). We will test hypothesis C1 statistically through the null hypothesis that women compete at least as often as men among the patriarchic Karbi, where the alternative is that men compete more often than women. This is a one-sided test. We test hypotheses C2 and C3 in two ways; first by conducting the same one-sided test as for hypothesis C1. Second, for hypothesis C2 (C3) we will test the null that the gender difference among the Karbi, defined as men's minus women's competitiveness, is not bigger than the corresponding gender difference among the Khasi (Dimasa). Again, these are one-sided tests.

Regarding the optimality of individual decisions to compete, we consider the same set of hypotheses for the outcome variable *decision interim optimal*, which we will introduce in detail in the following section. Hypothesis O1 states that males will take optimal decisions more often than females in the patriarchal society. According to O2, this result will be reversed, or at the least there will be no significant differences in the matrilineal/matrilocal society. And we expect no significant gender difference in the balanced society (O3).

[9] See footnote 8.

[10] For reference, the official daily minimum wage rate for unskilled labor in Assam and Meghalaya was Rs. 254 and 300 at the time of the experiment, respectively.

4 Data analysis

4.1 Participants' characteristics

We present, by community, the participant characteristics from our exit survey, which include gender, age, marital status, relation to the household head, years of education, a rough estimate of monthly income and principal economic activities, in Table 3. The average subject is between 35 and 42 years old. The Khasi are five and seven years older on average than their Dimasa and Karbi counterparts, respectively, because of later marriage and child-bearing ages. Average educational attainments are low, with averages between five and six and a half years. Interestingly, gender differences in education precisely reflect the relative status of the sexes predicted by our patriarchy index: women have 2.2 years more than men among the Khasi and 2.2 years less among the Karbi while there is only a small difference of 0.7 years in favor of men among the Dimasa. According to the income figures, Khasi subjects appear to be slightly wealthier than the others, but given the large variation within each community these differences are not statistically significant at conventional levels. The primary economic activity is farming, which is pursued by close to 90 percent of both men and women. In line with our objective to achieve homogeneity across the communities represented in our subject pool, these figures demonstrate that our subjects are quite similar regarding observable characteristics, perhaps with the exception of schooling. To account for such observable differences, we also conduct regression analyses with control variables.

4.2 Experimental outcomes

We provide summaries of the competitiveness experiment's outcomes in Table 4 and the upper left panel of Figure 2. Among the patriarchic Karbi, almost 70 percent of men but only 41 percent of women choose to compete. This difference is significant at the five percent level. While, with an incidence of 44 percent, women are slightly more competitive among the duolineal Dimasa, not more than 53 percent of Dimasa men choose to compete. Finally, only 44 percent of Khasi men compete, which compares to 50 percent of women. The figures for the Khasi are well in line with the ones obtained by Gneezy et al. (2009) with 39 and 54 percent, and Andersen et al. (2013) with 41 and 50 percent among adolescents. Choices among the Karbi are also broadly consistent with the latter authors' study, who report 67 and 19 percent among adolescents. The figures from our experiments imply that the incidence of competitiveness increases monotonically with the extent of patriarchy for men, while the opposite holds for women. In sum, across the three communities, the raw data support our ex-ante hypotheses C1, C2 and C3, and they suggest, in particular, that gender-balanced norms remove gender differences in

competitiveness.

An obvious concern is whether these differences in behavior could be due to gender differences in risk preferences across the three communities. The upper right panel of Figure 2 depicts the amount bet in our risk experiment by community and sex (see Table 4 for the means). According to these data, women bet 10 to 25 percent less than men. The gender difference in the amount bet varies little across the societies, however, and in fact slightly decreases with the extent of patriarchy. If competitive choices were solely driven by risk preferences, these risk-bearing patterns would predict a negative correlation between patriarchy and the gender difference in competitiveness – given that payoffs under the competitive regime are riskier.

Another concern is that there are gender differences in inherent skills regarding the ball-tossing task and that subjects factor this into their decisions. The center left panel of Figure 2 graphs the success rates in the competition experiment by community and sex (see Table 4 for the means). There are significant differences in ability across the communities, mostly however for men. Both Khasi and Dimasa men hit almost twice as often as their Karbi counterparts. Men in the two less patriarchic societies are also significantly better throwers than their female counterparts, especially among the duolineal Dimasa, where the gender difference is 44 percent (significant at one percent). Interestingly, there is no such gender difference among the patriarchic Karbi. If competitive choices were solely driven by expected payoffs and each subject were informed about her own skill as well as the skill distribution in her community, these patterns would predict greater gender differences in competitiveness in the balanced and matrilineal societies than in the patriarchic one.

Previous authors on gender differences in competitiveness have maintained that women's lower inclination to compete generally leads to worse economic outcomes for them (Gneezy et al., 2003). We make an attempt to assess this possibility with our data. We calculate analytically for each society a subject's expected payoff as a function of his/her number of successful tosses and the choice (*compete* or *not compete*) in the competition task. The expectation is taken over the empirical distribution of successes of all subjects in the respective society. Conditional on the subject's own successes, we then ask whether the expected payoff given the subject's actual decision is not smaller than his/her expected payoff with the alternative choice in the competition task. If the answer is yes, we call the subject's choice in the competition task *interim optimal*.[11] By construction, both *compete* and *not compete* are optimal choices for subjects with zero successes. Among Dimasas and Khasis, *not compete* is the unique optimal choice for subjects with one success and

[11]This approach is similar to the concept of optimality in Anderson et al. (2013). They conduct a simulation where each subject with her/his successes is repeatedly paired with another, random subject of the same community. Our calculation yields the limiting outcome of such a simulation as the number of repetitions approaches infinity.

compete for two or more successes. For Karbi subjects the unique optimal choice is *compete* even with only one success. This difference across the communities derives from the low aggregate success rate of Karbis relative to the other two communities (see the center left panel of Figure 2). We further define incidences of over and under-entry into competition by coding the former (latter) variable as one if a subject chooses *compete* (*not compete*) and this decision is not interim optimal, and zero otherwise.

