Equality of the Sexes and Gender Differences in Competitiveness: Experimental Evidence from a Traditional Society with Gender-Balanced Norms

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Abstract

Can gender-balanced social norms mitigate the gender gap in competitiveness that has been documented for modern as well as traditional patriarchic societies? We identify a society in northeast India where women and men have had similar rights and entitlements from time immemorial, to conduct the first lab-in-the-field experiment in a traditional society with gender-balanced norms. For reference we conduct the same competition experiments in adjoining traditional patriarchic and matrilineal societies. We find no significant gender difference in the inclination to compete in the gender-balanced society – unlike in the patriarchic society. We also find that women's decisions in our experiment are payoff-maximizing more often than men's in the gender-balanced society – opposite to the pattern encountered in the patriarchic society. Our results highlight the long-term effects of culture on economic behavior and indicate that the large gender gap in competitiveness documented for modern societies is a long-term consequence of their patriarchic foretime.

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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), and gender wage gaps are a continuing concern. One key factor held responsible for these asymmetries are systematic differences in the inclination to compete (Heinz et al., 2016). 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 as women in several economic lab experiments (see Niederle and Vesterlund, 2011, for a comprehensive review of this literature).

To assess how culture affects the gender gap in competitiveness, Gneezy et al. (2009) have studied gender-specific choices to compete in lab-in-the-field experiments in traditional patrilineal/patrilocal and matrilineal/matrilocal societies in Tanzania and India. In the latter, inheritance and kinship follow the female lineage and newly-wed couples join the bride's parental household. Patrilinearity is taken as a proxy for patriarchic cultural norms in their work and in ours. Consistent with the view that patriarchic cultural norms discourage women and suppresses their economic potential, they find that women are more competitive than men in the matrilineal/matrilocal society while men compete about twice as often as women in the patrilineal society.

While the results of Gneezy et al. (2009) demonstrate that social norms which asymmetrically favor women can close the gender gap in competitive behavior observed in modern and traditional patriarchic societies alike, in this paper we examine whether more gender-balanced social norms, for which modern societies strive, go along with less gender differences in competitive behavior. Our comparative perspective is that, in modern societies, patriarchic laws and customs have yielded to (formal) equal rights and entitlements, which we shall call *balanced gender norms*, only by the end of the twentieth century (Thomsen, 2012). The the traditional societies studied by Gneezy et al. (2009) have been following their gender norms until today, without having been strongly affected by external or internal attempts to change them.

To study this question, we identify a society where gender-balanced kinship, inheritance and post-marital residence norms have traditionally been in place for conducting lab-in-the-field experiments. Our research design and main hypotheses are illustrated in Figure 1, where the societies in which competition experiments with a gender focus have been conducted thus far are classified by their current and ancestral gender norms. By the latter we mean the norms in effect about 250 years ago, before the onset of massive societal and economic change in Europe and North America (Thomsen, 2012), and we refer to a 'traditional society' as one where gender norms have been relatively stable over

the same time horizon. We use the term *patriarchy* throughout to characterize a basic societal characteristic, while using *patrilineal* to refer to the specific inheritance norms. As has been argued by (Gneezy et al., 2009), even matrilineal societies cannot be considered *matriarchal* in most cases. Specific inheritance norms are considered somehow equivalent to formal gender equality laws in western societies, with a longer tradition than the latter.

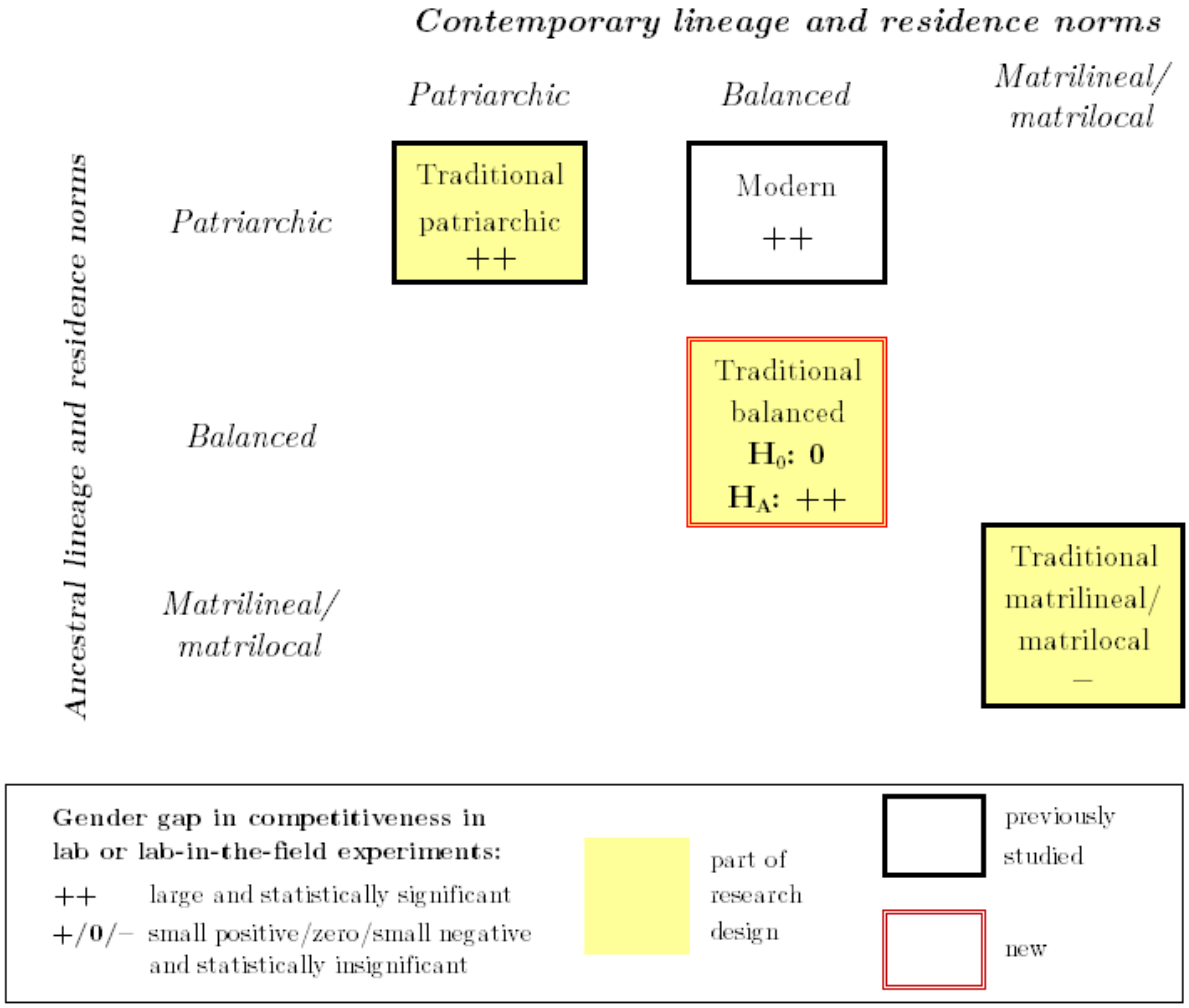


Figure 1: Hypotheses and research design

Notes: Each cell represents one type of society, classified by its ancestral and contemporary lineage and residence norms. Traditional patrilineal and traditional matrilineal/matrilocal societies are the subject of Gneezy et al. (2009) and Andersen et al. (2013), competition experiments in modern societies are reviewed in Niederle and Vesterlund (2011).

