MONASH UNIVERSITY

DOCTORAL THESIS

Three Essays on Social Norms

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in the

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Declaration of Authorship

I hereby declare that this thesis contains no material which has been accepted for the award of any other degree or diploma in any university or other institution, and that to the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

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In accordance with Monash University Doctorate Regulation 17.2 Doctor of Philosophy and Research Master's regulations the following declarations are made:

I hereby declare that this thesis contains no material which has been accepted for the award of any other degree or diploma at any university or equivalent institution and that, to the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

This thesis includes 3 unpublished publications. The core theme of the thesis are social norms. The ideas, development and writing up of all the papers in the thesis were the principal responsibility of myself, the candidate, working within the Department of Economics under the supervision of Professor Lata Gangadharan and Professor Pushkar Maitra.

The inclusion of co-authors reflects the fact that the work came from active collaboration between researchers and acknowledges input into team-based research.

In the case of 2 and 3 my contribution to the work involved the following:

Thesis chapter	Publication title	Publication status*	Nature and extent of candidate's contribution
2	The Fish is the Friend of Matriliny	Unpublished	Data collection, data analysis, write up and copy editing (60%)
3	Social Identity and Governance	Revise and Resubmit	Formulation of research question, design of experiment, data collection, data analysis, write up and copy editing (55%)
4	Does Status Effect Trust in Leaders	Unpublished	Formulation of research question, design of experiment, data analysis, write up and copy editing (100%)

I have not renumbered sections of submitted or published papers in order to generate a consistent presentation within the thesis.

Signed:

Date: 8/11/2015

MONASH UNIVERSITY

Abstract

Faculty of Business and Economics

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Doctor of Philosophy

Three Essays on Social Norms

by Joseph Vecci

This thesis comprises three papers that examine social norms and their effect on behaviour. The papers use surveys and experiments to examine this topic. The first paper uses survey data to show that a societies surrounding ecology is an important determinant of the prevalence of female land inheritance. The second paper demonstrates through a field experiment in India that males act out against female leaders, especially when female leaders are in place as a result of a quota. The final paper demonstrates through a laboratory experiment that trust in high status leaders is an important factor in the decision to follow them.

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Chapter 1

Introduction

1.1 Introduction

This dissertation comprises of three papers that examine the evolution of social norms and their subsequent effect on behaviour. The three papers utilise primary data collected from three countries: The Solomon Islands, India and Australia. Understanding the evolution of social norms and their effects on behaviour can improve our knowledge of how social norms influences peoples' perceptions and attitudes.

In the first paper we use a sample of 186 societies across the world and in a sample of 59 small-scale horticultural fishing communities in the Solomon Islands to study the persistence of the social norm of land inheritance. More specifically, we study whether a society's surrounding ecology is an important determinant of the prevalence of female land inheritance (matrilineal inheritance). The extent of female land rights has been shown to affect the overall productivity of labour, economic efficiency, and the effectiveness of land right reforms.

We use reef density as a measure of a societies ecology. We find that reef density predicts the prevalence of matriliny across the world and in a sample of small-scale horticultural fishing communities in the Solomon Islands. We show that this result holds when controlling for common descent by relying on variation within ethno-linguistic groups in our Melanesian micro-sample, where matriliny is ancestral. We thereby establish that reef density and, indirectly, reliance on fishing, is a robust predictor of the persistence of matrilineal inheritance. We also document some of the demographic consequences of matrilineal inheritance, including smaller household and village population size.

We argue that the surrounding ecology of a society determines the prevalence of patrilineal versus matrilineal inheritance in the following three ways: The first consists of the sexual division of

labour. Many features of human social organisation are the result of sex-specific economic spe-cialisation. Fishing and hunting is incompatible with the evolutionary commitment of women to childbearing because it is risky, requires long absence and is extremely skill intensive. Because reproduction requires a woman to devote time to childbearing, she is less likely to accumulate the human capital and experience required to become an efficient hunter or fisherman. The second determinant of inheritance rules is the evolutionary benefit in terms of reproductive fit-ness of transmitting wealth to sons versus daughters. In these circumstances, making daughters residual claimants of land improves their effort and investment incentives. The third explanation revolves around the relative evolutionary benefit of wealth transmission to sons versus daugh-ters. Fishing is risky and necessitates prolonged male absence. This explains the specialisation of men in fishing, but also justifies a more matricentric societal organisation. Prolonged male absence implies lower paternity certainty.

The second paper continues the theme of gender and social norms. We use data from artefac-tual field experiments and surveys conducted in 61 villages in India to examine whether men and women respond differently to women as leaders. In particular we ask: Do individuals react differently to male and female leaders, and if so, why? Is behaviour towards female leaders in-fluenced by experience with women in leadership positions? Does extended exposure to women leaders change male and female reaction to female leaders? The experiments are set against the background of a natural policy experiment (the 73rd Constitutional Amendment in India, enacted in 1992) that introduced quotas for women in village headship positions. We invite men and women residing in villages located in three districts of the state to participate in a modified one-shot public goods experiment where one group member is randomly selected as the leader. The other group members are designated as citizens. There are equal number of male and female leaders and each group consists of two men and two women. The leader proposes a non-binding contribution to the public good and all group members are informed of the leader's proposed contribution. Then all group members, including the leader, choose their actual contribution. By revealing the leader's gender in the treatment sessions and not in the control sessions, we are able to identify the impact of women's leadership on citizens' contributions. Additionally, participants might bring their preconceptions and prejudices relating to a female village head into the sessions. To exploit this, we use the random allocation of women to the position of the head of the village council as a second source of exogenous variation in exposure to female leaders.

We find a large and statistically significant behavioral response to women as leaders. Men con-tribute significantly less to the public good when women, rather than men, are group leaders. We term this behaviour *male backlash*. We hypothesise that this behaviour can largely be explained by social norms and social identity. We utilise a second artefactual field experiment that elicits beliefs to infer social norms relating to the role of men and women as leaders. In general, we find that participants believe that it is more socially appropriate for men to cooperate less with

female leaders than with male leaders. Additionally compared to women, men believe that it is more socially inappropriate for women to become village heads. The results on male bias against female group leaders, are considerably stronger in villages that have been exposed to female heads (*mukhiyas*, also known as *pradhan* or *sarpanch*). Our analysis suggests that male backlash in female headed villages is driven by ingrained social norms associated with male identity in these societies, and not because of either the ineffectiveness of women leaders, or the perception that they are ineffective leaders or tokens for powerful elites. The assignment of women as leaders threatens the identity of men who believe these positions of power are directly associated with their masculinity and identity, thereby creating resentment.

An important aspect of our findings is that male bias disappears with greater exposure to female leaders. This suggests that despite entrenched social norms against women leaders, persistent engagement with female leaders, perhaps via affirmative action policies, can potentially change social norms relating to identity and gender roles within the society. While this paper focuses on an in depth analysis of citizens response to male and female leaders, the experimental approach used can also identify the actions of the leader separate from other confounding factors. We find that, female leaders are more likely to engage in deceptive behavior, perhaps because they anticipate underinvestment by male citizens. Moreover, deception by female group leaders is significantly greater following exposure to female village heads.

A key finding of chapter two is that a leader's identity can create resentment which leads to anti-social behaviour directed toward the leader. The third paper continues this theme by investigating a different aspect of a leader's identity, rather than gender, leaders are either high status or low status. We then attempt to understand why high status leaders are followed more often by their peers and under what conditions. We offer two explanations. Firstly, followers trust high status leaders more than those of low status. Secondly, it is possible that status influences individual behaviour in that those with the same social identity as the leader are inclined to cooperate, thus demonstrating an in-group bias.

To examine these two possibilities we utilise two experiments. We define status based on the outcomes of an arbitrary quiz. All individuals participate in two tasks. In the first task, we utilise the trust task whereby the novel component of this task is that the subjects are told the status of their partner before making decisions. This task examines our first and standard measure of trust-trust that a partner will reciprocate a risky move. In the second task we design an innovative public goods game in which leaders send a costly signal to their followers after which followers make their contributions towards the group account. In this task subjects follow a leader because they trust the leaders signal. This task provides our second measure of trust–trust that a leader will be honest.

We find that at the mean, subjects send more to high status partners in the trust experiment. We do not find evidence, that followers are more likely to follow a high status leader compared to

a low status. We then find *high status* subjects trust and contribute more towards *high status* leaders. This suggests that subjects are inclined to follow and trust a leader with the same identity as theirs. Lastly, over time, high status leaders are followed more closely by their peers, except when a high status leader is untrustworthy and lies. The more often a high status leader lies, the lower the contributions by the followers compared to a low status leader who lies a similar amount.

The three papers discussed in this dissertation investigate separate questions of the larger theme on social norms. The papers demonstrate how social norms can effect: behaviour towards females in chapters 2 and 3 and behaviour towards leaders of high status in chapter 4. Chapter 5 then summarise the main findings from each paper, suggesting limitations and direction of future research. Changing social norms is often a slow and complex process. Policies that ignore the prevailing social norms are likely to go unenforced. These papers shed light on these impacts and provide tools for policy makers to evaluate the effect of social norms.

Chapter 2

The Fish is the Friend of Matriliny: Reef Density Predicts Matrilineal Inheritance

Declaration for Thesis Chapter [2]

Declaration by candidate

In the case of Chapter 2, the nature and extent of my contribution to the work was the following:

Nature of contribution	Extent of contribution (%)
Data collection, data analysis, write up and copy editing	60%

The following co-authors contributed to the work. If co-authors are students at Monash University, the extent of their contribution in percentage terms must be stated:
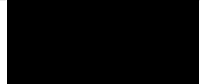
Name	Nature of contribution	Extent of contribution (%) for student co-authors only
Associate Professor Pauline Grosjean	Research question, data analysis, write up and copy editing	
Assistant Professor Ariel Ben-Yishay	write up and copy editing	

The undersigned hereby certify that the above declaration correctly reflects the nature and extent of the candidate's and co-authors' contributions to this work*.

Candidate's Signature	████████	Date 8/11/15

Main Supervisor's Signature	████████	Date 8/11/2015

*Note: Where the responsible author is not the candidate's main supervisor, the main supervisor should consult with the responsible author to agree on the respective contributions of the authors.

2.1 Introduction

Geographic endowments shape institutions and social norms ([1], [2], [3], [4]), with deep and far ranging consequences for economic growth and welfare across societies ([2], [5], [6]) as well as for the relative welfare of females and males within societies ([7], [8], [9]). Institutions and rules governing inheritance play a crucial role for social organization and economic growth ([5], [6]). Yet, little is known about their determinants. Particularly puzzling is why they exhibit such an entrenched gender bias. In only 16% of the 186 societies studied in the Standard Cross Cultural Sample [10], land is transmitted through females (see Figure 2.3). Matrilineal inheritance is prevalent in horticultural societies, but it is rare in agricultural societies that rely on plough use and virtually absent in societies that have domesticated large animals ([11], [12], [13], [14]), leading some to state that: "The cow is the enemy of matriliny" ([11] p. 680). A less studied hypothesis is that matriliny is associated with reliance on fishing. This correlation has been observed among North-West American matrilineal fishing groups [11]. However, the statistical significance of this correlation has not been established in the existing literature. Moreover, so far, it is unknown whether it is the result of adaptation to ecological conditions or whether it reflects habitat selection, that is to say the differential likelihood of groups with pre-existing matrilineal norms to settle in fish-abundant environments.

Several factors combine to predict that marine endowments will influence the prevalence of matrilineal versus patrilineal inheritance. The current literature has identified three main determinants. The first consists of the sexual division of labour [15]. For example, hunting is a male-dominated activity because it is risky, requires long absence and is extremely skill intensive. Because women devote so much time during their reproductive life to childbearing, it is more difficult for them to accumulate the human capital and experience required to become an efficient hunter [15]. This argument easily extends to some types of fishing, which are equally as skill intensive and dangerous as hunting. Differences in contributions to the exploitation of natural resources generate differences in the ownership and inheritance of these resources [14]. Fishing on reef edges and pelagic offshore habitats is exclusively a male activity [16], leading to a sharp sexual division of labour, with men specialised in fishing and women in agriculture. In these circumstances, having women own the land improves their effort and investment incentives. The second determinant is the evolutionary benefit in terms of reproductive fitness of transmitting wealth to sons versus daughters. When a resource, such as land or cattle, enables a son to secure one or several wives, this encourages parents to transmit this resource to sons in order to maximise the number of offspring in the next generation ([17], [18]). In rich marine environments, land may be relatively less important as an asset, so that its transmission to sons may not be expected to contribute greatly to improving the relative fitness of sons over daughters. Moreover, how much wealth transmission to sons versus daughters maximise inclusive fitness in subsequent generations depends on the degree of paternity certainty, the third

determinant of the prevalence of patrilineal versus matrilineal inheritance. In the case of fishing, prolonged absence lowers paternity certainty.