The center right panel of Figure 2 graphs the interim optimality of decisions in the competition task by community and sex (see Table 4 for the means). Consistent with our previous findings on competition and success rates, Karbi women take suboptimal decisions 30 percent more often than men. Consistent with the hypothesis that patriarchy makes women take poor decisions by competing too little (O1), the two bottom panels show that this disadvantage is entirely driven by under-entry. The difference of 19 percentage points is borderline significant with a p-value of 0.11 and similar to the 26 percentage points obtained by Andersen et al. (2013) among Karbi adolescents. In contrast, Dimasa and Khasi women's choices are more often interim optimal than the choices of their male counterparts (O3 and O2). Moreover, in both societies, the stereotype of too little entry by women is reversed as under-entry is a little more frequent among men whereas women over-enter competition slightly more often than men.

4.3 Regression analysis

We test the ex-ante hypotheses introduced in section 3 through regression analyses. This also allows us to control for various observable characteristics as well as individual risk attitudes to ascertain that these do not drive the differences across societies we have manifested in the previous section. We estimate linear probability models where the choice to compete is the dependent variable. The results for competitiveness are set out in Table 5. Columns 5 through 10 show that the gender difference in competitiveness is statistically significant at the five percent level for the patriarchic Karbi, but not for the Dimasa and Khasi. This pattern obtains regardless of whether controls, including the amount bet in the risk experiment, are added. The test results for the null hypothesis that women compete at least as often as men are reported towards the end of the table. According to the p-values, this hypothesis is clearly rejected for the Karbi but neither for the matrilineal Khasi nor the gender-balanced Dimasa.

Columns 1 through 4 contain estimations for the pooled data. The patriarchic Karbi are the reference group throughout and the constant in the first column, where there are no controls, gives the sample mean for Karbi men. Our interest here is in the *Female* interaction terms. The estimate in the line *Khasi – Female Interaction* says that the difference in competitiveness between women and men is greater, by 34 percentage points, among the Khasi than among the Karbi, while the corresponding double difference for

the Dimasa and Karbi equals 19 percentage points. We test in turn the null hypotheses whether these double differences are zero or negative. Consistent with the magnitude of the point estimates, this hypothesis is clearly rejected for the Khasi versus the Karbi (p=0.03) and, with a p-value of 0.14, the test comes close to a rejection for the Dimasa versus the Karbi. The addition of control variables in columns 2, 3 and 4 affects neither the two double differences of interest nor the hypothesis tests in a mentionable fashion. Overall these results confirm our initial hypotheses that a higher social status of women reduces the gender gap in competitiveness encountered in patriarchic societies and that gender-balanced norms rather than the extreme of matrilineal norms suffice to close this gap.

We now turn to analyzing in more detail gender differences in the optimality of decisions. Toward this, Table 6 is structured like Table 5 with results for the dichotomous dependent variable *Decision interim optimal*. An obvious concern regarding optimality comparisons across communities and sexes is the variation in success rates along these two characteristics (see the center left panel of Figure 2). We therefore control for successful tosses in columns 3, 4, 6, 8 and 10 and take the results set out in the remaining columns with caution. Columns 6, 8 and 10 show that women make worse decisions significantly more often than men only among the patriarchic Karbi. In accordance with our hypotheses O1 through O3, Karbi women make optimal decisions a third less often than men (column 6) while positive, albeit insignificant differences obtain among the gender-balanced Dimasa and the matrilineal Khasi (columns 8 and 10). According to the p-values reported in columns 6, 8 and 10, the hypothesis that women make better choices than men can be rejected safely for the Karbi but neither for the Khasi nor the Dimasa. In sum, these regression results support our three ex-ante hypotheses regarding optimality of decisions.

Turning to the double-differences in optimality, the test results reported in columns 3 and 4 show that the hypothesis that the gender difference (defined as male minus female) among the patriarchic Karbi is smaller than among the balanced Dimasa is rejected for one of the two specifications (column 3) and comes close to rejection when the full set of controls is included (p-value of 0.14 in column 4). Similarly, the analogous hypothesis is rejected at a level of ten percent for the matrilineal Khasi vis-a-vis the Karbi in column 4 while a borderline p-value of 0.12 obtains in column 3. Taken together, these results suggest that gender-balanced norms suffice to prevent women from being economically disadvantaged due to their competitiveness in comparison to men. The pattern of the optimality results indeed implies that women perform as well under gender-balanced norms as under the more extreme matrilineal/matrilocal norms.

5 Conclusion

We report an experiment to test whether patriarchic social norms make women shy away from competing. Our main contribution is that we conduct this experiment not only in societies with extreme social norms, which put one of the sexes at an obvious advantage, but also in a traditional society with gender-balanced norms, where both sexes have similarly important rights and entitlements. The second innovation of our research design is that we have located this community through a systematic comparison of social norms among the universe of traditional societies that populate the western part of India's panhandle, drawing on an extremely rich but thus-far untapped anthropological atlas. This approach also allows us to make a strong case that confounding factors in the form of differences in characteristics other than social norms, such as environmental factors and subsistence mode, are minor in our experimental sample. On the other hand, a limitation of our design owed to logistic constraints is the relatively small sample size that limits the power of our comparisons of the gender-balanced society with the two more extreme forms of social organization.

Across the three societies in our experimental sample, we find a significant gender difference in competitiveness only in the patriarchic society and none in the gender-balanced and the matrilineal ones. In addition, a gender difference in the optimality of experimental choices is absent in both the gender-balanced and the matrilineal community.

While the traditional communities are different from modern societies in several regards, we think that some important insights can be obtained from our study for gender differences in preferences to compete in modern societies documented by several authors since Niederle and Vesterlund's (2007) seminal work. In particular, our results support the view that gender differences in competitiveness are primarily due to socialization and less to biological factors. First, the difference in competitiveness between men and women melts away as we move from a traditional patriarchic to a traditional gender-balanced society. Second, the fact that men still compete slightly more often when pooling the data from all three societies, even though our research design aims to represent a balance of communities on the patriarchy-matriarchy spectrum, is consistent with the observation that the norms represented in our study sample still slightly favor men on average. According to the anthropological atlas that we have processed, the gender-balanced society studied by us still assigns a slightly higher social status to men while women in the matrilineal society do not assume all the roles held by men in the patriarchic society.