The societies studied in Gneezy et al. (2009) occupy the two extremes on the main diagonal of the resulting three-by-three matrix, along which ancestral and current norms coincide. Modern societies, on the other hand, are situated above this diagonal, with patriarchic ancestral and formally balanced contemporary gender norms. Since the changes that have eventually led to formally equal rights for women and men has been fairly recent, at least when viewed on a historical scale, our central argument is that the long-term

effects of more balanced gender norms can only be studied in a society where these norms have been relatively gender-balanced for centuries. Such societies are located in the center of this matrix. Our view is supported by a body of recent empirical work demonstrating that more than 200-year-old historical norms and institutions, even if long overcome, greatly affect contemporary behavior in numerous economic and social spheres (Nunn, 2020).

Specifically, we aim to distinguish between two competing views regarding culture and the gender gap in competitiveness which previous research designs have not been able to address. First, can more balanced gender norms close the gender gap in competitiveness in the long run? This hypothesis is depicted in Figure 1 as H_0. Alternatively, are relatively gender-balanced formal norms not sufficient to make a difference relative to patriarchy as far as competitive behavior of men and women is concerned, even in the long run? This hypothesis is depicted as H_A in Figure 1, according to which the gender gap in competitiveness in a gender-balanced society is large and positive, as in societies with a patriarchic heritage.

Knowing the answers to this question is of great interest for society and policy-makers alike whose goal it is to close behavioral gender gaps in the economic sphere. Under our null hypothesis there is hope that the gender gap in competitiveness will eventually close and interventions such as affirmative action (Niederle et al., 2013; Leibbrandt et al., 2018), single-sex education (Booth et al., 2018) or priming of women with a feeling of power and control in competitive situations (Balafoutas et al., 2018) need only be taken transitionally. On the other hand, under our alternative hypothesis, such measures may have to be continued infinitely if women are to be represented adequately in leading positions.[1]

Our paper's main contribution is to identify a society where gender norms have been balanced for a long time and to conduct economic experiments there. Such societies are rare on our planet: in the cross-cultural database D-Place, which is a continuation of G. P. Murdock's well-known Ethnographic Atlas (Murdock, 1967), among 1291 societies listed there are merely 25 in which men and women have similarly important rights and entitlements regarding lineage and post-marital residence, which are the factors we focus on when identifying relatively gender balanced societies. With very few exceptions they are native groups in North America and island dwellers in Polynesia.

To minimize the effect of confounding factors, our aim was to identify such a society as well as a patrilineal and a matrilineal/matrilocal one in the same area. Building on Andersen et al. (2013), who have identified a patrilineal and a matrilineal/matrilocal society dwelling adjacently in northeast India, we identify a gender-balanced society by systematically coding descent and residence norms for all major traditional communities

[1]That transitory changes in gender norms have no persistent effect on women's competitive inclination has recently been shown by Booth et al. (2019) in the context of communism in China.

in two neighboring states of India's northeast from the ethnographic atlas *People of India* (Singh, 1988). We are first with a perspective on economic behavior to systematically explore this important collection, which, for India, covers many more ethnic groups than Murdock's Ethnographic Atlas or its successor D-Place. Our ethnographic analysis of 23 societies shows that there is only a single one in which both genders have similar rights and entitlements, 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 adjoining Karbi, the patrilineal society studied by Anderson et al. (2013), 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 matrilineal/matrilocal 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 a competition experiment 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 or his reward shall depend on her/his own successes only or whether he/she competes and earns a reward only if he/she succeeds more often than her/his (anonymous) competitor.

Our experimental results support the hypothesis H_0 depicted in Figure 1 that gender-balanced norms correlate with less gender differences in competitiveness. While, in accordance with earlier research, men compete almost twice as often as women in the patrilineal 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/matrilocal society. In other words, we replicate the results depicted for previous studies in the upper left and lower right cells of Figure 1 (++ and –, respectively).

To assess whether patriarchy leads to worse economic outcomes for women through their choices, we also analyze the optimality of choices. Again, the experimental data support our null hypothesis: women among the patrilineal Karbi compete too little, making choices that fail to maximize payoffs 33 percent more often than men. In contrast, there is no 'under-entry' into competition among both Khasi and Dimasa women, whose choices are payoff-maximizing more often than men's.

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 gender norms across the three societies.

We conclude that relatively gender-balanced social norms rather than the extreme of matrilineage and matrilocality already go along with reduced gender asymmetries in behavior and economic outcomes – at least when they exist in the long run. At the very least these findings provide an existence result: it is not generally true that women avoid competition more often than men in societies with gender-balanced social norms – which the experimental literature from western societies thus far has suggested – because we have discovered a context where this is not the case. Instead our results support the view that a tradition of relatively gender-balanced norms comes with no major gender differences in competitiveness and that the effects of norms favoring a particular gender 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 patrilineal 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 traditional ruler of the Khasi country (Gerlitz, 1984).

More broadly, our results support the view that historical norms and institutions strongly impact contemporary behavior, specifically that a legacy of patriarchy in modern societies is primarily responsible for the stark gender differences in competitiveness. In the society with balanced gender norms that we study, the gender gap in competitiveness is much smaller than in several lab experiments conducted in modern societies of Europe and North America. In line with a large body of recent empirical literature in economics (Nunn, 2020), our findings stress the importance of long-term effects of social norms and institutions: while women's rights have improved significantly in western countries over the last 200 years (Thomsen, 2012), contemporary gender patterns in competitiveness as elicited by lab experiments continue to resemble those in traditional patriarchic societies. In contrast, among the Dimasa whom we study, both past and current norms are balanced, and women compete almost as often as men.

Our paper's main contribution is methodological, to a booming literature on determinants of economic and social behavior by comparing traditional societies with different social norms or modes of subsistence. Specifically, 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 but a few. Most closely related to our study are the papers by Gneezy et al. (2009), Andersen et al. (2013) and Lowes (2018), who all compare gender differences in competitive behavior between a matrilineal and a patriarchal society.[2] Beyond the experimental literature on the underpinnings of gender differences in behavior, there is a by now vast body of cross-cultural research involving lab-in-the-field experiments that reaches far beyond the discipline of economics (the pioneering contribution is Henrich et al., 2005).

Our principal innovation relative to these papers is that our research design is the very first one including a traditional society where the social status of men and women is balanced in addition to the extremes of a patrilineal and a matrilineal society. We think this is particularly useful to learn more about the long-term effect of social norms on economic behavior in modern societies. Moreover, our research design is the first one in this literature where the choice of societies is not convenience-based, but instead guided by a comprehensive ethnographic analysis covering the universe of traditional cultures in a defined area.

Our paper also contributes to a recent literature of historical norms and institutions, and their impact on contemporary economic and social behavior (Nunn, 2020, provides a current overview of this literature). While the bulk of this literature is concerned with the lagged effects of institutions that have long disappeared, our research complements this approach by deliberately focusing on societies where norms and institutions have been stable for several centuries and contrasting them with other authors' findings regarding societies that have undergone massive changes during the same time period.