We examine the hypothesis that the quality of reef and pelagic offshore marine resources predicts the prevalence of matrilineal inheritance in a cross-cultural sample of 186 societies and in a micro sample of small horticultural fishing communities in the Solomon Islands. We employ an exogenous measure of the quality of reef and pelagic marine resources: reef density, which varies little over time and is difficult to change through fishing intensity for the small horticultural societies we study. We thereby avoid the problem that the quality of marine resources themselves may be the result of societal norms of inheritance. Our contribution is two-fold. First, we establish that reef density, our proxy for reliance on fishing, systematically predicts matrilineal inheritance across the world and in our Melanesian sample. Second, we establish that the effect of marine resources on matrilineal inheritance is likely causal and reflects adaptation to ecological conditions rather than vertical descent. If the relationship were driven by habitat selection, one would expect ancestral groups with different norms to systematically settle in different environments. Instead, in our micro-sample in the Solomon Islands, we observe variation between inheritance rules within ethno-linguistic groups, among which vertically transmitted cultural traits are similar. We also document some of the demographic consequences of matrilineal inheritance, with smaller population and household sizes.

2.2 Background

2.2.1 Resources and Inheritance Rules

Human social organisation is an evolved process that is subject to the forces of natural selection (see among others [19] [20]. In particular, human social organisation has been shaped in a co-evolution process with ecological factors [15]. In the paper, we focus on the allocation of private property and the transmission of wealth, which are specific features of human social organisation that have widespread implications for economic development and welfare ([6], [21]).

We focus on a specific form of matrilineal inheritance, in which land is inherited by daughters. This form of matrilineal land inheritance is the norm in our sample, as well as in other societies in south central Africa, including large parts of Malawi, Zambia, and Mozambique and in some native American cultures including the Arikira, Hidatsa, Mandan, and Zuni [22]. In other matrilineal cultures, land is transferred from the mother's brother to his sister's son. As noted by Holden et al. despite their apparent differences, these two forms of matrilineal inheritance are equivalent for grandparents and both result in inheritance by their daughters' offspring [12].

The literature has discussed several robust empirical correlates of the prevalence of matriliny. Matriliny is prevalent in horticultural societies, but it is rare in agricultural societies that rely on plough use [23] and virtually absent in societies that have domesticated large animals ([11], [12], [13], leading some to state that: "The cow is the enemy of matriliny" [11] p. 680). Mace and Holden [13]) describe how matriliny was abandoned along with cattle adoption among Bantu-speaking societies of Africa. Matriliny was also prevalent among North-West American fishing groups [11]. However, no prior work has examined whether this correlation is robust to controlling for phylogenetic effects.

The first explanation for the correlation between ecological resources and the type of inheritance rule relates to the sexual division of labour. Kaplan, et al. [15] argue that many features of human social organisation are the result of sex-specific economic specialisation, which itself responds to evolutionary and ecological imperatives. The authors argue that the family structure and pair-bonding in particular are the result of male specialisation in hunting. Hunting is incompatible with the evolutionary commitment of women to childbearing because it is risky, requires long absence and is extremely skill intensive. Because reproduction requires a woman to devote time to childbearing, she is less likely to accumulate the human capital and experience required to become an efficient hunter. Although not directly discussed in [15], fishing shares the same characteristics with hunting: it is risky, requires long absence and is very skill intensive. In most societies, fishing is a male activity. In the SCCS dataset, women are in charge of fishing in only 5% of societies. In our Solomon Island sample, fishing is exclusively a male activity.

Where societies pursue both horticultural and fishing activities, the sexual division of labour is such that males fish and females farm. In our sample, approximately 20% of respondents derive an income from selling products, but males are 10 percentage points, or 50%, more likely to earn an income from the sea compared to females, on average; and conversely, females are 50% more likely to earn an income from farming compared to men.

A second determinant of the transmission of wealth via either patrilineal or matrilineal systems is the economic incentives for production. When transmitting wealth in the form of a productive asset (e.g., land), it is more efficient to bequeath this asset to those individuals responsible for production so that they become the residual claimant of their effort and investment. In the context of plough agriculture, for example, where men are primarily responsible for agriculture because of the significant upper body strength required [23], it is more efficient to transmit land to sons [24]. Similarly, where male labour is devoted to fishing, the incentive to transmit land to sons is reduced, since their effort and investments are directed differentially toward other resources.

The third explanation for the prevalence of patrilineal versus matrilineal inheritance is the relative evolutionary benefit of wealth transmission to sons versus daughters. This evolutionary benefit is shaped by two main forces, which work in opposite directions: (i) the extra amount

wealth improves male's reproductive fitness relative to female's, and (ii) paternity uncertainty. Wealth often has a larger effect on male reproductive fitness than on female reproductive fitness, thus favouring the transmission of wealth to sons [25]. For example, cattle can easily be stored and it enhances marriage prospects of sons, even enabling them to take multiple wives in some societies. In these conditions, cattle transmission to sons improves the reproductive success of sons more than that of daughters. However, the advantage of wealth transmission to sons in terms of inclusive fitness must be balanced with the potential cost due to the risk of paternity uncertainty. Paternity uncertainty always favours transmission of wealth to daughters. The degree of paternity certainty is influenced by ecological factors that determine how long males need to be away for the purposes of resource exploitation, trade, raiding, or warfare.

Holden and Sears [12] develop a simple theoretical model, which combines the two evolutionary forces described above. When deciding to transmit an asset, such as land, to either son or daughter, parents maximise their inclusive fitness. Transmission to sons will dominate transmission to daughters when the additional benefit in terms of the number of offspring that can be secured outweighs the loss in terms of paternity certainty. An important prediction of this model is that the number of offspring should be much larger in a patrilineal society than in a matrilineal society. This model can be augmented to include considerations that relate to the sexual division of labour. Specialisation of males in agriculture, for example, would increase the benefit of transmitting land to sons in order to preserve their incentives to provide effort and invest in land [24].

To sum up, reliance on fishing in a horticultural society is a favourable condition for matrilineal inheritance of wealth. The specialisation of labour, with men in fishing and women in farming, favours matrilineal inheritance. Where fishing is abundant, land is a relatively less important resource, and its transmission to sons may not improve sons' relative fitness enough to outweigh the potential negative effects on daughters' incentives. Fishing is also risky, which reduces the incentives to rely on the paternal line, since one has only one father but may have several uncles; and it entails male absence from the village, which increases paternity uncertainty. Several authors before us have noted that fishing and trade in the Pacific require prolonged male absence and favour the prevalence of matrilocality and matrilineal descent [26]. Historical and archeological evidence in eastern North America document switches to matrilocal residence following changes in subsistence practices and prolonged male absence for trading, hunting and raiding.

2.2.2   Matriliny is Ancestral in the Solomon Islands

In order to understand the variation of matrilineal versus patrilineal descent it is important to establish the original system of decent. The advantage of Melanesia as a study site is that the

ancestral character of matrilineal descent and of matrilocal residence have been well established in the literature.

Linguists and archaeologists have reconstructed ancestral settlement patterns based on phylogenetic analysis of languages and on genetic variations. There is a general agreement that Austronesian languages originated in Southeast Asia on or near Taiwan around 3,000 BC and that Austronesian-speakers dispersed through long distance sea voyage by outrigger canoe, first reaching Melanesia by 1450 BC and then Western Polynesia by 950 BC [26]. They were agriculturalists, who possessed rice and probably more than one variety of millet and had domesticated animals, at least pigs and dogs [27]. Parts of Melanesia, around the Bismarck archipelago but probably not the Solomon Islands, had already been settled by non-Austronesian groups long before then, at least since 11,000 BC [26].

Based on genetic evidence that Polynesian mitochondrial DNA (mtDNA) is of Asian origin while Polynesian Y chromosomes are of Melanesian (non-Austronesian) origin, Blust concludes that matrilocality and matrilineal descent characterised ancestral Oceanic society [12]. Indeed, this model is consistent with a matri-biased model in which non-Austronesian men married in groups organised by matrilineal descent along the way of the Austronesian expansion. Hence, even though parts of Melanesia were already settled by the time of the Austronesian expansion into Oceania [26], intermixing between Austronesian- and proto- Austroneisan-speaking populations took place within the framework of matrilocal residence and matrilineal descent. Similarly, in an article aptly titled "Matrilocal residence is ancestral in Austronesian societies", Jordan, et al. argue that matrilocality was predominant in early Austronesian societies, ca 5,000-4,500 BP [28]. This conclusion is reached using a cultural phylogenetic approach, which consists of using statistical simulation methods (Bayesian MCMC) based on present day ethnographic data [22] to reconstruct the ancestral states of social organisation.

Matrilineal systems are less stable than patrilineal systems. Levi-Strauss observes the tendency of matrilineal institutions to disappear in Micronesia [29], while [26], in reference to both Micronesia and Polynesia, argue that wherever long distance voyaging declined or never developed, matrilineal descent gave way to patrilineal descent or mixed descent systems. Mixed systems of double descent are generally interpreted as transitory states between matrilineal and patrilineal institutions [26]. Linguistic evidence from communities in Malaita, one of the islands included in our study, reveals shifts from matrilineal to patrilineal descent, but not the converse [27]. Again, the explanations for the breakdown of matriliny and the transition to patriliny evolve around the types of arguments discussed above: economic specialisation, relative fitness, and paternity certainty. For example, when the degree of paternity certainty is not high, men might be tempted to distribute resources to their own children rather than to their nieces and nephews, which entails a breakdown of matrilineal systems. However Blust explains the transition to patriliny with an economic specialisation argument [30]. Noting that there were no

known patrilineal neighbours to Malaita a province in the Solomon Islands to set the cultural example, he argues that the transition may have occurred as a result of male dominance in subsistence activities with a higher reliance on taro, a labour intensive crop, in Malaita and Choiseul provinces, as opposed to other areas of the Solomon Islands (see [31]). However, the authors add that "the ecological contrasts (between taro and yam) seem slight. We are left groping for an explanation". We rely in this paper on much larger ecological differences.

2.3 Data

We use the Standard Cross Cultural Sample (hereafter, SCCS) [10], and an original micro-level data collected by the authors among small horticultural fishing villages in the Solomon Islands

2.4 SCCS dataset

We utilise the Standard Cross Cultural Sample (SCCS) to examine a sample of worldwide matrilineal and patrilineal societies [10]. The SCCS dataset contains information on 186 cultural societies of the world that were originally selected from a list of 1,267 societies in the Ethnographic Atlas. The goal of the SCCS is to represent the cultural diversity of well-described human societies—which range from contemporary hunter-gatherers to now extinct civilisations. These societies are considered largely independent of one another and arguably representative of mutually distinct cultures [10]. The data set contains close to 1,400 variables that capture various ethnographic and cultural elements.

Other large cross-cultural surveys that contain historical information on global matrilineal villages are rare and of questionable quality. Because the number of societies in the SCCS is large and heterogeneous enough to provide significant statistical analysis, it has become one of the most widely used data sets to study cross-cultural societies. However, the dataset has several limitations for the purpose of our analysis. First of all, the societies included in the dataset differ widely in terms of their ecological environment as well as their origins. This means it is difficult to isolate the influence of the environment on cultural norms from the possibility that distinct ancestral groups with different norms settled in different ecological niches. Second, sampling of SCCS societies is not random so that generalisations from this dataset can be difficult. Lastly, our main measure of reliance on fishing consists of the reef density in the surroundings of different societies or villages throughout the world. Since the Earth is an imperfect ellipsoid, using a Geodetic datum such as WGS 84 can lead to inaccuracies in calculating distances. We use a local geodetic datum when calculating distances in the Solomon Islands dataset to overcome this issue.

To determine matrilineal inheritance, we use question v836 from SCCS on the primary rule of decent in each society. Approximately 16.6% of all societies in the sample are of matrilineal inheritance while the rest are matrilineal or non-lineal. The second variable used in our analysis—'Dependence on fishing' is taken from SCCS question v205. The majority of societies (60%) depend on fishing for less than 15% of their diet.

2.4.1   Setting of the Study in the Solomon Islands

Our study in the Solomon Islands took place in June - August 2013 in a sample of 79 randomly selected villages in four provinces in the Solomon Islands (Choiseul, Malaita, Temotu, and Western), with 20 villages sampled in each province (because of difficulty of access to one particular village, data was collected only in 19 in Western Province). Sampled villages were drawn from the population of villages receiving funds under the Solomon Islands Rural Development Program (henceforth RDP). RDP is a US$22 million Community Driven Development Program initiative implemented by the Solomon Islands' Ministry of Development and Planning and Aid Coordination (MDPAC), and supported by AusAID, IFAD, and the World Bank.