Our results also support the view that the gender differences in competitiveness documented in modern societies, which are of a similar order of magnitude as those observed in traditional patriarchic societies, are a consequence of a patriarchic heritage. While our research cannot resolve whether patriarchic implicit norms or lags in behavioral changes

are responsible for women's lower competitiveness in modern societies, our result that competitiveness is nearly on par across the sexes in a traditional society with almost gender-balanced norms suggests that the societies of high-income countries, which have adopted balanced *de jure* norms more or less recently, still have a long way to go to also achieve a gender balance in behaviors that appear to be fostered by balanced *de facto* norms in the long run.

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Figures and Tables

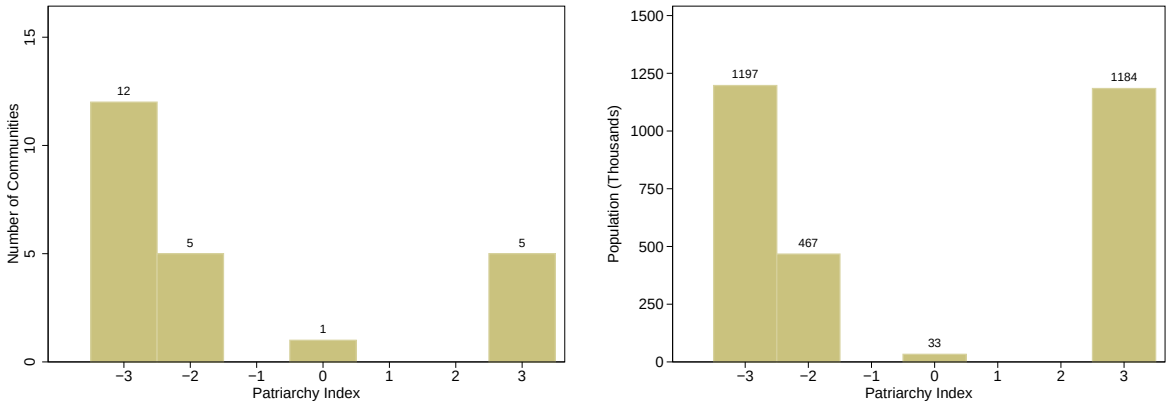


Figure 1: Distribution of the patriarchy index
Source: Own calculations with data coded from the anthropological atlas People of India (Singh, 1994 and 2003)

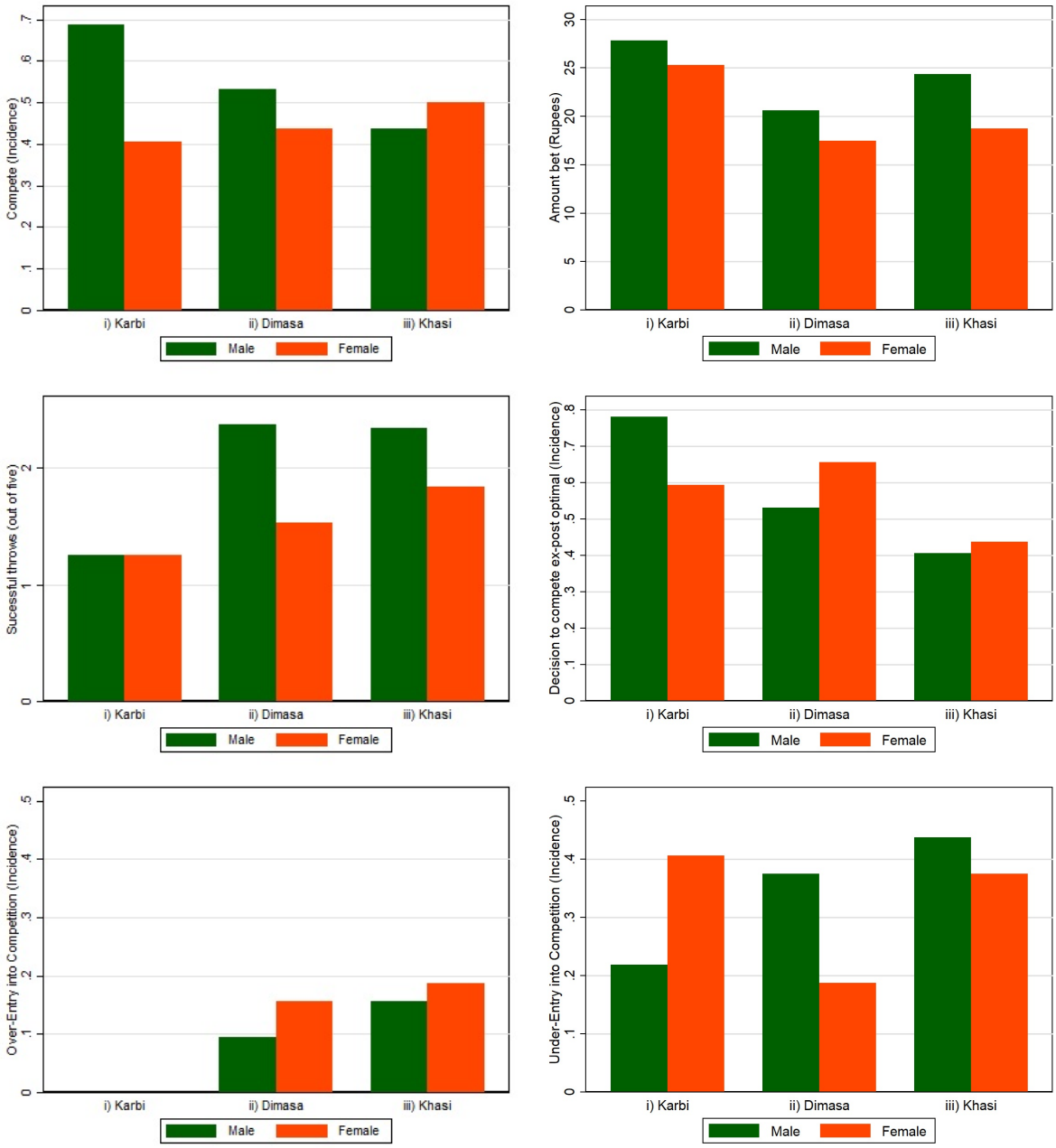


Figure 2: Experimental results
Source: Authors' experimental outcomes data

Table 1. Social norms relevant for women's status in 26 communities of Assam and Meghalaya