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

[2]The key difference between the two former papers, which, like us, study the Khasi of northeast India as matrilineal society, and Lowes is that she finds no closing of the gender gap among spouses of matrilineal descent in an urban African context. While the reason for the difference between Lowes' and Gneezy and coauthors' findings cannot be rigorously identified from the research designs, an important difference between her and Gneezy's as well as our study design is that the experiments are not set in traditional societies, where according to our definition ancestral social norms are largely followed by the experimental subjects. Instead, her subjects are inhabitants of an ethnically highly diverse city of 1.3 million, where contemporary residence arrangements and marriage transfers do not differ significantly across descendants of traditionally matrilineal and patrilineal groups. Moreover, the city of Kananga is surrounded exclusively by patrilineal communities, indicating that the mainstream culture of the study location might be patriarchic. Hence we think there is a possibility that the matrilineal subjects in Lowes' study experienced a largely patriarchic socialization and might therefore not display behaviors found among members of the same societies who live in a more traditional, typically rural setup. In this perspective, her matrilineal (patrilineal) subjects would be categorized in the lower (upper) left corner of our classification scheme in Figure 1. Her findings, which amount to a '++' in both cells of Figure 1 covered by her research, suggest that patriarchy, no matter whether ancestral or only contemporary, always comes with a gender gap in competitive behavior.

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 traditional societies in India's north-east

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, 4,635 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 societies world-wide, the *People of India* volumes include no tabulations.[3] Instead, in *People of India*'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 lifestyle and culture are 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 re-

[3]There is a large number of recent papers in economics using Murdock's atlas. They all focus on Africa (e.g. Alesina et al., 2020, 2013; Michalopoulos et al., 2018). For India, in contrast, the coverage of Murdock's atlas is far less comprehensive than *People of India*. Murdock lists less than 50 societies, while *People of India* contains 4,635.

cently immigrated communities. Forty communities in the two *People of India* volumes on Assam and Meghalaya (Singh et al., 2003, 1994) satisfy this criterion. We further eliminate nine communities for which *People of India* 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.[4] This compares to a total population of scheduled tribes in the two states of about 3.3 million in 1981.[5] 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 competitive-

[4]For each of the five communities that are portrayed twice, once in the Assam and once in the Meghalaya volume of *People of India*, we only consider the set of norms of the more populous of the two sub-populations.

[5]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.

ness 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 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.[6] 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 patrilineal descent and inheritance norms as well as patrilocal residence norms as unfavorable for women (score of -1). We classify descent and inheritance norms that are matrilineal as well as matrilocal residence norms as favorable for women (score of $+1$). We classify 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 as neutral (score of 0). 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 *People of India* (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 in the respective *People of India* chapter. The rate of disagreement between the two coders in this exercise was 14 percent, 11 out of 78

[6]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.

$(= 26 * 3)$ 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 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 patrilineal and a matrilineal society, respectively, our analysis yields the extreme scores of -3 and 3 for them.

Figure 2 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 2 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 patrilineal 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 patrilineal Karbi and the matrilineal/matrilocal Khasi.

2.2 The Dimasa, Karbi and Khasi societies

In this section, we discuss similarities and differences of the societies 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). Forth, the cultural traditions of all three groups are explicitly honored and given a special status by the constitution of India. Under its sixth schedule, autonomous administrative divisions are demarcated for Karbi, Dimasa and Khasi people, Karbi Anglong and Dima Hasao in Assam, and Khasi Hills in Meghalaya. Their governing bodies, so-called autonomous district councils, are given wide-ranging autonomy regarding the judicial system, taxation, executive as well as legislative powers, comprising "inheritance of property, marriage and divorce, [and] social customs."

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 six dimensions just discussed. The Khasi are similar to the Karbi and Dimasa regarding ethnicity, genetics, environment, mode of subsistence and constitutional status, 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 patrilineal 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.

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 and 40 matri-clans, 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 women is held to be a little lower than that of men" 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.

Two issues of importance for our general argument about the long-term effects of gender-balanced norms on competitive behavior are, first, whether the lineage and residence norms recorded in *People of India* during the late 1980s are 'ancestral' by our previous definition and, at the same time, contemporary. Establishing the former encounters the problem that none of our study societies have their own written histories. On the other hand, the most comprehensive available ethnography of the Dimasa (Danda, 1978) points out that, according to their own oral traditions, the double descent system as well as other fundamental cultural norms have been in place for at least 500 years, when the Dimasa-Kachari king had to give up the grand capital Dimapur on the southern banks of the Brahmaputra after being defeated by invaders and the kingdom entered a sustained phase of political decline. Both the Karbi and Khasi are covered by Murdock's ethnographic atlas (Murdock, 1967), where the entries for these two groups are based on ethnographies written during the first decade of the twentieth century. These sources document precisely the same norms regarding lineage and residence as the respective chapters in *People of India*. Moreover, they refer to them as ancestral, around the year 1900.

Turning to the second item, Andersen et al. (2018) confirm that, in the 2010s, Karbi and Khasi people continue to follow the lineage and residence norms as recorded 30 years earlier by the *People of India* project. In addition, from our own circumstantial observations, lifestyles of the Dimasa appear no less traditional than among the neighboring Khasi and Karbi. These assessments are also confirmed by the results of an exit survey that we administered to our subjects. Regarding post-marital residence, all 64 Karbi subjects stated that they live with the groom's family, while all Khasi subjects live with the bride's family. Among the Dimasa, 41 stated a neolocal and 23 a patrilocal arrangement. Regarding descent, we asked for the family name their children would take. All Karbi subjects answered the groom's family name, all Khasi subjects stated the bride's family name, and all Dimasa indicated a duolineal regime, where sons inherit the father's

patriclan name and daughters the mother's matriclan name. For inheritance we asked who will inherit the subject's personal property. All Karbi subjects stated sons and all Khasi subjects the youngest daughter, while among the Dimasa all male subjects named their sons and all female subjects their daughters. Taken together, these observations and figures give us confidence that, in our study sample, ancestral and contemporary norms are largely congruent and in accordance with the accounts in *People of India*.

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.[7] 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. All experimental sessions took place within six days in May 2019.

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.[8]

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 fixed the size of our experimental sample at 192.[9]

[7]For the two communities in Assam, the Karbi and Dimasa, we consulted the administration of the Lumbajong development block in Manja and selected 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.

[8]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.

[9]We also calculated the sample size for detecting a double difference of 28.5 percent, which we

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 – a piece-rate scheme – or, in addition, on winning against an anonymous competitor. If the subject has more hits than her competitor, the reward per successful toss is Rs. 30 per hit under the competitive scheme and zero if the competitor scores more often. In case of a tie, the competitive and the piece-rate schemes' payoffs are the same.[10]

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 test with $\alpha = 0.05$.

[10]In addition, to elicit investment propensities regarding sons and daughters, we gave each subject the option to allocate a self-chosen fraction of the fixed 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. We capped this amount at Rs. 100, half of the total participation fee of Rs. 200. In this process, we were careful not to make gender salient. First, subjects were unaware 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 the fraction of the fixed 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. To be clear, unlike in Cassar et al. (2016), there was no option to invest any of the variable returns from the competition or risk tasks in child items. Correlating the choices from these two experiments, there is no evidence for an association between competitiveness and the sex of the investment's recipient (p-value=0.55 in Fisher's exact test for independence of these two choices). This also holds separately for male and female subjects, and separately for each community. This gives us confidence that choices in the competition

To rule out experimenter gender effects, in each session both a male and a female facilitator were present. The outcome of the risk task was not revealed to the subject until she had made a choice regarding competition and completed the ball-tossing. 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 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. Inclusive of the participation fee, subjects earned Rs. 285.83 on average, with a minimum of Rs. 210 and a maximum of Rs. 440.[11] 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 patrilineal Karbi. We test hypotheses C2 and C3 by conducting the same test as for hypothesis C1.