We collected data from three different surveys in each village: an individual, household, and community leader survey. More detail on the individual and household survey is given in [32]. The data used in this paper is taken exclusively from the community leader's survey, which included a battery of questions about village characteristics. Several village leaders, typically the village chief, a female representative and members of RDP's sub-project implementation committees were present. The community leader's survey is the main source of information on overall village characteristics, such as inheritance and post-marital residence rules, total population, religion, and political structure.

We exclude the province of Temotu from the analysis because there is no variation within this province in inheritance rule, every village displaying patrilineal inheritance, and because we are unable to reconstruct the phylogenesis of some of the languages spoken in this province from the Ethnologue. We are thus left with a sample of 59 villages in 3 provinces. We checked that all the results reported in the paper are robust to using the full sample of 79 villages (contact the authors for this information).

All the villages included in the study are remote, coastal lowland villages (see Figure 2.4, 2.5,2.6). The average travel time between villages and their respective provincial capital is eight hours and the average travel time to the country's capital city Honiara is two and a half days. The main mode of transport is by ship or outboard canoe; access to roads is very limited. On average, there are 488 people in a village, the vast majority of whom (82%) rely solely on subsistence fishing and horticulture, without plough agriculture or large domestic livestock. In

our sample, fishing is exclusively a male activity and relies on traditional techniques, with men-operated paddleboats or outboard canoes. None of the fishermen in our study have access to modern fishing techniques nor do they use a motor to operate boats on fishing expeditions. Fishing is very risky, namely because of the risk of crashing on the reef on the way out to sea or on return to shore, particularly at night. Women are involved in the exploitation of some near shore sea resources, such as sea grass. Both men and women participate in agricultural activities, but women are, on average, much more involved than men in agriculture.

Most of the villages (85%) are governed by traditional village chiefs. In some cases, elected leaders (8%) or church leaders (13%) play a role in village governance (there are many cases of multiple leader types within a given village). All villages have one or more churches, which also serve as the community hall for meetings. Religion is an important part of daily life. All survey respondents claim a religious affiliation and there is at least one church service a day in most villages. In our sample, the most predominant denominations are United Church (28%) and Seventh Day Adventists (27%), closely followed by Catholics (25%) and South Seas Evangelists (22%).

The vast majority of villagers (82%) depend on a subsistence economy. Other households sell food at nearby markets. In most villages, the three most important sources of income come from selling produce (fish, crops, livestock), cocoa/copra and other cash crops or from logging royalties. Most villages do not have access to electricity, running water or sanitation. The vast majority (80%) of households use rainwater catchments for drinking water, only have access to solar lamps for lighting their households, and defecate in the sea or the bush.

As is the case in most villages in the Solomon Islands, the villages we surveyed are small. Individuals within the village are organised first in households and second in tribal groups. On average, each village has 488 people, organised in 82 households and slightly over 4 tribal groups. All descriptive statistics are included in Table 2.3.

Matrilineal villages are smaller (mean of 292.5) than patrilineal villages (mean of 533.2) (difference in means p-value: 0.037, see Table 2.4). The share of households relying solely on subsistence is higher in matrilineal villages, and these villages are more remote, although the relationship is not statistically significant. This pattern is again consistent with a switch to patrilineal inheritance in less remote and more developed areas. However, wealth and food security are higher in matrilineal villages. The proportion of people with roof iron, one of the main proxies for wealth, is 47% in matrilineal villages against 40% in patrilineal villages (difference in means p-value: 0.15, see Table 2.4). The proportion of people declaring they always have enough food for all family members is also 6 percentage points higher in matrilineal villages (difference in means p-value: 0.05, see Table 2.4). The main prevailing religion in the village displays some statistical difference between matrilineal and patrilineal villages, with patrilineal villages more likely to have adopted Western religions, such as Anglicanism and Catholicism,

which again is consistent with these villages being more influenced by Western values. We control for these statistically significant differences in the empirical analysis.

2.4.2 Social Organisation in the Solomon Islands

The community leader survey asked several questions about the social and political organization of the village. In particular, we inquired about land inheritance and post-marital residence rules, as well as the practice of dowry or bride price payments and about customs dividing the marriage costs between the bride's and groom's family.

As shown in Table 2.3 19% of our sampled villages have a matrilineal land inheritance system, in which land is transmitted by mothers to their daughters. Less than 4% display a mixed system in which both the father and the mother can transmit land. As we have already discussed, mixed systems are indicative of a transition from matrilineal to patrilineal inheritance. Figure (2.4, 2.5,2.6) plots the distribution of matrilineal and patrilineal inheritance across our survey sites. Matrilineal inheritance is most prominent in Western Province, where 50% of surveyed villages have matrilineal inheritance. Inheritance rules vary within provinces, and even within smaller geographic areas. Crucial for our identification strategy, we also observe variation in inheritance rules within language groups. This is illustrated in the final nodes of the language tree in Figure 2.2. For example, Touo and Bilua are both Central Solomons languages. Yet in Touo villages, land is transmitted through mothers, whereas it is transmitted through fathers in Bilua villages

7% of our survey sites report matrilocal post-residence rules, where the newly married couple lives in the bride's village, against 56% reporting patrilocal post-residence rules. Post-marital residence is a lot more mixed than inheritance, with 36% of villages displaying a mixed system. The highest prevalence of matrilocality is again found in Western Province, where up to a quarter of the villages are matrilocal. Although matrilineality and matrilocality are strongly correlated (correlation coefficient of 0.37, significant at the 1% level), the overlap is not perfect. Only 20% of matrilineal villages are also purely matrilocal, and 50% are mixed, where post residence rules vary, with the remaining being patrilocal.

Marriage payments are more variable than both inheritance rules and post-marital residence rules. Dowry payments are common in only 2% of our villages, all in Malaita Province. Bride prices are much more predominant, in nearly 60% of villages. In the rest of the sample, mixed systems prevail, where both the groom and bride's families pay. Similarly, in less than 2% of villages the bride's family pay for the wedding costs, whereas the bride's family pays in 35% of villages, and the rest is mixed. The large prevalence of mixed systems when it comes to bride payments or wedding costs is consistent with anecdotal evidence of the rise of "love" marriages and the decreasing proportion of marriages taking place purely within traditional marriage systems.

In the paper, we focus on inheritance rules for two main reasons. First of all, inheritance provides the main economic motivation in this paper. Second, inheritance rules exhibit fewer mixed conditions than post-marital residence rules or marriage payments, which can be taken as an indication that they have been less affected by social changes in recent years. Inheritance rule thus provides a more direct proxy for villages' traditional social organisation. There is, indeed, a much lower proportion of mixed, transitional systems in inheritance rules (only 4%) compared with any other dimension of social organisation. In our analysis of the SI, we focus on the contrast between pure matrilineal and patrilineal inheritance.

2.4.3 Balance of Covariates between Matrilineal and Patrilineal Villages

In Table 2.4, we present the balance of covariates between matrilineal and patrilineal villages. In line with the discussion in the paper and the prediction that the number of offspring per family will be smaller under a matrilineal system, the total number of people in a village is significantly smaller in matrilineal villages. On average, matrilineal villages are nearly half as populous as patrilineal villages, although neither the total number of tribal groups nor the total number of households is significantly different. Accordingly, household size is significantly smaller in matrilineal villages, with, on average, 6.5 people per household, against more than 11 in patrilineal villages (p-value of the difference in means around 10%).

There is no statistical difference between the political organisation of matrilineal and patrilineal villages, with traditional chiefs being predominant in both types of villages. We however find differences in the major religion practiced by matrilineal and patrilineal villages. Patrilineal villagers are more likely to come from Christian churches with broad global reaches, such as Anglican, Catholic, Uniting or Methodist churches, while matrilineal villagers are more likely to follow local Christian hybrid religions such as Charismatic Church, Solomon Island Seventh Day Adventist (SDA) and South Seas Evangelical Church (SSEC). Consistent with the higher concentration of matriliny in Western Province, we find a statistical difference in the language group across matrilineal and patrilineal villages, this is not an issue for our analysis, as we control for language fixed effects.

The share of households relying solely on a subsistence economy is slightly higher in matrilineal compared with patrilineal villages. Matrilineal villages are also more remote, with a travel time of 12 hours to the provincial capital compared to 7.2 hours in patrilineal villages, although this difference is not statistically significant. This is consistent with economic development and contact with Western institutions leading to a transition from matrilineal to patrilineal inheritance, a phenomenon that has previously been noted in the literature [29], including in the Solomon Islands [30].

2.4.4 Reef Data

To identify a village's reliance on fishing, we measure the density of coral reefs in a 10km-radius of each village. We select a 10-km radius as a reasonable limit for a regular fishing trip on a paddleboat, the main fishing technology for the individuals in our Solomon Islands dataset. For consistency, we also use a 10-km radius for the SCCS analysis. The reef data is from the Global Distribution of Coral Reefs, a dataset compiled from a number of sources by the UNEP-World Conservation Monitoring Centre and the World Fish Centre, in collaboration with the World Resources Institute and The Nature Conservancy [33]. It is the most comprehensive global dataset of warm-water coral reefs publicly accessible. Due to variation in quality of the GDCR data, the exact calculation of reef density for our analyses with the SCCS dataset and with our Solomon Islands sample differ, each is explained in turn below.

To examine the density of coral reefs in the locality of SCCS villages, we map and calculate distances between the SCCS societies and coral reefs. To calculate distances, we use QGIS using the World Geodetic 1984 coordinate system, which is the standard coordinate reference system used by GPS devices.Since the GDCR data is compiled from a number of sources the data varies in terms of geometry and reef information. Specifically, a number of locations do not contain information on reef type such as whether the reef is shallow or deep, however all sources contain the total size of each reef formation. To calculate reef density we create a reef distance algorithm that calculates the total square kilometres of reef in a 10km radius of each village.

Reef data in the vicinity of the Solomon Islands is of higher quality: it has been validated by the University of South Florida and the Institute de Recherche pour le Development (IRD) with support from NASA. The Solomon Islands reef data contains information on reef type (including barrier reef, patch reef and shelf reef) and reef depth (including whether the reef is shallow, variable or deep). We use QGIS using Solomon 1968 datum, we overlay the reef shapefile with the GPS coordinates of our sampled villages. Using both nearest neighbour techniques and a distance matrix, we calculate the number of shallow reefs within a 10km radius of each village.

We focus our analysis on shallow reefs, as these are closest to shore and thus most accessible by villagers on canoe or small paddleboats. Furthermore, other reef types are rare—each village is surrounded by on average 47 shallow reefs, compared to 0.01 deep water reefs (in a 10 kilometre radius). Lastly, shallow water reefs are the most productive for fishing purposes: reef-building corals generally grow best at depths shallower than 70 meters, with the most productive reefs growing at depths of 18–27 meters below sea level [34].

2.5 Results

2.5.1 Results in the SCCS Societies

The density of reefs as a proxy for reliance on fishing and, in turn, as a predictor of the prevalence of matrilineal inheritance across the world is confirmed in the SCCS dataset. Societies that are surrounded by more reefs within a 10km radius are more likely to rely on fishing as a source of livelihood (difference in means, p-value: 0.00). In turn, these societies are more likely to be matrilineal, and this relationship is also statistically significant. Within a 10km radius of matrilineal villages, there are on average 10.80 square kilometres of reef compared to 2.49 in patrilineal and mixed villages. An increase by one square km of reef is associated with an increase in the probability of a society being matrilineal by 0.2% (difference in means p-value: 0.081). These result are included in Table 2.2 and illustrated in Panel A of Figure 2.1.

While the SCCS dataset provides intriguing evidence on the correlation between reef density and matrilineal descent, this analysis is limited by several factors. The societies in the SCCS dataset face different ecological conditions but also differ in the groups from which they descend. This makes it difficult to identify whether the correlation between reef density and matriliny is due to the adaptation of groups to ecological conditions or to habitat selection by ancestral groups with different norms.

By contrast, in our Solomon Islands sample, we obtained a random sample of villages, reef data is of good and consistent quality, and we observe variation in inheritance rules within ethno-linguistic group, which enables us to control for common ancestry.

2.5.2 Results in the Solomon Islands

We follow the phylogenetic method and proxy descent by language group. Language is the main source of identification among the people of the Solomon Islands. The country has an estimated 71 live languages still spoken today among a total population of half a million people [33]. We recorded 22 languages spoken in our sample of 59 villages but many of these languages originate from the same language group. We reconstruct the phylogenesis of each language using Ethnologue: Languages of the World [35], a database that contains the genetic classification of more than 7000 languages. We first group together different languages that belong to the same language group. Our data comprises 9 different language groups, which are the final nodes of the tree in Figure 2.[1] We then trace back each language to two distinct main language groups: Central Solomons and Austronesian. Languages of the Austronesian family consist of

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[1]Recorded language is missing in one village of our study and we were unable to find any reference in Ethnologue for only one language in our study: Mbaere, the spoken language in Tiqe village in Western. We thus have valid observations in 57 villages.

two main groups: Central Eastern Oceanic and Western Oceanic, which we consider as two separate groups in the analysis in order to be conservative. We end up with three different language groups: Central Solomons, Central Eastern Oceanic, Western Oceanic. Figure 2.2 displays the language tree representation of Ethnologue: Languages of the World [35] for our sample.