Community	State	Post-marital Residence	Inheritance	Descent	Patriarchy Index
Boro	Meghalaya	-1	-1	-1	-3
Chakma	Assam	-1	-1	-1	-3
Garo	Meghalaya	1	1	1	3
Hajong	Meghalaya	-1	-1	-1	-3
Hmar	Assam	-1	-1	-1	-3
Jaintia	Meghalaya	1	1	1	3
Kachari Mech	Assam	-1	-1	-1	-3
Kachari Barman	Assam	-1	0	-1	-2
Kachari Boro	Assam	-1	-1	-1	-3
Kachari Dimasa	Assam	0	0	0	0
Kachari Hojai	Assam	-1	-1	-1	-3
Kachari Sonowal	Assam	-1	-1	-1	-3
Karbi/Mikir	Assam	-1	-1	-1	-3
Khasi	Meghalaya	1	1	1	3
Koch	Meghalaya	1	1	1	3
Kuki	Assam	-1	-1	-1	-3
Lalung	Meghalaya	1	1	1	3
Mishing	Assam	0	-1	-1	-2
Mizo Biate	Meghalaya	.	-1	-1	.
Naga Kabui (Rongmei)	Assam	-1	-1	-1	-3
Show Fonts	Assam	0	-1	-1	-2
Naga Rengma	Assam	-1	-1	-1	-3
Naga Sema	Assam	0	-1	-1	-2
Naga Zeimei (Zeliang)	Assam	-1	-1	.	.
Rabha	Assam	.	-1	-1	.
Riang	Assam	0	-1	-1	-2

Source: *People of India* compiled by the authors. A value of -1 (+1) indicates that the respective norm is pro-male (pro-female), while a value of zero indicates a gender-balanced norm. For post-marital residence the norm is coded as +1 , 0 and -1 if matrilocality, neolocality (or ambilocality or duolocality), and patrilocality is followed, respectively. For inheritance a society is coded +1, 0, and -1 if female inheritance, duolineal inheritance or gender-neutral equigeniture, and male inheritance is followed, respectively. For descent norms a society is coded +1, 0, and -1 if matrilineality, duolineality, and patrilineality is followed, respectively. A "." indicates that the respective norm is missing from the *People of India* text. The Patriarchy Index is the horizontal sum of the three preceding columns.

Table 2. Social Norms in the Karbi, Dimasa and Khasi Societies

	Karbi	Dimasa	Khasi
Post-marital residence	Patrilocal	Neolocal	Matrilocal
Descent	Patrilineal	Double descent	Matrilineal
Inheritance	Male primogeniture	Duolineal and equigeniture	Female ultimogeniture

Source: *People of India* as coded by the authors.

Table 3. Participants' characteristics

	Karbi			Dimasa			Khasi		
	Pooled	Women	Men	Pooled	Women	Men	Pooled	Women	Men
Age (Years)	34.8	33.4	36.2	36.9	33.4	40.5	42.1	39.6	44.6
	(8.3)	(6.8)	(9.5)	(7.6)	(6.4)	(7.1)	(10.3)	(8.1)	###
Education (Years)	5.4	4.3	6.5	6.5	6.2	6.9	5.3	6.4	4.2
	(3.9)	(3.7)	(3.8)	(4.0)	(4.2)	(3.9)	(5.2)	(5.4)	(4.9)
Spouse's education	5.9	6.8	5.0	6.5	7.2	5.8	4.1	5.1	3.2
	(3.5)	(3.3)	(3.5)	(4.1)	(3.8)	(4.4)	(5.0)	(5.4)	(4.4)
Monthly income	5.5	6.1	5.0	5.4	5.3	5.5	7.3	6.4	8.1
(in Rs. Thousand)	(4.9)	(6.3)	(3.0)	(3.6)	(3.1)	(4.0)	(10.8)	(10.9)	###
Marital status									
Married (monogamy) (%)	95	94	97	100	100	100	98.4	96.9	100
Married (polygyny) (%)	1.6	0	3.1	0	0	0	0	0	0
Widow(er) (%)	1.6	3.1	0	0	0	0	1.6	3.1	0
Divorced (%)	1.6	3.1	0	0	0	0	0	0	0
Relation to head of household (HHH)									
Respondent is HHH (%)	53.1	6.3	100	50.0	0	100	51.6	3.1	100
Spouse (%)	46.9	93.8	0	50.0	100	0	48.4	96.9	0
Principal occupation of respondent									
Farmer (%)	90.6	84.4	96.9	81.3	75.0	87.5	90.5	93.6	87.5
Teacher (%)	0	0	0	0	0	0	4.8	6.5	3.1
Service (%)	3.12	3.1	3.1	3.1	6.3	0	1.6	0	3.1
Trading (%)	0	0	0	3.1	3.1	3.1	1.6	0	3.1
Unemployed (%)	0	0	0	1.6	3.1	0	1.6	0	3.1
Other (%)	6.25	12.5	0	10.9	12.5	9.4	0	0	0
Household owns land (%)	98.4	100.0	96.9	89.1	93.8	84.4	71.9	68.8	75.0
Observations	64	32	32	64	32	32	64	32	32

Notes: Means, standard deviations in parentheses. Education denotes completed years of schooling; income denotes monthly average household income (self-reported); relation to head of household denotes whether the participant is household head (HHH) or the household head's spouse; principal occupation denotes the respondent's primary economic activity.