Regarding the optimality of individual decisions to compete, we consider the same set of hypotheses for the outcome variable *decision interim payoff-maximizing*, which we will introduce in detail in the following section. Hypothesis O1 states that males will take payoff-maximizing 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 difference in the matrilineal/matrilocal society. And we expect no significant gender difference in the balanced society (O3).

experiment are not impacted or contaminated by the child-investment task, and vice versa.

[11] 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 38 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 women and men 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 3. Among the patrilineal Karbi, almost 70 percent of men but only 41 percent of women choose to compete. According to Fisher's nonparametric exact test for equal proportions, this difference is significant at the five percent level (p=0.044). 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 resulting differences between men and women of nine and minus six percentage points among the Dimasa and Khasi, respectively, are far from being statistically significant (p-values of 0.62 and 0.80, respectively, with Fisher's exact test).

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 3 depicts the amount bet in the risky-investment task by community and gender (see Table 4 for the means). According to these data, women bet Rs. 22 or 10 to 25 percent less than men. When we pool all three communities, this difference is statistically significant according to a Mann-Whitney test (p=0.011). The gender difference in the amount bet varies little across the societies, however, and in fact slightly decreases with the extent of patriarchy (the p-values for Karbi, Dimasa and Khasi are 0.19, 0.12 and 0.06, respectively). 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 3 graphs the success rates in the competition experiment by community and gender (see Table 4 for the means). Men hit the bucket significantly more often in the pooled sample (Mann-Whitney p=0.023). 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 (p=0.013; Khasi: 0.102). Interestingly, there is no such gender difference among the patrilineal Karbi (p=0.94). If competitive choices were solely driven by expected payoffs and each subject were informed about her/his own skill as well as the skill distribution in her/his community, these patterns would predict greater gender differences in competitiveness in the balanced and matrilineal societies than in the patrilineal 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 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 in the competition task given the subject's actual decision is not

smaller than his/her expected payoff with the alternative choice. If the answer is yes, we call the subject's choice in the competition task *interim payoff-maximizing*.[12] By construction, both *compete* and *not compete* are payoff-maximizing choices for subjects with zero successes. Among the Dimasa and Khasi, *not compete* is the unique payoff-maximizing choice for subjects with one success and *compete* for two or more successes. For Karbi subjects the payoff-maximizing choice is *compete* even with only one success. This difference across the communities derives from the low aggregate success rate of Karbi subjects relative to the other two communities (see the center left panel of Figure 3). 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 payoff-maximizing, and zero otherwise.

The center right panel of Figure 3 graphs the interim optimality of decisions in the competition task by community and gender (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 (p=0.088 according to Fisher's exact test). 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 and inherent skill 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, which reports marginal effects. The estimates show that the gender difference in competitiveness is statistically significant at the five percent level for the patrilineal Karbi, but not for the Dimasa and Khasi. This pattern obtains regardless of whether controls, including the amount bet in the risk experiment and the number of

[12]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.

successful tosses, are added.

While columns 2, 3, 5, 6, 8 and 9 of Table 5 account for observed heterogeneity within each society, we address the concern that observable differences across societies other than the social norms we have focused on could drive the gender difference in competitiveness. Toward this, we pool the observations from all three societies and add different sets of control variables. The coefficients of interest are society-specific *female* interactions, which correspond to the female dummies in Table 5.[13] The results, which are set out in columns 1 through 3 of Table 7, confirm the ones obtained in Table 5 throughout. Taken together, all regression results obtained thus far confirm our initial hypotheses that a higher social status of women reduces the gender gap in competitiveness encountered in patrilineal 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 payoff-maximizing*. An obvious concern regarding optimality comparisons across communities and gender is the variation in success rates along these two characteristics (see the center left panel of Figure 3). We therefore control for successful tosses in columns 3, 6 and 9 and take the results set out in the remaining columns with caution. The estimates contained in these columns show that women make worse decisions significantly more often than men only among the patrilineal Karbi. In accordance with our hypotheses O1 through O3, Karbi women make payoff-maximizing decisions a third less often than men (column 3) while positive, albeit insignificant differences obtain among the gender-balanced Dimasa and the matrilineal Khasi (columns 6 and 9). We repeat these estimations with the pooled sample. Overall the results, set out in columns 4 through 6 of Table 7, confirm the patterns found in the raw data and the society-wise regressions in Table 6, albeit the gender difference among the patrilineal Karbi is now no longer significant at five percent (the p-values for the *Karbi-Female Interaction* in columns 5 and 6 are 0.056 and 0.081). Taken together, these results show 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 suggests that women perform as well as men under balanced gender norms as under the more extreme matrilineal/matrilocal norms.

[13]The estimating equation underlying Table 7 includes no constant term. Instead the three dummy variables, *Karbi*, *Dimasa* and *Khasi* correspond and are numerically equal to the constant terms in columns 1, 4 and 7 of Table 5.

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 relatively 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 a 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 minimized 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 patrilineal society and none in the gender-balanced and 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 western 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 within a specific normative set-up. 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 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 patrilineal society.

Our results support the view that the gender differences in competitiveness documented in modern (western) 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 men's and women's competitiveness is nearly on par in a traditional society with almost gender-balanced ancestral and contemporary 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 eliminate gender imbalances in important domains of economic behavior.

References

Alesina, A., B. Brioschi, and E. L. Ferrara (2020). Violence against women: A cross-cultural analysis for Africa. *Economica* (forthcoming).

Alesina, A., P. Giuliano, and N. Nunn (2013). On the origins of gender roles: Women and the plough. *Quarterly Journal of Economics 128*(2), 469–530.

Andersen, S., E. Bulte, U. Gneezy, and J. A. List (2008). Do women supply more public goods than men? Preliminary experimental evidence from matrilineal and patriarchal societies. *American Economic Review 98*(2), 376–81.

Andersen, S., S. Ertac, U. Gneezy, J. A. List, and S. Maximiano (2013). Gender, competitiveness, and socialization at a young age: Evidence from a matrilineal and a patriarchal society. *Review of Economics and Statistics 95*(4), 1438–1443.

Andersen, S., S. Ertac, U. Gneezy, J. A. List, and S. Maximiano (2018). On the cultural basis of gender differences in negotiation. *Experimental Economics 21*(4), 1–22.

Balafoutas, L., H. Fornwagner, and M. Sutter (2018). Closing the gender gap in competitiveness through priming. *Nature Communications 9*, 4359.

Banerjee, D., M. Ibañez, G. Riener, and M. Wollni (2015). Volunteering to take on power: Experimental evidence from matrilineal and patriarchal societies in India. DICE Discussion Paper No. 204, University of Düsseldorf.

Booth, A., E. Fan, X. Meng, and D. Zhang (2019). Gender differences in willingness to compete: The role of culture and Institutions. *Economic Journal 129*(618), 734–764.