Inheritance rule varies within provinces, and even within smaller geographic areas (see Figures 2.5,2.6,2.4). Crucial for our identification strategy, we also observe variation in inheritance rules within language groups. This is illustrated in the final nodes of the language tree in Figure 2.2. For example, Touo and Bilua are both Central Solomons languages. Yet in Touo villages, land is transmitted through mothers, whereas it is transmitted through fathers in Bilua villages.

To test the hypothesis that reef density reduces the likelihood of transition away from matrilineal inheritance, we regress the presence of matrilineal inheritance on our measure of reef density, the number of shallow reefs in a 10km radius. Regression results are displayed in Columns 1 to 3 of Table 2.5.[2]

In the first column, we present the raw correlation between matriliny and reef density, without including any control variables. The relationship is statistically significant at the 1% level. The magnitude of the results is non-negligible. One more shallow reef in a 10km radius (a 2.4% increase at the mean) is associated with an increase in the probability of matriliny being prevalent in a village by 0.6 percentage points (a 3.2% increase at the mean). On average, reefs are twice as dense in the vicinity of matrilineal villages compared to patrilineal villages (see also Table 2.3). The pseudo R^2 statistic indicates that our reef density measure explains as much as 20% of the variation in inheritance rule across villages.

Because descent plays a central role in the distribution of social norms, it is important to hold descent constant when studying the influence of ecological variation. We do so in Column 2 by accounting for phylogenesis by including controls for language fixed effects. The results are robust, with reef density predicting the presence of matriliny to a similar extent and with similar confidence (p-value < 1%). Adding language fixed effects increases the goodness of fit; reef density and phylogenesis together explain 34% of the variation in the presence of matrilineal inheritance across villages. These results indicate that while language groups explain some of the variation in matrilineal inheritance, reef density accounts for a considerable amount of the within-group variation.

In Column 3, we check that our results are robust to controlling for differences between patrilineal and matrilineal villages in terms of soil quality. Land quality may vary between matrilineal

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[2]For ease of interpretation, we present the results of an OLS regression model in Table 2.5. Because of the discrete nature of the dependent variable, we check that the results are robust to using a nonlinear logit regression estimation model. We have also checked that the OLS model did not predict values outside the 0-1 range for the dependent variable. Moreover, our analysis is also robust to taking the log transformation of the number of shallow reefs in a 10km radius. See Section 2.6 and Table 2.6 for robustness discussion and tests.

and patrilineal villages influencing land inheritance rules. We find that including a soil production index cannot explain land inheritance patterns. The results in Column 3 are also robust to controlling for other potential differences between villages in terms of subsistence patterns, religion and political structure. The coefficient associated with our main independent variable, reef density, is very stable across specifications. Since we include a large number of potential confounders, the stability of our point estimate suggests that the presence of other potential confounders is not of significant concern for the validity of our results.

Our results indicate that in locations where the surrounding reef is most dense, matrilineal inheritance is the predominant rule of inheritance of land. We offer the following explanations: First, the sexual division of labour, with men specialised in fishing and women in farming, may be sharper where reef density is high. In these circumstances, having women own the land improves their incentives for exerting effort and expending investments. Second, where reef density is higher, land is relatively less important as an asset, so that its transmission to sons is not expected to contribute as greatly to improving their relative fitness over daughters. Last, fishing is risky and necessitates prolonged absence. This explains the specialisation of men in fishing, but also justifies a more matricentric societal organisation. Prolonged male absence implies lower paternity certainty, although we are unable to test for this hypothesis in our current framework.

2.5.3   Demographic Consequences

We are able to investigate some of the socio-demographic consequences of inheritance rule. We test for the prediction that family size will be higher in a patrilineal system compared to a matrilineal system [12]. This hypothesis derives from explanations for inheritance rule based on the maximisation of inclusive fitness. Under a patrilineal inheritance system, the additional number of offspring that can result from transmitting an asset to sons needs to outweigh the loss in terms of paternal certainty [12]. The economic literature has also stressed that land ownership improves the bargaining power of women, which in turn reduces fertility ([36], see [30] for a review). Moreover, because proximity to reefs may be associated with greater female responsibility for farming, the opportunity cost of foregone agricultural production due to childbearing may also induce smaller family sizes. [3]

To test this hypothesis, we regress population size on the presence of matrilineal inheritance in Columns (4) to (9) of Table 2.5. We examine both the effect on total population size at the village level and on household size. Given that there is neither transient population nor migration other than through marriage in our villages, these measures are good proxies for fertility. As before, we first present the simple correlation between, on the one hand, reef density and on the other

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[3]It is not the aim of this paper to disentangle the different mechanisms: this is left for future research.

hand, village size (Column 4) and household size (Column 7). We then control for language fixed effects (Columns 5 and 8) as well as for the set of controls for subsistence patterns, political organisation and religion (Columns 6 and 9).

We find a negative, statistically significant, and sizeable relationship between matrilineal inheritance and population and household size. According to our estimates, switching from matrilineal to patrilineal inheritance is associated with an increase in village and household size of around 50

2.6 Robustness of Results

2.6.1 Econometric Specification

The results in Table 2.5 in the main paper are robust to taking the log transformation of the number of shallow reefs in a 10km radius. These robustness tests are included in Table A5. Because of the discrete nature of the dependent variable, we check that the results are robust to using a nonlinear logit regression estimation model. However, for ease of interpretation, we only discuss the results of an OLS regression model in the main paper. We have checked that an OLS model did not predict values outside the 0-1 range for the dependent variable.

2.6.2 Influence of Observable Characteristics

An immediate concern for our analysis is the presence of confounders that explain the variation of inheritance rule across villages. In Section 2.4.3, we discussed how matrilineal and patrilineal villages are similar in many dimensions, including political organisation. Yet, they differ in a few dimensions, such as religion and subsistence patterns. If certain religions favoured a type of inheritance rule over another, and if the type of religion in a village was correlated with reef quality, this could challenge the interpretation of our results. It is therefore important for the analysis to control for the characteristics that differ across matrilineal and patrilineal villages. We also control for political structure in order to be conservative. This is done in Column (3) of Table 2.5 in the paper, in which we add the following controls: religion (Anglican, Catholic, Charismatic, Methodist or other), political structure (traditional village chief, church leader, or village committee), and subsistence pattern (the share of households living just from subsistence, broken down in 3 categories).

Another important concern is that reef quality may be negatively correlated with land quality, and that the presence of matrilineal inheritance can be explained by differences in land quality. To test this hypothesis we use a raster of the FAO's Soil Production Index [37]. A single soil

production observation is extracted for each village. The index is a geographic projection that measures the suitability of the best adapted crop to each soil's condition in an area and then generates a weighted average for all soils present in a pixel. It has a spatial resolution of 5 x 5 arc minutes. Higher values of the index indicate greater soil quality and scope for higher agricultural production. Figure 2.7 shows the soil index for the Solomon Islands and reveals that there is very little variation in land quality within provinces. This indicates that land quality is unlikely to be sufficient to explain the observed variation in inheritance rule. Next we control for land quality by including it in our regression explaining matrilineal inheritance. Table 2.7 reports the results of regressions in which we regress the presence of matrilineal inheritance on the soil production index. In Column (1) we find a negative and statistically significant relationship between the soil production index and matrilineal inheritance (p-value: 0.03). However, when we add reef density Column (2) we find that the index is no longer statistically significant while reef density is unchanged in terms of both magnitude and statistical significance compared to the base model. These results are largely unchanged when we include other controls including language groups Column (3) and demographics Column (4). To ensure this result is robust we also re-estimate the same model replacing the soil production index with an alternative measure of land quality- soil type. We hypothesise that minimal variation in soil type is an indication that land quality is constant. Soil type is taken from the Digital Soil Map of the World (DSMW) which also has a spatial resolution of 5 x 5 arc minutes and is a geographic projection [38]. We find that the coefficient of reef density is similarly unchanged in this model (contact the author for further details)

Although we control for a battery of controls such as land quality, it is possible that there may be unobservables that are correlated with reef density and matrilineal inheritance. To test this we use a method developed by Oster and compute the extent of unobservable selection that would be required to negate the effects of reef density in matrilineal villages under the assumption of proportional selection on observables and unobservables [39]. Based on the recommended assumption that the maximum R-squared is 1.3 times the R-squared obtained with the full set of controls, the influence of unobservable variables would need to be more than 22 times as large as the influence of all controls included in Column (3) of Table 1 to explain away the influence of reef density as a predictor of the persistence of matriliny. With the assumption of a maximum possible R-squared of 1, a highly conservative scenario, the corresponding number is still more than 7. When language groups fixed effect are included in the baseline regression (as in Column (2)), adding controls in Column (3) results in an increase in the magnitude of the coefficients, which suggests that adding more unobservable variables to the regression may move the coefficient on reef density even further away from the null of no effect.

2.6.3 Treatment of Standard Errors

We re-estimate all the results while clustering the standard errors by language group. Since we have only 3 clusters, we use the Wild cluster bootstrap method and we alter the distribution of weights in the bootstrap to a six-point distribution [40]. This method is shown to outperform the standard wild bootstrap for estimations with less than 10 clusters. Using this method, we find almost identical standard errors as in the standard model. P-values are reported in Table 2.5 (see WCB6)

We also re estimate Columns 5-6 and 8-9 of Table 2.5 using the wild cluster bootstrap method with a six-point distribution [40]. Using this method, we find similar results for household size, but the results fall short of statistical significance for the total number of households in the village. P-values are reported in Table 2.5 (see WCB6).

2.7 Conclusion

Overall, our results establish that ecological conditions play a critical role in the evolution of inheritance rules. In turn, inheritance rules are a key determinant of economic growth and welfare. Our results contribute to a recent literature that shows how geographic endowments shape institutions and social norms ([41],[29],[42],[2], [3], with deep and far ranging consequences for economic growth and welfare across societies [2],[43], [6]) as well as for the relative welfare of females and males within societies, measured namely by the sex ratio ([44], [7]), female labour force participation, female representation in politics [8] and fertility [9]. We establish that ecological conditions play a critical role in the evolution of inheritance rules, a central norm of social organisation that influences economic efficiency and economic growth [43], [2]) directly as well as indirectly. Because of its influence on fertility and population, inheritance rules influence genetic diversity [26]; which has been discussed as an important determinant of economic growth [45] and [46], innovation adoption and economic development [47], [48], as well as conflict [48].

FIGURE 2.1: **Correlation between matriliny and reef density across the world (Panel A) and in our sample of the Solomon Islands (Panel B)**
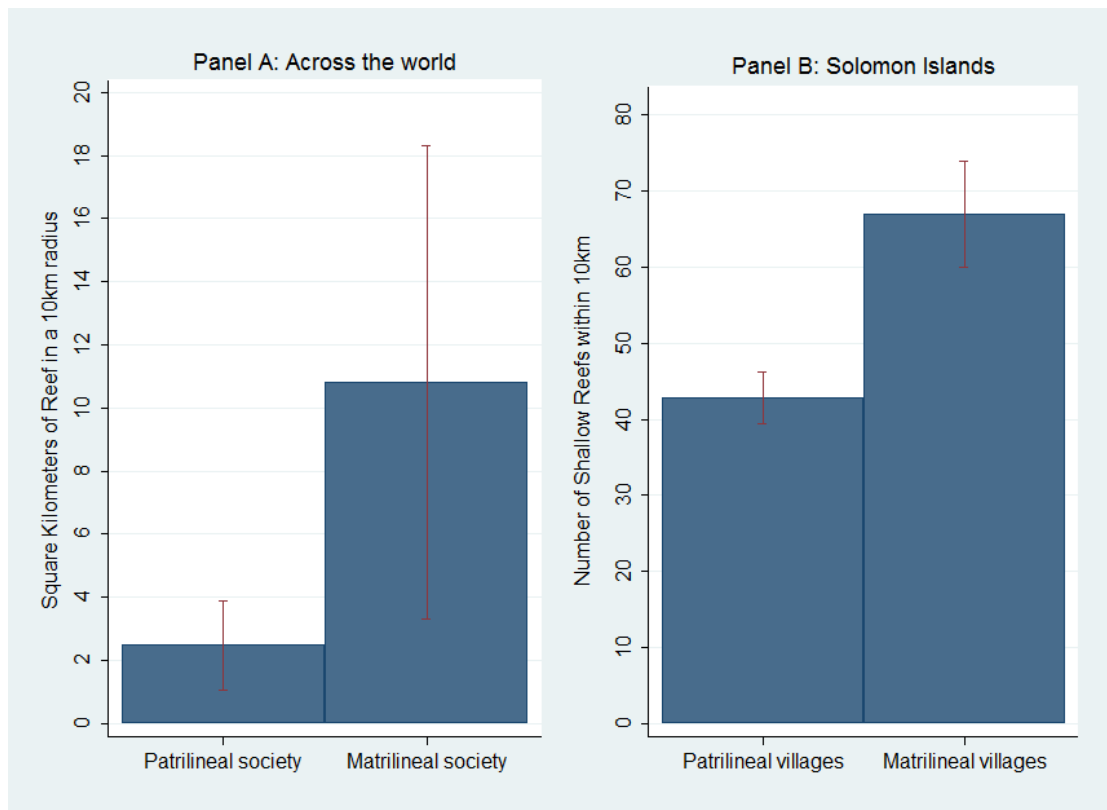
Notes:
Source: [1], World Atlas of Coral Reefs, Authors' data.