Table 4. Participants' choices

	Karbi			Dimasa			Khasi		
	Pooled	Women	Men	Pooled	Women	Men	Pooled	Women	Men
Experiment summary: competition									
Compete	0.55	0.41	0.69	0.48	0.44	0.53	0.47	0.50	0.44
	(0.50)	(0.50)	(0.47)	(0.50)	(0.50)	(0.51)	(0.50)	(0.51)	(0.50)
Success	1.25	1.25	1.25	1.95	1.53	2.38	2.09	1.84	2.34
	(1.11)	(1.16)	(1.08)	(1.27)	(0.95)	(1.41)	(1.20)	(1.14)	(1.23)
Earnings	19.84	15.00	24.69	29.84	22.50	37.19	26.56	22.50	30.63
	(27.86)	(17.41)	(35.01)	(32.24)	(28.85)	(34.19)	(30.46)	(25.14)	(34.91)
Observations	64	32	32	64	32	32	64	32	32
Those who chose to compete									
Success	1.29	1.08	1.41	1.94	2.00	1.88	1.80	1.44	2.21
	(1.05)	(0.76)	(1.18)	(1.09)	(0.88)	(1.27)	(1.13)	(1.03)	(1.12)
Won-loss-tie	13-12-10	4-4-5	9-8-5	14-10-7	6-5-3	8-5-4	9-15-6	3-7-6	6-8-0
Earnings	26.29	16.92	31.82	40.65	36.43	44.12	30.00	22.50	38.57
	(34.99)	(22.13)	(40.19)	(41.63)	(38.95)	(44.59)	(42.67)	(34.35)	(50.51)
Earnings if choice reversed	12.86	10.77	14.09	19.35	20.00	18.82	18.00	14.38	22.14
	(10.45)	(7.60)	(11.82)	(10.93)	(8.77)	(12.69)	(11.26)	(10.31)	(11.22)
Those who chose not to compete									
Success	1.21	1.37	0.90	1.97	1.17	2.93	2.35	2.25	2.44
	(1.21)	(1.38)	(0.74)	(1.42)	(0.86)	(1.39)	(1.23)	(1.13)	(1.34)
Won-loss-tie	8-9-12	5-7-7	3-2-5	13-17-3	4-13-1	9-4-2	13-7-14	5-4-7	8-3-7
Earnings	12.07	13.68	9.00	19.70	11.67	29.33	23.53	22.50	24.44
	(12.3)	(13.8)	(7.4)	(14.2)	(8.6)	(13.9)	(12.3)	(11.3)	(13.4)
Earnings if choice reversed	20.69	23.16	16.00	40.91	15.56	71.33	44.12	36.88	50.56
	(33.59)	(39.31)	(19.55)	(52.28)	(29.35)	(58.17)	(41.93)	(37.54)	(45.56)
Interim optimality of choices									
Over-entry	0.00	0.00	0.00	0.13	0.16	0.09	0.17	0.19	0.16
	(0.00)	(0.00)	(0.00)	(0.33)	(0.37)	(0.30)	(0.38)	(0.40)	(0.37)
Under-entry	0.31	0.41	0.22	0.28	0.19	0.38	0.41	0.38	0.44
	(0.47)	(0.50)	(0.42)	(0.45)	(0.40)	(0.49)	(0.50)	(0.49)	(0.50)
Decision optimal	0.69	0.59	0.78	0.59	0.66	0.53	0.42	0.44	0.41
	(0.47)	(0.50)	(0.42)	(0.50)	(0.48)	(0.51)	(0.50)	(0.50)	(0.50)
Experiment summary: risk									
Amount bet	26.56	25.31	27.81	19.06	17.5	20.63	21.56	18.75	24.38
	(8.21)	(6.21)	(9.75)	(8.11)	(8.03)	(8.01)	(12.63)	(11.85)	(12.94)

Notes: Means, standard deviations in parentheses. *Compete* denotes whether the subject opted for the competitive remuneration scheme in the competition task; *success* denotes the number of successful tosses in the ball tossing task (out of 5 balls thrown); *earnings* give the amount earned (in Rs.) from the ball-tossing experiment. This amount equals 10 times the number of successes if the participant chose not to compete. It equals 30 times the number of successes if the subject chose to compete and won the competition. It equals 10 times the number of successes if the subject chose to compete and tied. It equals zero if the subject chose to compete and lost the competition; *earnings if choice is reversed* denotes the hypothetical earnings if the subject had made the complementary choice in the competition task.

Table 5. Regression results: Competition choice

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Estimation Sample:	Pooled	Pooled	Pooled	Pooled	Karbi	Karbi	Dimasa	Dimasa	Khasi	Khasi
Dimasa	-0.16	-0.15	-0.12	-0.12						
	(0.12)	(0.13)	(0.13)	(0.13)						
Khasi	-0.25**	-0.24*	-0.23*	-0.22						
	(0.12)	(0.14)	(0.13)	(0.14)						
Female	-0.28**	-0.29**	-0.27**	-0.28**	-0.28**	-0.36**	-0.09	-0.04	0.06	0.04
	(0.12)	(0.13)	(0.12)	(0.13)	(0.12)	(0.14)	(0.13)	(0.16)	(0.13)	(0.14)
Dimasa - Female Interaction	0.19	0.19	0.19	0.19						
	(0.18)	(0.18)	(0.18)	(0.18)						
Khasi - Female Interaction	0.34*	0.33*	0.36**	0.34*						
	(0.18)	(0.18)	(0.18)	(0.18)						
Risk Preference (Amount Bet, in Rs.100)			0.47	0.39		-0.15		0.95		0.29
			(0.37)	(0.38)		(0.73)		(0.85)		(0.57)
Constant	0.69***	-3.75	0.56***	-3.72	0.69***	-32.34**	0.53***	4.14	0.44***	11.64
	(0.08)	(9.58)	(0.14)	(9.54)	(0.08)	(14.02)	(0.09)	(18.58)	(0.09)	(14.26)
Observations	192	192	192	192	64	64	64	64	64	64
R-squared	0.035	0.043	0.043	0.048	0.080	0.156	0.009	0.037	0.004	0.062
Control Variables	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
H0: Female ≥ 0 (p-value)					0.012	0.006	0.230	0.395	0.688	0.617
H0: Dimasa-Female Interaction ≤ 0 (p-value)	0.143	0.141	0.141	0.142						
H0: Khasi - Female Interaction ≤ 0 (p-value)	0.026	0.037	0.022	0.032						

Notes:

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The dependent variable is a dummy indicating whether the subject chooses the competitive (=1) or the piece-rate (=0) remuneration scheme.