Booth, A. L., L. Cardona-Sosa, and P. Nolen (2018). Do single-sex classes affect academic achievement? An experiment in a coeducational university. *Journal of Public Economics 168*, 109–126.

Cassar, A., F. Wordofa, and Y. J. Zhang (2016). Competing for the benefit of offspring eliminates the gender gap in competitiveness. *Proceedings of the National Academy of Sciences 113*(19), 5201–5205.

Chakraborty, T. and S. Kim (2010). Kinship institutions and sex ratios in India. *Demography 47*(4), 989–1012.

Danda, D. G. (1978). *Among the Dimasa of Assam: An ethnographic study*. New Delhi: Sterling.

Das, B. and R. Deka (1985). Population study in Assam: AB0 blood groups, haemoglobin E and G-6-PD deficiency. *Anthropologischer Anzeiger 43*(1), 81–86.

Dyson, T. and M. Moore (1983). On kinship structure, female autonomy, and demographic behavior in India. *Population and Development Review 9*(1), 35–60.

Fox, R. (1967). *Kinship and marriage: An anthropological perspective*. Cambridge: Cambridge University Press.

Fulford, S. (2014). Returns to education in India. *World Development 59*, 434–450.

Gerlitz, P. (1984). *Religion und Matriarchat: Zur religionsgeschichtlichen Bedeutung der matrilinearen Strukturen bei den Khasi von Meghalaya unter besonderer Berücksichtigung der national-religiösen Reformbewegungen*. Wiesbaden: Harrassowitz.

Ghosh, D. (1965a). Descent and clan among the Dimasa. *Man in India 45*(3), 185–194.

Ghosh, D. (1965b). Notes on the family among the Dimasa Kachari. *Man in India 45*(1), 17–26.

Gneezy, U., K. L. Leonard, and J. A. List (2009). Gender differences in competition: Evidence from a matrilineal and a patriarchal society. *Econometrica 77*(5), 1637–1664.

Gneezy, U., M. Niederle, and A. Rustichini (2003). Performance in competitive environments: Gender differences. *Quarterly Journal of Economics 118*(3), 1049–1074.

Gong, B., H. Yan, and C.-L. Yang (2015). Gender differences in the dictator experiment: Evidence from the matrilineal Mosuo and the patriarchal Yi. *Experimental Economics 18*(2), 302–313.

Gong, B. and C.-L. Yang (2012). Gender differences in risk attitudes: Field experiments on the matrilineal Mosuo and the patriarchal Yi. *Journal of Economic Behavior and Organization 83*(1), 59–65.

Government of India (1955). Report of the backward classes commission.

Heinz, M., H.-T. Normann, and H. A. Rau (2016). How competitiveness may cause a gender wage gap: Experimental evidence. *European Economic Review 90*, 336–349.

Henrich, J., R. Boyd, S. Bowles, C. Camerer, E. Fehr, H. Gintis, R. McElreath, M. Alvard, A. Barr, J. Ensminger, N. Henrich, K. Hill, F. Gil-White, M. Gurven, F. Marlowe, J. Patton, and D. Tracer (2005). "Economic man" in cross-cultural perspective: Behavioral experiments in 15 small-scale societies. *Behaviroal and Brain Sciences 28*(6), 795+.

Izraeli, D. N., N. J. Adler, and D. N. Izraeli (1994). *Competitive frontiers: Women managers in a global economy*. Cambridge, MA: Blackwell.

Kumar, V., D. Basu, and B. M. Reddy (2004). Genetic heterogeneity in northeastern India: Reflection of tribe–caste continuum in the genetic structure. *American Journal of Human Biology 16*(3), 334–345.

Leibbrandt, A., L. C. Wang, and C. Foo (2018). Gender quotas, competitions, and peer review: Experimental evidence on the backlash against women. *Management Science 64*(8), 3501–3516.

Lowes, S. (2018). Kinship structure, stress, and the gender gap in competition. Unpublished working paper, Bocconi University, Milan.

Michalopoulos, S., L. Putterman, and D. N. Weil (2018). The influence of ancestral lifeways on individual economic outcomes in sub-Saharan Africa. *Journal of the European Economic Association 17*(4), 1186–1231.

Morley, L. (2014). Lost leaders: Women in the global academy. *Higher Education Research and Development 33*(1), 114–128.

Mukherjee, S. (2018). Are women really better borrowers in microfinance? Evidence from matrilineal and patrilineal societies. Unpublished Working Paper, Meghnad Desai Academy of Economics, Mumbai School of Economics and Public Policy.

Murdock, G. P. (1949). *Social structure*. New York, NY: Macmillan.

Murdock, G. P. (1967). Ethnographic atlas: a summary. *Ethnology 6*(2), 109–236.

Niederle, M., C. Segal, and L. Vesterlund (2013). How costly is diversity? Affirmative action in light of gender differences in competitiveness. *Management Science 59*(1), 1–16.

Niederle, M. and L. Vesterlund (2011). Gender and competition. *Annual Review of Economics 3*(1), 601–630.

Nunn, N. (2020). The historical roots of economic development. *Science 367*(6485).

Paxton, P. and M. M. Hughes (2014). *Women, politics, and power: A global perspective*. Los Angeles, CA: Sage.

Pondorfer, A., T. Barsbai, and U. Schmidt (2017). Gender differences in stereotypes of risk preferences: Experimental evidence from a matrilineal and a patrilineal society. *Management Science 63*(10), 3268–3284.

Sikdar, M. (2016). Hemoglobin E in northeast India: A review on its origin, distribution, migration and health implication. *Anthropological Review 79*(3), 241–263.

Singh, K. S. (Ed.) (1988). *People of India (National Series): India's communities*. New Delhi: Oxford University Press.

Singh, K. S., B. Bardoloi, and R. Athaparia (Eds.) (2003). *People of India (State Series): Assam*. Calcutta: Seagull Books.

Singh, K. S., B. Pakem, S. Roy, and A. Basu (Eds.) (1994). *People of India (State Series): Meghalaya*. Calcutta: Seagull Books.

Thomsen, N. (2012). *Womens' rights* (2. ed. ed.). New York, NY: Facts on File: New York, NY.

Walter, H., H. Matsumoto, T. Miyazaki, B. N. Mukherjee, K. C. Malhotra, B. M. Das, K. Gilbert, and P. Lindenberg (1987). Distribution of Gm and Km allotypes among ten populations of Assam, India. *American Journal of Physical Anthropology 73*(4), 439–445.