FIGURE 2.2: **Language tree of the Solomon Islands and of our sample languages**
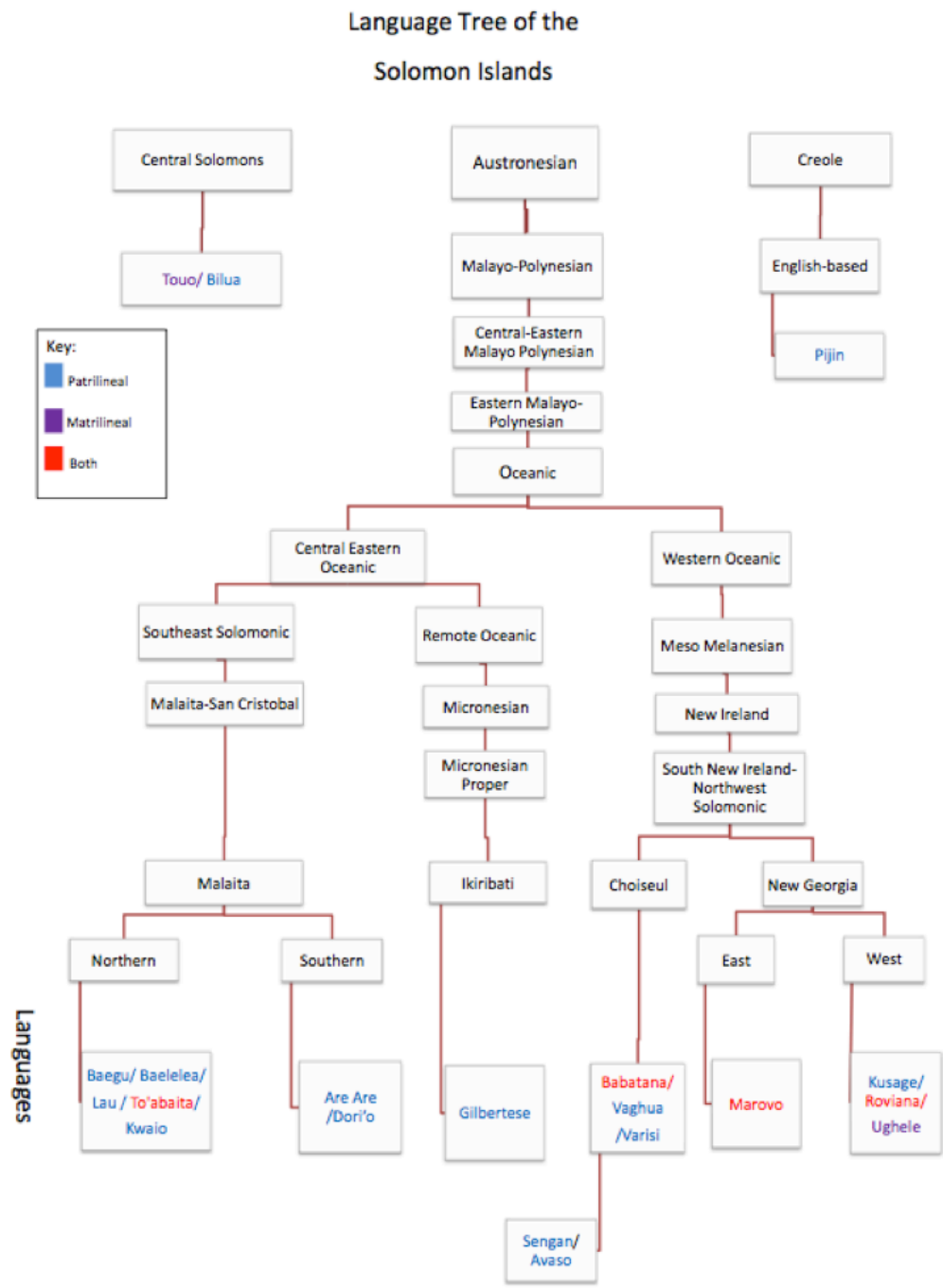
Notes:
Source: Ethnologue [24]. Languages in our sampled villages are the final nodes.

FIGURE 2.3: **Matrilineal and Patrilineal Groups Across the World**
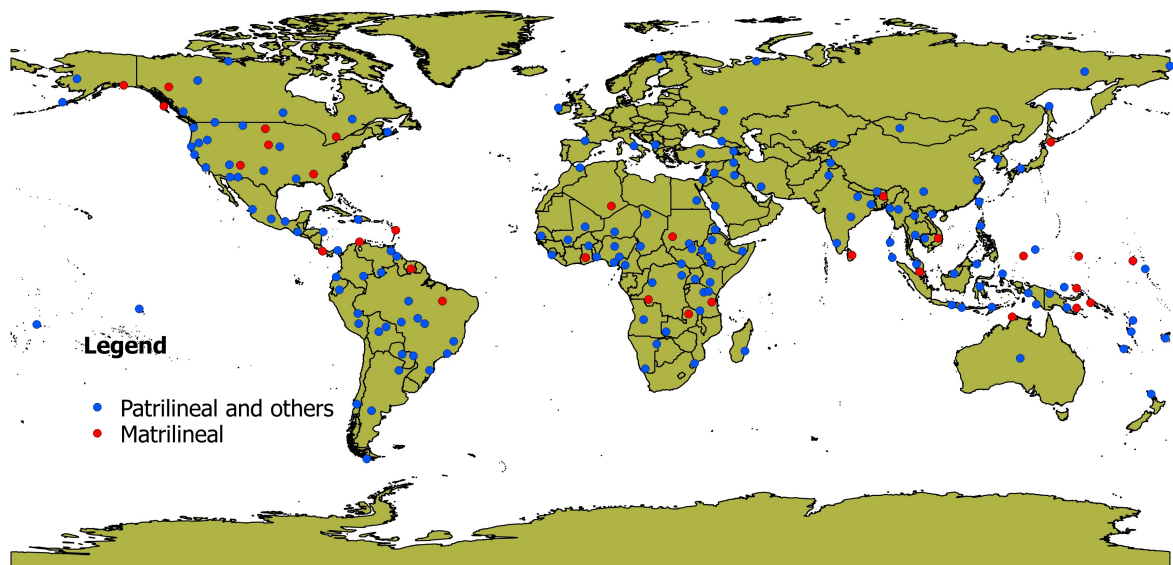
Notes:
Source: Murdock and White (1969)

FIGURE 2.4: **Map of the Western Province and Matrilineal Inheritance and Reef Density**
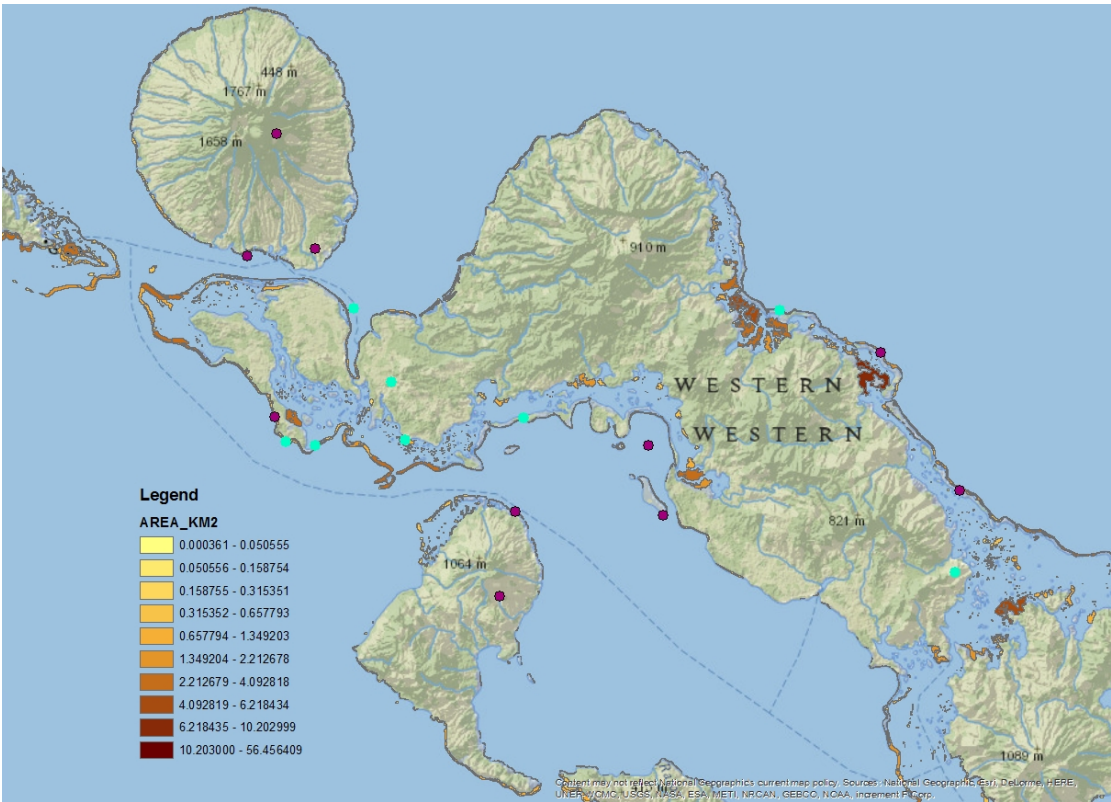
Notes:
Source: Western Province in the Solomon Islands

FIGURE 2.5: **Map of the Choiseul Province and Matrilineal Inheritance and Reef Density**
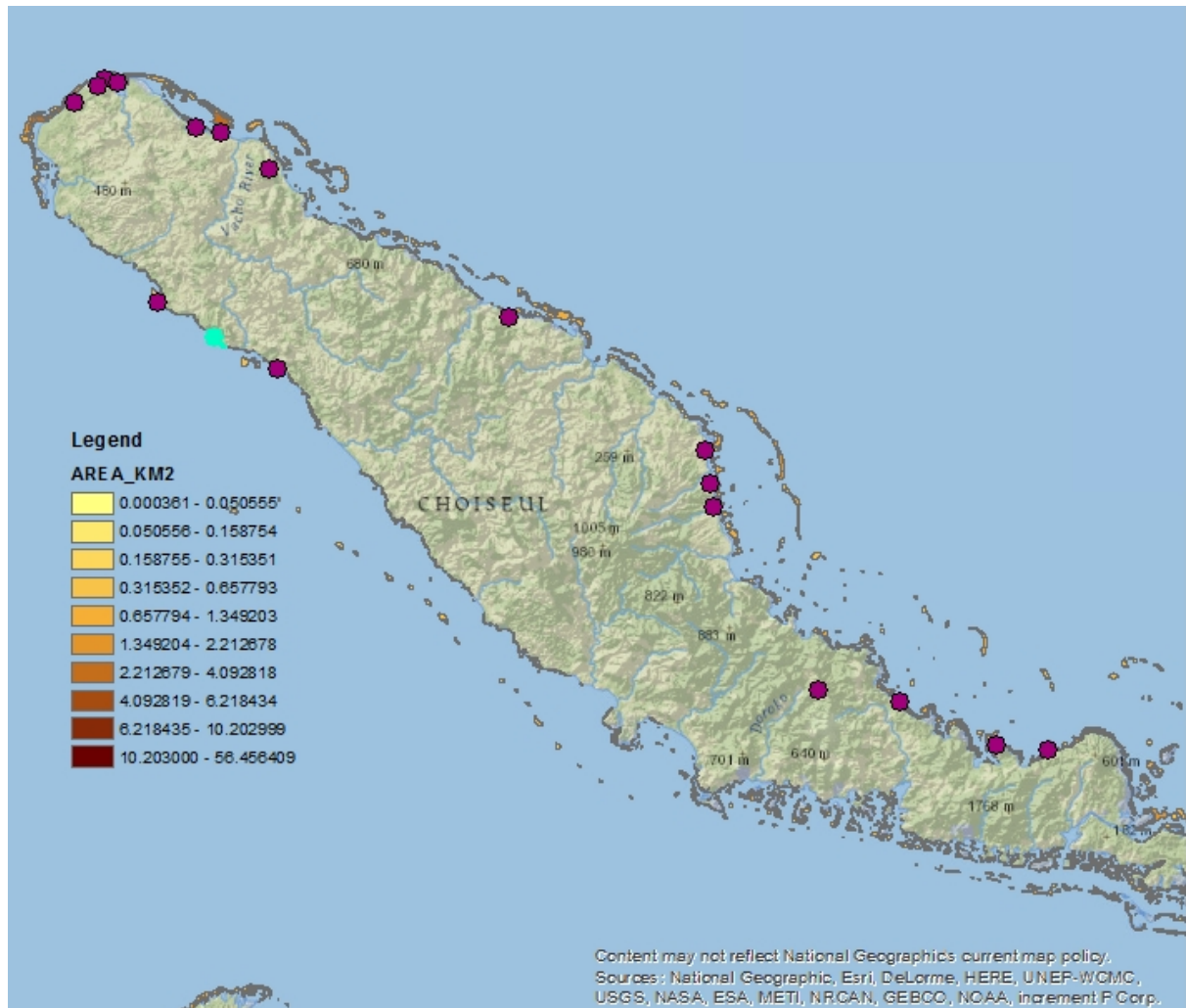
Notes:
Source: Choiseul Province in the Solomon Islands