Control variables: Age, education, female household head (dummy), land ownership (dummy), principal occupation farmer (dummy).

In columns 1 through 6, Karbi men are the reference category. In columns 7 and 8 (9 and 10) Dimasa (Khasi) men are the reference category.

Table 6. Regression results: Optimality of decision to compete

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Estimation Sample:	Pooled	Pooled	Pooled	Pooled	Karbi	Karbi	Dimasa	Dimasa	Khasi	Khasi
Dimasa	-0.25**	-0.21*	-0.05	0.01						
	(0.12)	(0.12)	(0.12)	(0.13)						
Khasi	-0.38***	-0.30**	-0.22*	-0.12						
	(0.12)	(0.13)	(0.12)	(0.14)						
Female	-0.19	-0.23*	-0.16	-0.20*	-0.19	-0.26**	0.13	0.12	0.03	0.07
	(0.12)	(0.12)	(0.12)	(0.11)	(0.12)	(0.13)	(0.12)	(0.16)	(0.13)	(0.13)
Dimasa - Female Interaction	0.31*	0.29*	0.23	0.19						
	(0.17)	(0.17)	(0.17)	(0.17)						
Khasi - Female Interaction	0.22	0.25	0.20	0.24						
	(0.17)	(0.18)	(0.16)	(0.17)						
Risk Preference (Amount Bet, in Rs.100)			1.04***	1.12***		0.01		1.93***		1.45***
			(0.35)	(0.32)		(0.69)		(0.69)		(0.47)
Ability (Successful Tosses)			-0.11***	-0.11***		-0.12**		-0.10**		-0.11**
			(0.03)	(0.02)		(0.05)		(0.05)		(0.05)
Constant	0.78***	-9.65	0.63***	-11.32	0.78***	-36.73***	0.53***	8.14	0.41***	-3.49
	(0.07)	(9.25)	(0.13)	(8.68)	(0.07)	(12.03)	(0.09)	(16.48)	(0.09)	(13.75)
Observations	192	192	192	192	64	64	64	64	64	64
R-squared	0.067	0.087	0.162	0.193	0.041	0.237	0.016	0.181	0.001	0.241
Control Variables	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
H0: Female ≥ 0 (p-value)					0.054	0.021	0.842	0.773	0.598	0.697
H0: Dimasa-Female Interaction ≤ 0 (p-value)	0.033	0.049	0.085	0.139						
H0: Khasi - Female Interaction ≤ 0 (p-value)	0.100	0.079	0.116	0.077						

Notes:

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

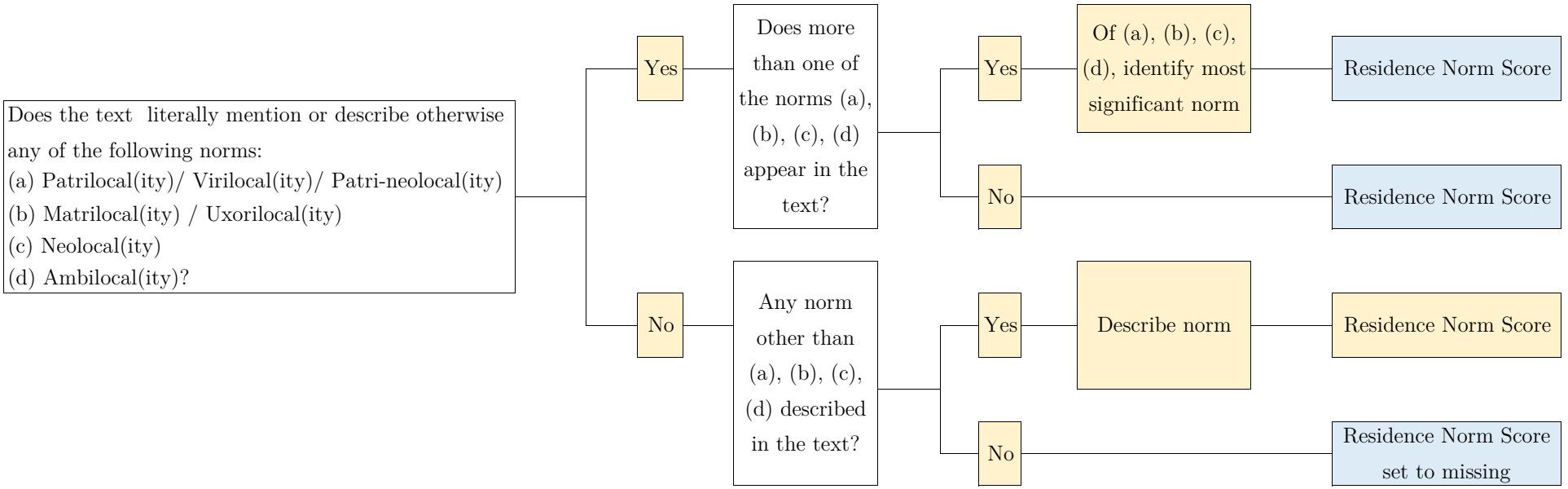
The dependent variable is a dummy variable indicating whether the subject's competition choice is interim-optimal.

Control variables: Age, education, female household head (dummy), land ownership (dummy), principal occupation farmer (dummy).