Figures and Tables

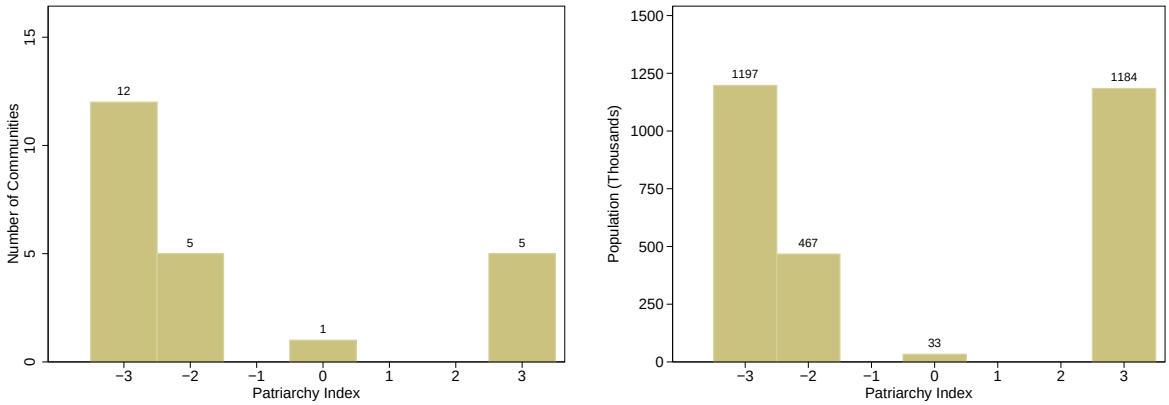


Figure 2: Distribution of the patriarchy index

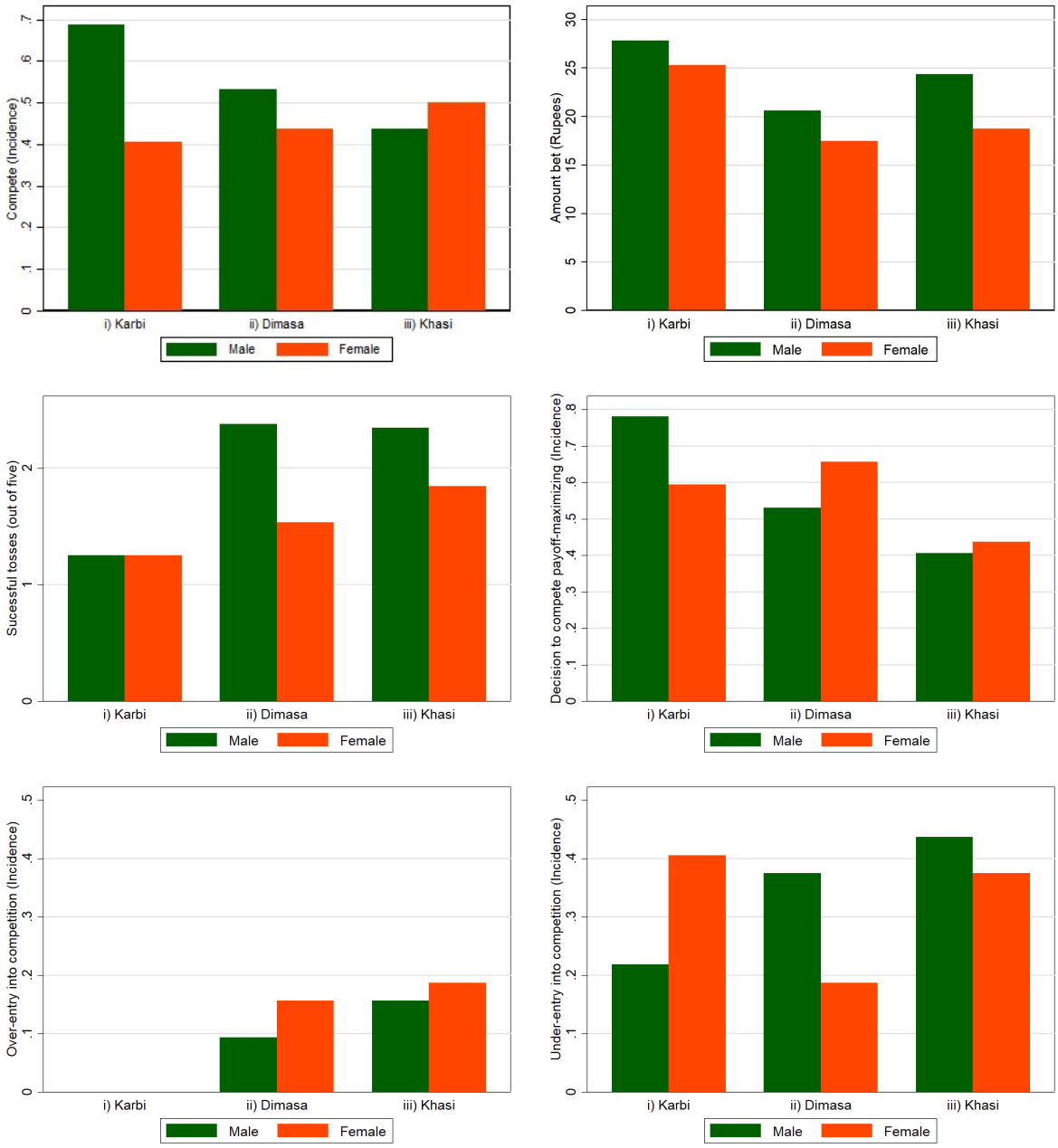


Figure 3: Experimental results

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)	(11.6)
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. 1,000)	(4.9)	(6.3)	(3.0)	(3.6)	(3.1)	(4.0)	(10.8)	(10.9)	(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

Estimation Sample:	*Karbi*			*Dimasa*			*Khasi*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Female	-0.28**	-0.36**	-0.37**	-0.09	-0.06	-0.06	0.06	0.02	0.02
	(0.12)	(0.14)	(0.14)	(0.13)	(0.15)	(0.17)	(0.13)	(0.14)	(0.13)
Risk Preference (Amount Bet, in Rs.100)			-0.20			0.95			0.43
			(0.73)			(0.86)			(0.57)
Successful Tosses			0.03			-0.02			-0.10*
			(0.06)			(0.06)			(0.05)
Year of Birth		0.02**	0.02**		-0.00	-0.00		-0.01	-0.01
		(0.01)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)
Years of Education		-0.01	-0.01		0.00	0.00		0.02	0.01
		(0.02)	(0.02)		(0.02)	(0.02)		(0.02)	(0.02)
Occupation Other than Agriculture		0.07	0.07		0.04	0.06		-0.32	-0.27
		(0.19)	(0.20)		(0.18)	(0.19)		(0.24)	(0.25)
Household Head Female		0.07	0.07					0.62***	0.45*
		(0.44)	(0.48)					(0.14)	(0.24)
Household Owns Land		-0.31***	-0.32***		-0.11	-0.16		-0.06	-0.00
		(0.09)	(0.09)		(0.23)	(0.22)		(0.15)	(0.15)
Constant	0.69***	-32.24**	-32.75**	0.53***	5.98	2.18	0.44***	11.50	11.48
	(0.08)	(13.87)	(14.18)	(0.09)	(18.91)	(19.86)	(0.09)	(14.22)	(13.83)
Observations	64	64	64	64	64	64	64	64	64
R-squared	0.080	0.155	0.159	0.009	0.015	0.039	0.004	0.058	0.109

Notes:

Robust standard errors are in parentheses;

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

Estimation method: ordinary least squares (linear probability model).

The dependent variable is a dummy indicating whether the subject chooses the competitive (=1) or the piece-rate (=0) remuneration scheme.
In columns 1 through 3 Karbi men are the reference category. In columns 4 through 6 (7 through 9) Dimasa (Khasi) men are the reference category.