FIGURE 2.6: **Map of the Malaita Province and Matrilineal Inheritance and Reef Density**
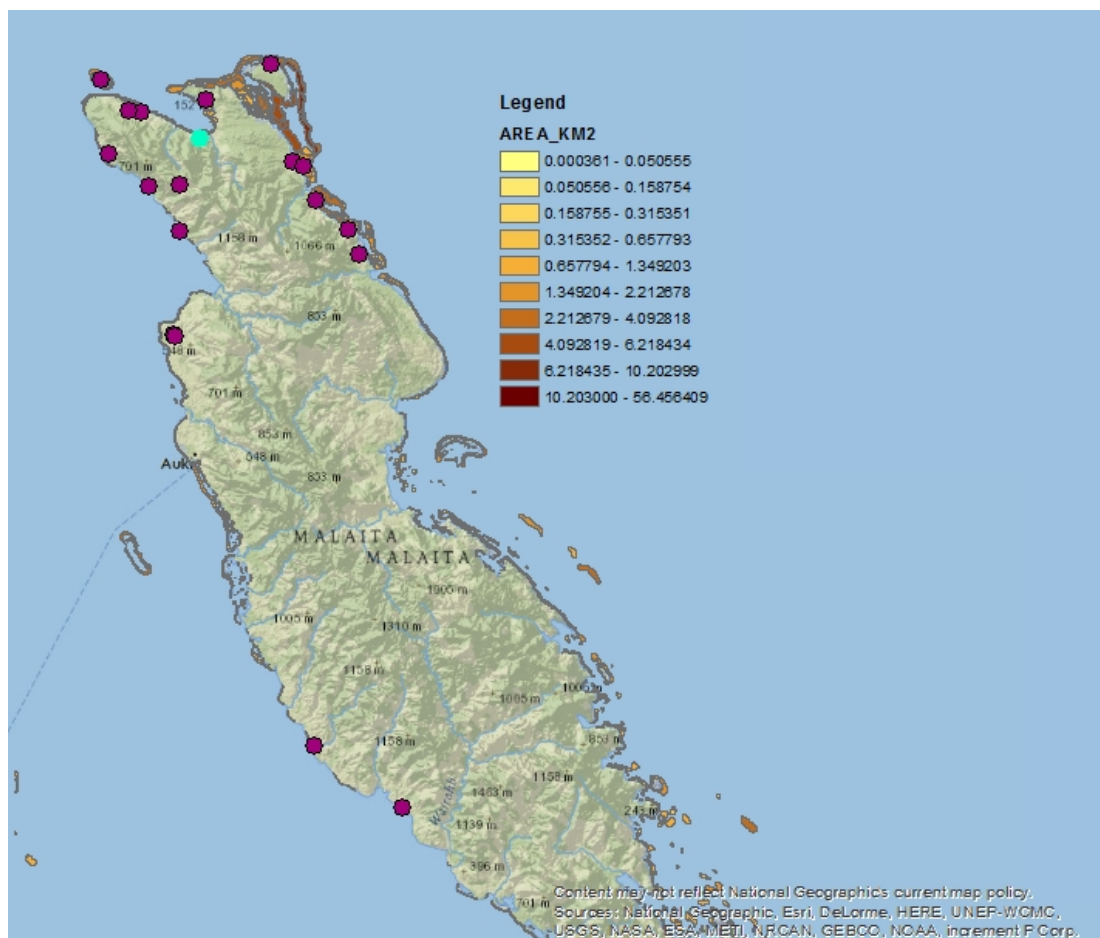
Notes:
Source: Malaita Province in the Solomon Islands

FIGURE 2.7: **Map of the Solomon Islands with Soil Production.**
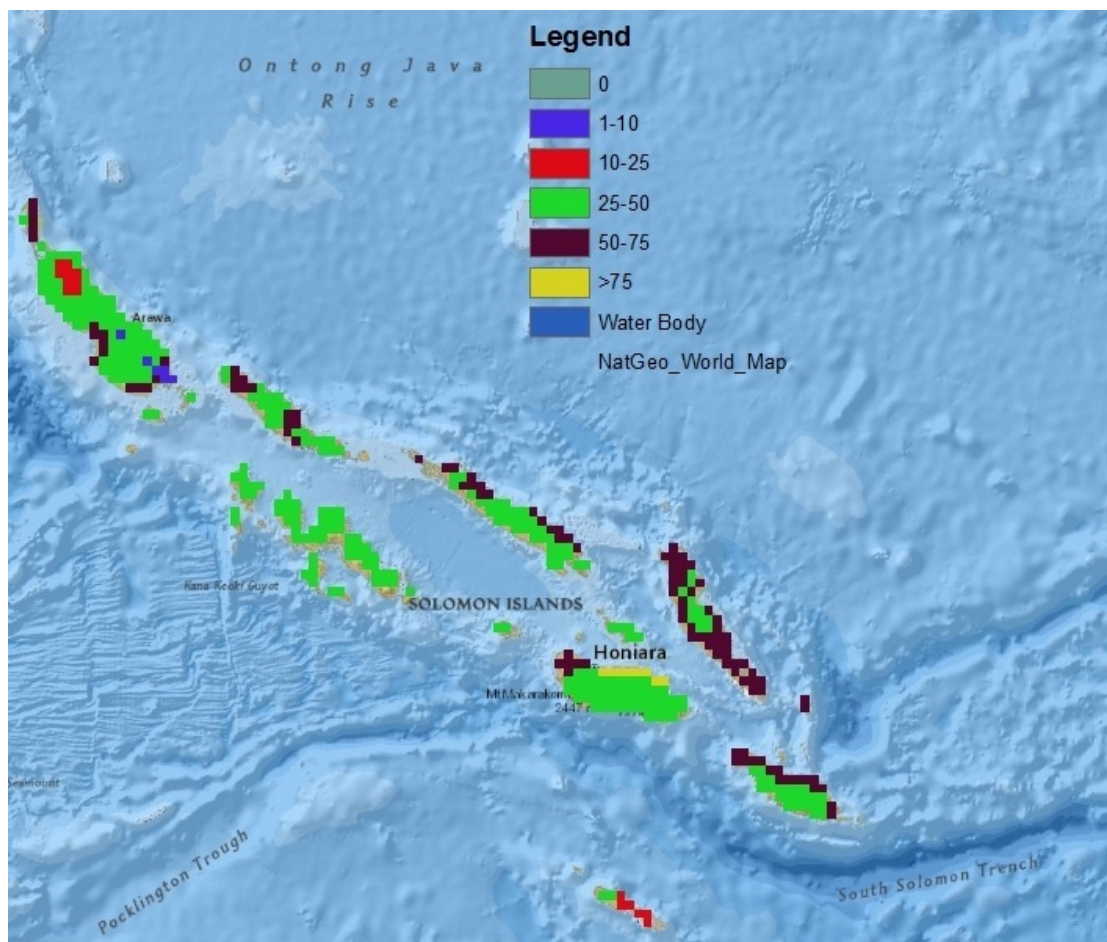
Notes:
Source: Map contains data on Soil Production taken from FAO (2012)

TABLE 2.1: **The ecological determinants of matrilineal inheritance and its demographic consequences**

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
	Matrilineal inheritance			Total number of people in village			Household size		
Number of shallow reefs in 10km radius	0.006*** (-0.002)	0.005*** (-0.002)	0.006** (-0.003)						
Matrilineal inheritance				-240.691** (-112.540)	-381.036*** (-185.098)	-352.334+ (-218.508)	-4.525+ (-2.775)	-5.720+ (-3.444)	-10.046* (-5.453)
Constant	-0.053 (-0.051)	0.419+ (-0.270)	0.009 (-0.347)	533.191*** (-93.470)	935.777*** (-413.399)	843.035** (-345.571)	11.087*** (-2.146)	9.897*** (-3.056)	9.688 (-7.560)
Soil Production Index			-0.118 (-0.132)						
Language group fixed effects included	no	yes	yes	no	yes	yes	no	yes	yes
Religion and political controls included	no	no	yes	no	no	yes	no	no	yes
Observations	58	56	52	57	56	52	57	56	52
R-squared	0.196	0.337	0.526	0.025	0.055	0.288	0.016	0.068	0.143

Notes: The unit of observation is a village. Coefficient estimates from OLS regressions. Robust standard errors corrected for heteroskedasticity are reported in parentheses. ***, **, * and + indicate statistical significance at the 1%, 5% and 10%, 15% level, respectively. For results for the full set of included controls or with standard errors corrected for clustering at the language group level see Table 2.5 . Sources: Authors' data and [37].

TABLE 2.2: **Reef Density and Fishing, in the SCCS dataset**

	(1) Dependence on Fishing	(2) Matrilineal
Square Km of Reef in 10 Km Radius	0.03***	0.002*
	(0.34)	(0.13)
	[0.01]	[0.00]
Constant	1.58***	0.153***
	(0.13)	(0.03)
Observations	186	186
R-squared	0.11	0.02

Notes: Coefficient estimates from OLS and linear probability regression presented in column 1 and 2 respectively. Column 1 reports the relationship between the density of reefs and societies' dependence on fishing. Column 2 reports the relationship between the density of reefs and societies' land inheritance. Standardized regression coefficients are in brackets. Robust standard errors in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% level, respectively. Source: [10] and [33]

TABLE 2.3: **Descriptive Statistics**

Variable	Obs	Mean	Std. Dev.	Min	Max
Number of shallow reef in 10 km radius	59	41.2	29.44	0	97
Social organisation					
Patrilineal inheritance	58	0.78	0.42	0	1
Matrilineal inheritance	58	0.19	0.4	0	1
Mixed inheritance	58	0.03	0.18	0	1
Patrilocal post-marital residence	55	0.56	0.5	0	1
Matrilocal post-marital residence	55	0.07	0.26	0	1
Mixed post-marital residence	55	0.36	0.49	0	1
Demographics					
Number of people	58	487.67	585.12	28	3000
Household size	58	10.29	13.44	1	87.26
Language					
Central Solomons	57	0.07	0.26	0	1
Central Eastern Oceanic	57	0.39	0.49	0	1
Western Oceanic	57	0.53	0.5	0	1
Creole	57	0.02	0.13	0	1
Political organisation and religion					
Elected leader	59	0.08	0.28	0	1
Traditional village chief	59	0.86	0.35	0	1
Church leader	59	0.14	0.35	0	1
Village Committee	59	0.05	0.22	0	1
Anglican	59	0.05	0.22	0	1
Catholic	59	0.14	0.35	0	1
Charismatic	59	0.08	0.28	0	1
Methodist	59	0.07	0.25	0	1
SDA	59	0.17	0.38	0	1
SSEC	59	0.17	0.38	0	1
United Church	59	0.28	0.46	0	1
Subsistence					
Share HH living just from subsistence: 76-100%	54	0.81	0.39	0	1
Share HH living just from subsistence: 51-75%	54	0.15	0.36	0	1
Share HH living just from subsistence: 0-25%	54	0.04	0.19	0	1
Travel time to province capital (hours)	58	7.97	9.28	0.5	30
Iron roof	59	0.41	0.18	0	1
Enough food for everyone	58	0.92	0.11	0.6	1

Source: Authors' data.