In columns 1 through 6, Karbi men are the reference category. In columns 7 and 8 (9 and 10) Dimasa (Khasi) men are the reference category.

Online Appendix

Figure A1: Summary of coding and scoring for post-marital residence norms

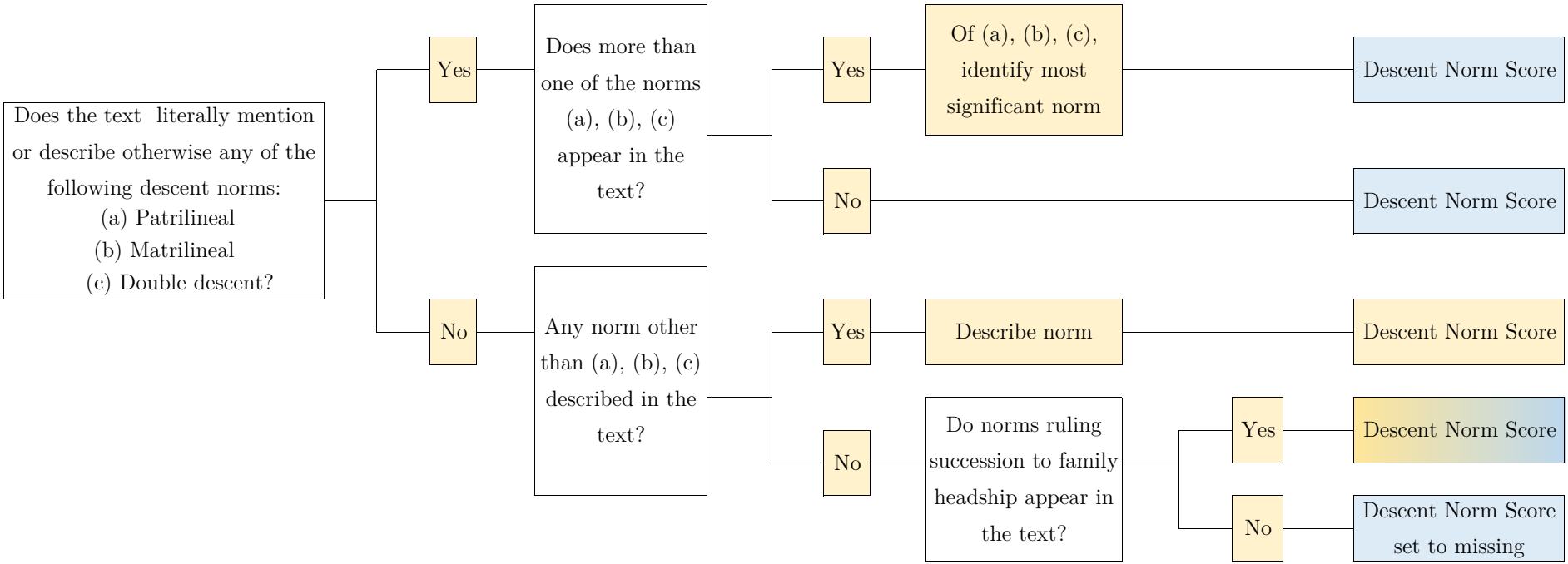


Notes:

Decision/score taken/assigned by the coder

Score assigned mechanically to the norm identified by the coder: -1 for patrilocality, +1 for matrilocality, 0 for neolocality and ambilocality.

Figure A2: Summary of coding and scoring for descent norms



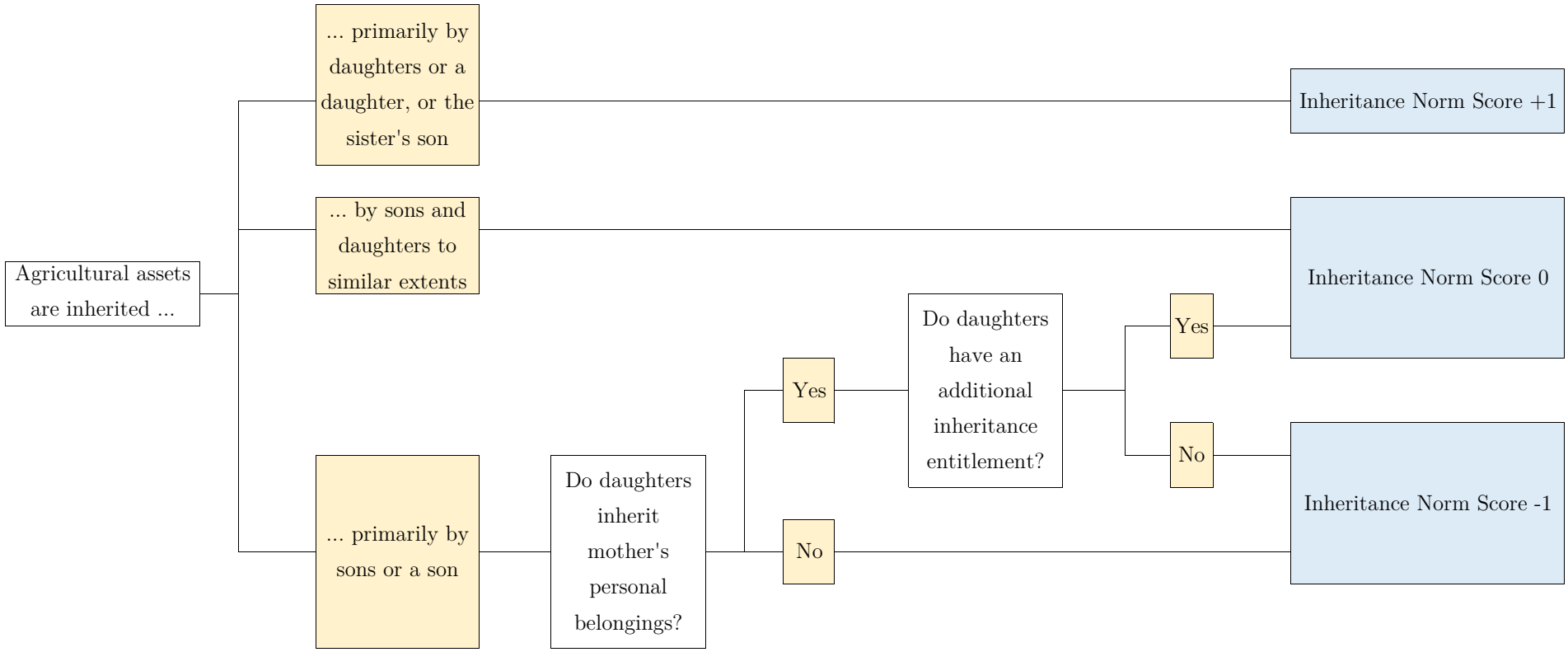
Notes:

Decision/score taken/assigned by the coder

Score assigned mechanically to the norm identified by the coder:
-1 for patrilineal, +1 for matrilineal, 0 for double descent.

Score assigned mechanically to the norm identified by the coder if family head's biological son or other adult male succeeds as family head
-1 if one of the father's biological sons succeeds his father as family head,
+1 if a male adult who may or may not be the current head's biological son (e.g. a son in law) succeeds as the head of the family.
Score assigned by the coder if other succession norm is described in the text.

Figure A3: Summary of coding and scoring for inheritance norms



Notes:

Decision taken by the coder

Score assigned mechanically

EXPERIMENTAL PROTOCOL

Welcome to this study of decision-making. The experiment will take about 10 minutes. The instructions are simple, and if you follow them carefully, you can earn a considerable amount of money. All the money you earn is yours to keep and will be paid to you, in cash, immediately after the experiment ends. In addition to any earnings you might have in this task, you will be paid 100 rupees to participate.

I

At the beginning of this experiment you will receive 100 rupees. You can split this 100 rupees freely between you and **your children. Depending on the money you give to your children they will receive any of the schooling items of your choice.** The rest of the money will be accumulated in your total balance.

Ask them how much they want to give to their children and how much they want to keep.

(*Record the money split*)

II

Next, you will receive 50 rupees. You are asked to choose the portion of this amount (between 0 and 50) that you wish to invest in a risky option. The rest of the money will be accumulated in your total balance.

The risky investment: there is an equal chance that the investment will fail or succeed. If the investment fails, you lose the amount you invested. If the investment succeeds, you receive 3 times the amount invested.

How do we determine if you win? After you have chosen how much you wish to invest, you will toss a coin to determine whether you win or lose. If the coin comes up heads, you win 3 times the amount you chose to invest. If the coin comes up tails, you lose the amount invested.

Examples

1. If you choose to invest nothing, you will get the 50 rupees for sure. That is, the coin flip would not affect your profits.
2. If you choose to invest all of the 50 rupees, then if the coin comes up heads, you win 150 rupees, and if the coin comes up tails, you win nothing and end up with 0.
3. If you choose to invest 30, then if the coin comes up heads, you win 110 (20 + 3 x 30), and if the coin lands on tails, you win 20.

Do you have any questions?

Ask them how much they would like to invest.

(*Record the outcome of the lottery and calculate the amount*)

(Do not tell the outcome of the lottery)

III

The task that we ask you to perform today is throwing this ball into this bucket from this line. (Show them the ball, bucket, and line.) You will have 5 tries.

We now ask you to choose one of two options according to which you will be paid in the experiment

There are two payment options:

Option 1: If you choose this option,you will get 10rupees for each time you get the ball in the bucket in your 5 tries. So if you succeed 1 time, then you will get 10 rupees. If you succeed 2 times, then you will get 20 rupees. If you succeed 3 times, you will get 30 rupees, and so on.

Option 2: If you choose this option, you will receive a reward only if you succeed more times than the person who is playing in the next room. If you succeed more than this person, you will be paid 30 rupees for every time you succeed. So if you succeed 1 time, then you will get 30 rupees. If you succeed 2 times, then you will get 60 rupees. If you succeed 3 times, you will get 90 rupees and so on. But you will only receive a reward if you are better than the person in the next room. If you both

succeed the same number of times, you will both get 10 rupees for each success. If you succeed the less number of times, you will get nothing.

We now ask you to choose how you want to be paid: according to Option 1 or Option 2.

Record their choice: Option 1 or Option 2.

Now you may play.

Allow the participant to toss the balls and record the result on the survey sheet. You can record the result of each toss with a check mark (√) and X (check mark (√) for success and X for failure). At the end of the 5 tosses, write the total number of successes on the survey sheet and the money value of each toss (based on his/her choice). Also write down whether his/her succeeded more than his/her opponent with win (W) or lose (L) or tie (T).

(*Compare* and r*ecord the money earned*)

(*Conduct the exit survey privately*)

(After survey make final payments in cash and offer them to choose schooling item)

SCHOOLING ITEMS

We offer you to take any one or any combination of schooling items indicated here for your children. Suppose you have given 50 rupees for your children, you can take a geometry box. You can also choose more than one item within the money you have given to your children. For example, if you gave 40 rupees you can take either one pencil box or two glue sticks or 4 Wax crayons. But you cannot take cash.

Cost of the item	Description
Rupees 10	Wax crayons
Rupees 20	Glue stick
Rupees 30	Gel Pen
Rupees 40	Pencil box
Rupees 50	Geometry box
Rupees 60	Stapler
Rupees 70	Writing board
Rupees 80	Tiffin box
Rupees 90	Water bottle
Rupees 100	Calculator

Ask them which child should get the schooling item.

(*mark it in the exit survey*)

Now, you can ask questions or clarifications before the experiment starts. But you cannot consult anybody during the experiment.

You do not need to write the total payment on the card. Tell the participant he/she must go to the person who will fill out an exit survey. Once he/she has filled out this survey, he/she should take the card and the survey to the "cashier" and he/she will receive payment. If they ask you what to do: Tell them that you cannot give them advice about what to choose and offer to read the script to them again.

***