Table 6. Regression results: Optimality of decision to compete

Estimation Sample:	*Karbi*			*Dimasa*			*Khasi*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Female	-0.19	-0.27**	-0.26**	0.13	0.18	0.12	0.03	-0.01	0.07
	(0.12)	(0.13)	(0.13)	(0.12)	(0.14)	(0.16)	(0.13)	(0.13)	(0.13)
Risk Preference (Amount Bet, in Rs.100)			0.01			1.93***			1.45***
			(0.69)			(0.69)			(0.47)
Successful Tosses			-0.12**			-0.10**			-0.11**
			(0.05)			(0.05)			(0.05)
Year of Birth		0.02***	0.02***		-0.01	-0.00		0.00	0.00
		(0.01)	(0.01)		(0.01)	(0.01)		(0.01)	(0.01)
Years of Education		-0.02	-0.01		-0.01	-0.01		0.01	0.00
		(0.02)	(0.02)		(0.02)	(0.02)		(0.02)	(0.02)
Occupation Other than Agriculture		0.05	0.04		0.08	0.10		-0.10	0.00
		(0.18)	(0.19)		(0.16)	(0.19)		(0.23)	(0.25)
Household Head Female		-0.15	-0.11					0.56***	0.02
		(0.44)	(0.32)					(0.14)	(0.21)
Household Owns Land		-0.21***	-0.18**		0.02	-0.08		0.30**	0.43***
		(0.07)	(0.08)		(0.22)	(0.19)		(0.13)	(0.12)
Constant	0.78***	-38.53***	-36.73***	0.53***	21.36	8.14	0.41***	-3.92	-3.49
	(0.07)	(12.40)	(12.03)	(0.09)	(17.11)	(16.48)	(0.09)	(13.96)	(13.75)
Observations	64	64	64	64	64	64	64	64	64
R-squared	0.041	0.156	0.237	0.016	0.043	0.181	0.001	0.098	0.241

Notes:

Robust standard errors are in parentheses;

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

Estimation method: ordinary least squares (linear probability model).

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

In columns 1 through 3 Karbi men are the reference category. In columns 4 through 6 (7 through 9) Dimasa (Khasi) men are the reference category.

Table 7. Regression results: Competition and optimality of competition choice, pooled estimations

Dependent Variable:	*Competition Choice*			*Competition Choice Optimal*		
	(1)	(2)	(3)	(4)	(5)	(6)
Karbi - Female Interaction	-0.281**	-0.294**	-0.283**	-0.188	-0.226*	-0.199*
	(0.121)	(0.126)	(0.128)	(0.115)	(0.118)	(0.113)
Dimasa - Female Interaction	-0.094	-0.099	-0.123	0.125	0.063	-0.012
	(0.126)	(0.136)	(0.140)	(0.124)	(0.135)	(0.132)
Khasi - Female Interaction	0.063	0.035	0.044	0.031	0.021	0.039
	(0.127)	(0.131)	(0.132)	(0.125)	(0.128)	(0.120)
Karbi	0.688***	-3.753	-4.307	0.781***	-9.653	-11.315
	(0.083)	(9.576)	(9.418)	(0.074)	(9.254)	(8.675)
Dimasa	0.531***	-3.905	-4.381	0.531***	-9.860	-11.302
	(0.090)	(9.545)	(9.384)	(0.090)	(9.216)	(8.633)
Khasi	0.437***	-3.990	-4.483	0.406***	-9.954	-11.440
	(0.089)	(9.533)	(9.378)	(0.088)	(9.199)	(8.621)
Risk Preference (Amount Bet, in Rs.100)			0.428			1.117***
			(0.380)			(0.319)
Successful Tosses			-0.038			-0.114***
			(0.030)			(0.025)
Year of Birth		0.002	0.002		0.005	0.006
		(0.005)	(0.005)		(0.005)	(0.004)
Years of Education		0.002	0.001		-0.003	-0.006
		(0.009)	(0.009)		(0.009)	(0.008)
Occupation Other than Agriculture		-0.029	-0.027		0.044	0.047
		(0.114)	(0.117)		(0.106)	(0.110)
Household Head Female		0.256	0.196		0.107	-0.046
		(0.285)	(0.260)		(0.310)	(0.207)
Household Owns Land		-0.058	-0.036		0.189*	0.250**
		(0.114)	(0.111)		(0.112)	(0.100)
Observations	192	192	192	192	192	192
R-squared	0.518	0.521	0.528	0.597	0.605	0.651

Notes:

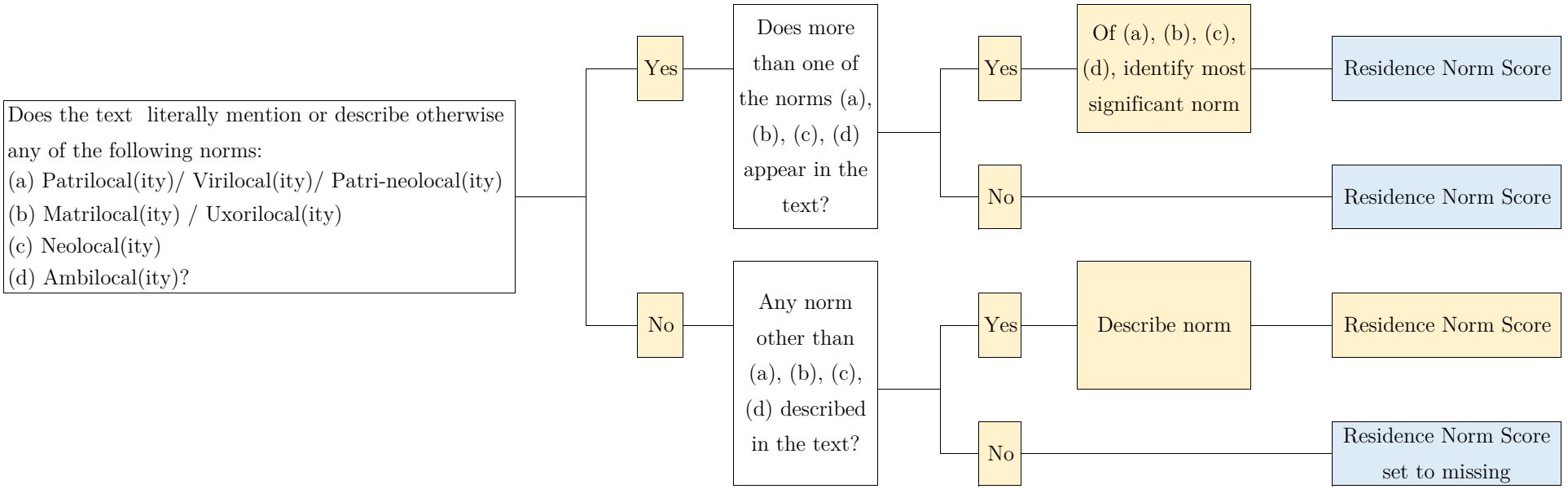
Robust standard errors are in parentheses;

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

Estimation method: ordinary least squares (linear probability model).
See Tables 5 and 6 for the definition of dependent variables.