TABLE 2.4: **Covariates in Matrilineal and Patrilineal Villages**

Variable	Mean in Matrilineal Villages	Mean in Patrilineal Villages	Difference between Matrilineal and Patrilineal Villages	Difference in means P-value
Number of shallow reef in 10 km radius	66.909	34.277	32.631	0
Social organisation				
Patrilocal post-marital residence	0.3	0.622	-0.322	0.056
Matrilocal post-marital residence	0.2	0.439	0.156	0.246
Mixed post-marital residence	0.5	0.333	0.167	0.348
Demographics				
Number of people	292.5	533.191	-240.691	0.369
Household size	11.087	6.562	-4.251	0.109
Language				
Central Solomons	0.3	0.0219	0.278	0.0670
Central Eastern Oceanic	0.1	0.457	-0.356	0.005
Western Oceanic	0.6	0.522	0.07	0.656
Political organisation and religion				
Elected leader	0.182	0.064	0.117	0.344
Traditional village chief	0.726	0.915	-0.188	0.194
Church leader	0.363	0.064	0.3	0.053
Village Committee	0	0.064	-0.064	0.084
Anglican	0	0.064	-0.064	0.084
Catholic	0	0.17	-0.17	0.003
Charismatic	0.363	0.021	0.342	0.025
Methodist	0	0.064	-0.064	0.084
SDA	0.273	0.149	0.124	0.402
SSEC	0.182	0.17	0.012	0.93
United Church	0.09	0.34	-0.25	0.031
Subsistence				
Share HH living just from subsistence: 76-100%	1	0.791	0.209	0.002
Share HH living just from subsistence: 51-75%	0	0.163	-0.163	0.006
Share HH living just from subsistence: 0-25%	0	0.047	-0.047	0.161
Travel time to province capital (hours)	11.975	7.239	4.735	0.263
Iron roof	0.468	0.398	0.07	0.152
Enough food for everyone	0.962	0.904	0.05	0.049

Source: Authors' data.

TABLE 2.5: **Results (replica of Table 2.1): Full set of results**

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
	Matrilineal inheritance			Total number of people in village			Household size		
Number of shallowreefs in 10km radius	0.006***	0.005***	0.006**						
	(0.002)	(0.002)	(0.003)						
Matrilineal inheritance				-240.691**	-381.036**	-352.334+	-4.525+	-5.720+	-10.046*
				(112.54)	(185.098)	(218.508)	(2.775)	(3.444)	(5.453)
Religion and political controls									
Elected leader						-111.864			-2.087
						(136.282)			(3.789)
Traditional village chief						46.014			4.67
						(231.566)			(7.230)
Church leader						-222.038			-1.705
						(240.639)			(3.439)
Village Committee						168.764			-1.69
						(307.738)			(6.972)
Anglican						1,479.450+			1.447
						(998.893)			(2.906)
Catholic						109.174			2.423
						(287.701)			(5.458)
Charismatic						247.174			10.988
						(186.144)			(8.525)
Methodist						-299.451			2.875
						(327.752)			(5.307)
Share HH living just from subsistence: 76-100%						115.55			1.197
						(111.908)			(2.721)
Share HH living just from subsistence: 51-75%						108.937			-9.278**
						(341.858)			(4.161)

Continued on next page . . .

Source: Authors' data.

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
	Matrilineal inheritance			Total number of people in village			Household size		
Soil Production Index			-0.118 (0.132)						
Language group fixed effects:									
Central Eastern Oceanic		-0.538** (0.254)	-0.4 (0.27)		-458.593 (424.904)	-684.048 (480.559)		-2.093 (3.156)	-7.524 (5.256)
Western Oceanic		-0.424+ (0.253)	-0.283 (0.24)		-360.636 (389.677)	-408.536 (439.783)		4.324+ (2.729)	0.904 (3.587)
Constant	-0.052 (0.050)	0.419+ (0.27)	0.515 (0.692)	533.191*** (93.47)	935.777** (413.399)	843.035** (345.571)	11.087*** (2.146)	9.897*** (3.056)	9.688 (7.561)
p-value for Number of shallowreefs in a 10 km radius using (WCB6)									
p-value for matrilineal inheritance using (WCB6)	p=0.006		p=0.036		p=.234	p=0.216		p=0.048	p=0.160
Observations	58	56	52	57	56	52	57	56	52
R-squared	0.196	0.337	0.538	0.025	0.055	0.288	0.016	0.068	0.142

Source: Authors' data.

TABLE 2.6: **Robustness: Log of shallow reef and merged language group**

	[1] Matrilineal	[2] Matrilineal	[3] Matrilineal	[4] Matrilineal	[5] Matrilineal
Ln (Number of shallow reef in a 10km radius)	0.139*** (0.043)	0.095** (0.037)	0.086* (0.043)		
Number of shallow reefs in 10km radius				0.005*** (0.002)	0.005* (0.003)
Elected leader			0.15 (0.159)		0.167 (0.137)
Traditional village chief			-0.02 (0.231)		0.094 (0.228)
Church leader			0.218 (0.203)		0.09 (0.216)
Village Committee			-0.422 (0.253)		-0.303 (0.251)
Anglican			0.047 (0.119)		0.026 (0.081)
Catholic			-0.09 (0.092)		-0.096 (0.103)
Charismatic			0.225 (0.217)		0.223 (0.191)
Methodist			-0.021 (0.119)		-0.105 (0.154)
Share HH living just from subsistence: 76-100%			0.346 (0.158)		0.227** (0.143)
Share HH living just from subsistence: 51-75%			0.197 (0.187)		-0.153 (0.188)
Soil Production Index			-0.129 (0.139)		-0.172 (0.124)
Central Eastern Oceanic		-0.596** (0.238)	-0.347 (0.26)		
Western Oceanic		-0.480* (0.243)	-0.278 (0.23)		
Central and Western Oceanic				-0.465* (0.25)	-0.292 (0.234)
Constant	-0.276** (0.118)	0.357 (0.274)	0.464 (0.614)	0.401 (0.269)	0.035 (0.388)
Observations	58	56	52	56	52
R-squared	0.137	0.280	0.496	0.317	0.523

Notes : The unit of observation is a village. Coefficient estimates from OLS regression. Robust standard errors corrected for heteroskedasticity are reported in parentheses. Column 1-3 reports the relationship between the log of the number of shallow reefs in a 10km radius and matrilineal inheritance. Column 4 and 5 reports the relationship between the number of shallow reefs in a 10km radius and matrilineal inheritance controlling for languages (Central and Western Oceanic are combined into one group). ***, ** and * indicate statistical significance at the 1%, 5% and 10% level, respectively. Sources: Authors' data.

TABLE 2.7: **Robustness: Landless Quality**

	[1] Matrilineal	[2] Matrilineal	[3] Matrilineal	[4] Matrilineal	[5] Matrilineal
Ln (No. of shallow reef	0.139***	0.095**	0.086*		
in a 10km radius)	(0.043)	(0.037)	(0.043)		
No. of shallow reefs in 10km radius				0.005***	0.005*
				(0.002)	(0.003)
Elected leader			0.15		0.167
			(0.159)		(0.137)
Traditional village chief			-0.02		0.094
			(0.231)		(0.228)
Church leader			0.218		0.090
			(0.203)		(0.216)
Village Committee			-0.421		-0.302
			(0.253)		(0.251)
Anglican			0.047		0.026
			(0.118)		(0.081)
Catholic			-0.09		-0.096
			(0.092)		(0.103)
Charismatic			0.225		0.223
			(0.217)		(0.191)
Methodist			-0.021		-0.105
			(0.118)		(0.154)
Share HH living just from subsistence: 76-100%			0.345		0.227**
			(0.158)		(0.143)
Share HH living just from subsistence: 51-75%			0.197		-0.153
			(0.187)		(0.188)
Soil Production Index			-0.129		-0.171
			(0.139)		(0.124)
Central Eastern Oceanic		-0.596**	-0.347		
		(0.238)	(0.26)		
Western Oceanic		-0.480*	-0.278		
		(0.243)	(0.23)		
Central and Western Oceanic				-0.465*	-0.292
				(0.25)	(0.234)
Constant	-0.276**	0.357	0.464	0.401	0.035
	(0.117)	(0.274)	(0.614)	(0.269)	(0.388)
Observations	58	56	52	56	52
R-squared	0.137	0.280	0.496	0.317	0.523

Notes: The unit of observation is a village. Coefficient estimates from OLS regression. Robust standard errors corrected for heteroskedasticity are reported in parentheses. Column 1 reports the relationship between the soil production index and matrilineal inheritance. Column 2-4 reports the relationship between the soil production index, the number of shallow reefs in a 10km radius and matrilineal inheritance controlling for languages (Central and Western Oceanic are combined into one group) and other demographic and political controls. ***, ** and * indicate statistical significance at the 1%, 5% and 10% level, respectively. Sources: Authors' data and [37].

Chapter 3

Social Identity and Governance: The Behavioral Response to Female Leaders

Declaration for Thesis Chapter [3]

Declaration by candidate
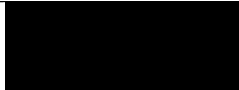
In the case of Chapter 3, the nature and extent of my contribution to the work was the following:

Nature of contribution	Extent of contribution (%)
Formulation of research question, design of experiment, data collection, data analysis, write up and copy editing	55%

The following co-authors contributed to the work. If co-authors are students at Monash University, the extent of their contribution in percentage terms must be stated:

Name	Nature of contribution	Extent of contribution (%) for student co-authors only
Professor Lata Gangadharan	Design of experiment, write up and copy editing	
Professor Pushkar Maitra	Design of experiment, data analysis, write up and copy editing	
Assistant Professor Tarun Jain	Design of experiment, write up and copy editing	

The undersigned hereby certify that the above declaration correctly reflects the nature and extent of the candidate's and co-authors' contributions to this work*.

Candidate's Signature	███████████	Date 8/11/15

Main Supervisor's Signature	███████	Date 8/11/15

*Note: Where the responsible author is not the candidate's main supervisor, the main supervisor should consult with the responsible author to agree on the respective contributions of the authors.

3.1   Introduction

Women in leadership positions often make different policy choices compared to men.[1] Female leaders can potentially alter the nature of governance, resulting in substantial changes to the kinds of public services provided. The opportunities for women to be leaders are however often constrained, both in developed and developing countries.[2] To counter this, gender based quotas have been introduced in leadership positions. Prominent examples of such quotas are in France, Spain, Norway and India.[3]

Despite a substantial literature comparing the policy choices of male and female leaders, relatively little is known about the behavioral response to women as leaders. Do individuals react differently to male and female leaders, and if so, why? Is behaviour towards female leaders influenced by experience with women in leadership positions? Does extended exposure to women leaders change male and female reaction to female leaders?

The behavioral responses of citizens to women in leadership positions are important, since they might enable or hinder the effectiveness of women in these roles. If citizens do not cooperate with female leaders, then long-term economic and social relationships may be destroyed, with adverse consequences for social welfare. Conversely, greater willingness to accept and work cooperatively with female leaders may facilitate their engagement with policy and encourage future female leaders. Our paper contributes to this important debate by focusing on the relationship between gender and political leadership, with particular emphasis on the behavioral reaction to female leaders.

We conduct an artefactual field experiment on leadership in public good provision in villages in the Indian state of Bihar. The experiment is set against the background of a natural policy experiment (the 73rd Constitutional Amendment in India, enacted in 1992) that introduced quotas for women in village headship positions.[4] We invite men and women residing in villages located in three districts of the state to participate in a modified one-shot public goods experiment where one group member is randomly selected as the leader.[5] The other group members are designated

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[1]See, for example, the evidence presented in Lott and Kenny [49] and Edlund and Pande [50]. Pande and Ford [51] conclude that female leaders have significant policy influence although there is considerable heterogeneity in the strength and type of this effect.

[2] Women are under represented in the political sphere in both developed and developing countries (as of 2014 women comprise 22% of the members of the UK House of Commons, 18% of the US Congress and 11% of the Lok Sabha or National Parliament of India). The corporate sector and academia also suffer from considerable under representation of women in leadership positions [52, 53].

[3]In France the *parity law* required parties to field the same number of male and female candidates in all elections; the *equality law* in Spain mandates a 40% female quota on electoral lists in towns with population above 5000; in Norway 40% of seats on corporate boards of publicly listed companies are reserved for women; and in India quotas for women are imposed in village council headship positions.

[4] Section 3.2.2 provides more details on reservation for women that are specific to our setting.

[5] Several recent papers have used experimental methods to analyze different aspects of leadership [54–58]. These typically involve a single centrally observed player sending a signal to (generally) a group of citizens. The leader's effort (contribution) is commonly observed prior to citizens' effort.

as citizens. There are equal number of male and female leaders and each group consists of two men and two women. The leader proposes a non-binding contribution to the public good and all group members are informed of the leader's proposed contribution. Then all group members, including the leader, choose their actual contribution. By revealing the leader's gender in the treatment sessions and not in the control sessions, we are able to identify the impact of women's leadership on citizens' contributions. Additionally, participants might bring their preconceptions and prejudices relating to a female village head into the sessions. To exploit this, we use the random allocation of women to the position of the head of the village council as a second source of exogenous variation in exposure to female leaders.