Online Appendix

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

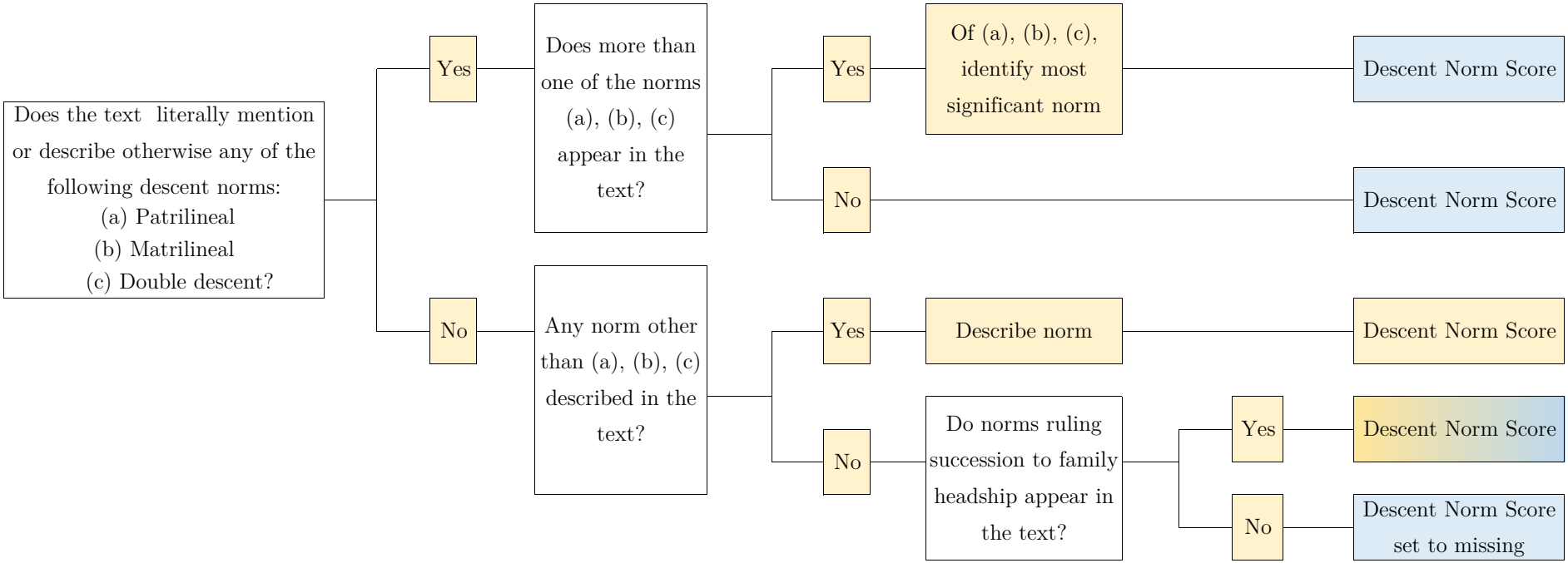


Notes:

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



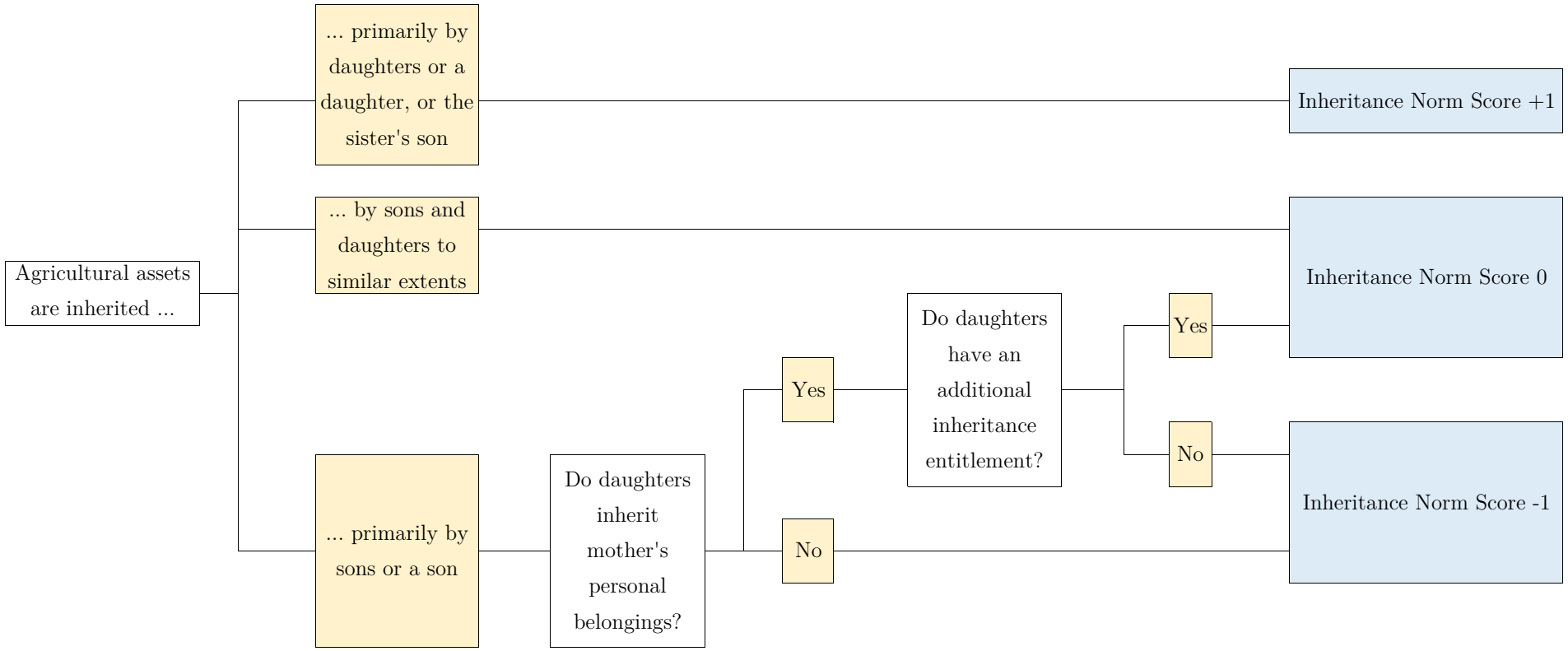
Notes:

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. Independent of any earnings you might earn from the experimental tasks, you will be paid 100 rupees to participate.

I

In addition, you receive another 100 rupees. You can split these 100 rupees freely between you and your children. Depending on the amount you give to your children, they will receive 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 10 rupees 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 he/she 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.

Equality of the Sexes and Gender Differences in Competitiveness: Experimental Evidence from a Traditional Society with Gender-Balanced Norms

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Abstract

Can gender-balanced social norms mitigate the gender gap in competitiveness that has been documented for modern as well as traditional patriarchic societies? We identify a society in northeast India where women and men have had similar rights and entitlements from time immemorial, to conduct the first lab-in-the-field experiment in a traditional society with gender-balanced norms. For reference we conduct the same competition experiments in adjoining traditional patriarchic and matrilineal societies. We find no significant gender difference in the inclination to compete in the gender-balanced society – unlike in the patriarchic society. We also find that women's decisions in our experiment are payoff-maximizing more often than men's in the gender-balanced society – opposite to the pattern encountered in the patriarchic society. Our results highlight the long-term effects of culture on economic behavior and indicate that the large gender gap in competitiveness documented for modern societies is a long-term consequence of their patriarchic foretime.

JEL Classifications: J16; D81; J15; K36; K38; C93
Keywords: Gender; competition; gender-balanced social norms; field experiment

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