We find a large and statistically significant behavioral response to women as leaders. Men contribute significantly less to the public good when women, rather than men, are group leaders. We term this behaviour *male backlash*. This behaviour can largely be explained by social norms and social identity. We use a novel method of belief elicitation [59] to infer social norms relating to the role of men and women as leaders. In general, we find that participants believe that it is more socially appropriate for men to coorperate less with female leaders than with male leaders. Additionally compared to women, men believe that it is more socially inappropriate for women to become village heads. The results on male bias against female group leaders, are considerably stronger in villages that have been exposed to female heads (*mukhiyas*, also known as *pradhan* or *sarpanch*). Our analysis suggests that male backlash is driven by ingrained social norms associated with male identity in these societies, and not because of either the ineffectiveness of women leaders, or the perception that they are ineffective leaders or tokens for powerful elites. The assignment of women as leaders threatens the identity of men who believe these positions of power are directly associated with their masculinity and identity, thereby creating resentment.

An interesting twist to our findings is that male bias disappears with greater exposure to female leaders. This suggests that despite entrenched social norms against women leaders, persistent engagement with female leaders, perhaps via affirmative action policies, can potentially change social norms relating to identity and gender roles within the society. While this paper focuses on an in depth analysis of citizens response to male and female leaders, the experimental approach used can also identify the actions of the leader separate from other confounding factors. As summarised in Gangadharan et al. [60], female leaders are more likely to engage in deceptive behavior, perhaps because they anticipate underinvestment by male citizens.[6] Moreover, deception by female group leaders is significantly greater following exposure to female village heads.

An extensive literature examines the effect of gender-based quotas in the context of local governments in India. The policy has increased investment in public goods demanded by women [61], improved educational attainment of children [62, 63], increased reporting of and arrests

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[6] *Deception* is defined by the leader contributing less than their own proposal.

for crimes against women [64], reduced male subconscious biases about the appropriateness of women being leaders, challenged prevailing social norms [65], and reduced party bias against women candidates and increased the share of female candidates from major political parties in subsequent elections [66]. However, these results might be different by region or take time to materialize. Using data from South India, Ban and Rao [67] fail to find evidence that women leaders favour female-preferred goods or significantly impact government services. Bardhan et al. [68] and Bardhan and Mookherjee [69] find no impact of female reservation on public good provision in the villages of West Bengal. Rather, village councils reserved for women perform worse in targeting government programs towards the most disadvantaged households, including female headed households. Afridi et al. [70] suggest that female reservation is beneficial only in the long term. They find that greater inefficiencies and leakages occur in a government employment program in those villages that have had only one female reserved leader.[7]

Our paper contributes to this literature by providing novel insights on behavioral challenges to women's leadership. First, the randomized assignment of leadership status in the experiment allows us to avoid selection issues relating to the identity of the leader, and we can therefore interpret the actions of the citizens in response to the gender of the leader as causal.[8] Second, the experimental approach allows us to explicitly observe and separately identify the actions of the citizens from other social and environmental factors, which is difficult to do in an observational study. By conducting the experiments in a field setting, we can place the experimental findings in the context of participants' actual exposure to female leaders in headship positions of local village councils. Third, combining survey data with participants' actions in the experiment allows us to examine different reasons for resistance to women's leadership. Finally, we use a recently developed unique approach to collect evidence on social norms and identity that can largely explain the behavior of participants in the artefactual field experiment.

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[7]The effect of gender based quotas in European countries is also mixed. Casas-Arce and Saiz [71], using the natural experiment provided by the equality law in Spain show that parties that increased the share of women in their electoral lists as a result of the quota witnessed an increase in vote share. However they also find that women were significantly less likely to run at the top of lists that were favoured to win seats. This is consistent with the evidence from France. Murray [72] shows that since the parity law refers only to the number of women candidates and not the number of elected women candidates, parties reacted to this law by placing women disproportionately in difficult or unwinnable seats. Matsa and Miller [73] find that the quota on board member positions in Norway did not affect corporate decisions in general, with the exception of employment policies. Firms affected by the female board quota undertook fewer workforce reductions, leading to lower short-term profits. This policy however has also been associated with an exodus of firms listed on Norway's stock exchange, down from 563 firms in 2003 to 179 in 2008 [74].

[8] A critical challenge in analyzing the responses of citizens to female leaders is that the actions of the female leaders are rarely observed isolated from other concurrent actions and trends. Additionally, women who self-select as candidates for political office might be systematically different in terms of their preferences, aspirations or taste for competition. Even without self-selection, women might be tokens of other powerful interests in the village if men place them as their surrogates in political office [67, 75]. Therefore, isolating the impact of gender from the influence of other factors can be difficult. With relatively few women competing for leadership positions, this problem becomes particularly acute since citizens have little information about the leadership qualities of the average female candidate.

3.2 Research strategy

Our research strategy is designed to address two key questions. First, are there gender differences in the behavioral response to female leaders and if yes, can we identify reasons for this difference? Second, are the responses affected by the intensity and length of exposure to female leaders?

To answer these questions, we conduct two artefactual field experiments, which we call *the leadership experiment* and *the belief elicitation experiment*. The leadership experiment, described in more detail in subsequent sections, is designed to examine the effects of gender on behavior towards leaders in a public goods game. The belief elicitation experiment, described in Section 3.2.6, identifies the prevailing social norms associated with gender and leadership in this setting, and helps explain the findings from the leadership experiment.

3.2.1 Experimental design (The leadership experiment)

The task in the leadership experiment is based on the linear voluntary contribution mechanism (VCM) experiment or a public goods experiment. We implement a one-shot version of the game with subjects participating in groups of four. We chose a one shot game to avoid reputation and learning effects and to avoid subject fatigue. Each subject is initially endowed with Rs. 200 ($\approx$ US\$ 3.50; EUR 2.50) and their task is to allocate this endowment between an individual account and a group account. Each rupee placed in the individual account earns Rs. 1 for the subject. Contributions to the group account are aggregated and doubled, then divided equally amongst all group members. Each participant faces the following payoff function

$$\pi_i = e - g_i + \beta \sum_n g_j \tag{3.1}$$

where g_i is the decision variable (the amount subject i contributes to the group account), e is the endowment common to all participants, β denotes the returns to the amount contributed to the group account, n is the group size and $\sum_n g_j$ is the sum of the n individual contributions to the group account. The dominant strategy Nash equilibrium is for each subject to invest their entire endowment in the individual account and zero in the group account as the private returns are higher than the individual returns from the public good. However, the socially efficient outcome is to contribute everything to the group account, as the total returns received by the group from any public good allocation exceed the private returns. Given the parameters of our experimental design ($\beta = 0.5$; $n = 4$) $\beta < 1 < n\beta$, the payoff function given by equation (3.1) represents a social dilemma.

Of the four members in each group there are two males and two females, and all participants are informed of this group composition. One member of the group is randomly selected to be the leader. Each group therefore consists of one leader and three non-leaders (henceforth, *citizens*). All subjects are informed about their role in the experiment – leader or citizens. All decisions are made in private, and anonymity is maintained at all levels of decision making. More details of the experimental procedure are presented in Section 4.2.1.

The experimental task is in two stages. In the first stage, the leader proposes a non-binding contribution between Rs. 0 and 200 towards the group account. Group members are informed of the leader's proposal. In the second stage, all group members including the leader choose their contribution to the group account. Subjects are never informed of their fellow group members' actual contribution to the group account.

The experiment consists of a treatment (*Gender of group leader revealed*) and a control (*Gender of group leader not revealed*). In all sessions half the groups have male leaders while the remaining groups have female leaders and subjects are randomly assigned to different groups. In all sessions, participants are given instructions sheets with own gender symbols on the front page making gender prominent. This was done prior to the leader making his or her proposal. In the treatment sessions, in addition, the citizens are informed of the leader's gender before the leader makes his or her proposal.[9] The gender composition of the group and the proportion of male and female led groups is the same across treatment and control sessions, the only difference is that gender of the leader is revealed in the treatment sessions.

The proposed contribution by the leader is non-binding, akin to cheap talk. Standard economic theory therefore suggests that the proposal stage should have no impact on citizens' contribution decision. The leader also knows that the group members may not follow his/her proposal, and therefore has little incentive to follow it as well. We therefore expect low contributions to the group account and provision of public goods below the socially optimal level in all the treatments.

Recent experimental evidence however suggests that leaders' suggestions, even though non-binding, can help increase group contributions [55]. All citizens receive the same information and this common signal can indicate the value of cooperation and perhaps reciprocity, thus providing a focal point for contributions. Hence, citizens might be more likely to choose higher levels of contribution, and leaders anticipating this, may contribute more as well leading to greater public good provision in both treatments. In such a scenario, the leader's gender could effect citizen's contributions, since beliefs about the leaders' social appropriateness as well as their potential for deception are potentially influenced by perceptions about the effectiveness of male and female leaders.

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[9] A number of recent papers show that priming gender, ethnicity or religion can cause changes in the behaviour of participants [76–78].

3.2.2 Setting and village selection

The leadership experiment was conducted in 40 villages in the districts of Gaya, Madhubani and Khagaria of Bihar. These districts (see Figure 3.1) are approximately equidistant from the capital city of Patna and they have similar geographic characteristics.[10] Almost 10% of India's population resides in Bihar and it is one of the fastest growing states in India with an average GDP growth of 10% between 2010 and 2014.

Each village within Bihar (and India) is governed by a village council or Gram Panchayat (GP). The village councils are elected through universal adult franchise and are accountable to more than 5,000 people, sometimes across several villages. The councils are responsible for the provision of public services, identifying villagers below the poverty line and resolving local disputes. Each village council consists of a head (mukhiya), a deputy (upmukhiya) and councillors or ward members. Village councils do not enjoy much taxation power and about 95% of their revenue comes from state and national grants. Therefore its principal job is to decide the allocation of its yearly grant across different local public goods and implement the projects. While all the council members play a role in deciding the final allocation of the resources, the head of the village council can exert substantial influence in decision-making. This is because the head of the village council heads the sub-committee of planning and finance within the council and all the proposed projects must have the approval of this subcommittee for them to be implemented. Besley et al. [79] and Chattopadhyay and Duflo [61] provide evidence of considerable discretionary power enjoyed by the head of the village council. Hence we view the head of the village council to be the effective policymaker and leader of the council.

The village council members, including the head, are elected every five years in a local election. The 73rd amendment to the Indian Constitution in 1992 reserved one third of all positions of the village head for women, i.e., only women can run as candidates and become heads in the reserved villages. In 2006, the Bihar government increased the quota for women in positions of village head to 50%.[11] As of 2014, Bihar has had three village council elections (in 2001, 2006 and 2011). In Bihar, women are unlikely to be elected as village heads without reservation. For instance, following local elections in 2006, 50.06% of all positions of village head were occupied by women, not different from the mandated 50%, implying that the village head's gender is decided exogenously by the reservation quota.

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[10]For example, the share of land allocated to the cultivation of rice, wheat and maize, the three main crops grown in Bihar, is comparable in these three districts.

[11] The 73rd amendment to the Indian constitution also includes reservations for Scheduled Castes (SC) and Scheduled Tribes (ST), which are official designations given to groups of historically disadvantaged people in the country. The Constitution of India establishes general principles of affirmative action for SCs and STs and the proportion of head of village council seats to be reserved for SCs and STs in a state are given by their population shares in the state. In each local election cycle, village councils are randomly assigned to one of three categories: SC reserved, ST reserved and unreserved.

Using the 2011 census of India and a list of villages provided by the Bihar Rural Livelihoods Project (BRLP), we randomly chose 40 villages in the three districts where the experimental sessions were conducted. Only one session was conducted in each village in order to prevent information spillover across sessions, which could result in considerable loss of experimental control and precision. In our sample the match between a village and a village council is unique as we only conducted a single session in each respective village council area. We define a village to be a female headed village if it had at least one female head in the last three village council elections. A male headed village has therefore never had a female head and citizens in male headed villages consequently have very limited experience with women as leaders. Of the 40 villages where we conducted our experimental sessions, 17 (42.5%) villages have had no female head; 16 (40%) have had one female head; five (12.5%) have had two female heads and two (5%) have had all three female heads. As described in footnote 11, in every election, village councils are randomly allocated to one of the three lists – reserved for SC, reserved for ST and unreserved. Within each list, half the village head positions are randomly reserved for women so the head's position can be reserved for women in consecutive elections.

Column 1 in Table 3.1 presents average village characteristics for the experimental villages. The average village in our sample consist of 566 households with approximately five members per household. Men outnumber women in these villages, a third of the households are SC. Virtually no STs live in the sample villages. The literacy rate is rather low: on average 44% of the individuals in the village are literate, with men more likely to be literate than women.

Columns 2–11 of Table 3.1 present the results of several randomization tests that examine if the sample villages are matched on different dimensions in terms of observable village level characteristics. First, columns 2 and 3 present the village level averages separately for the treatment (gender revealed) and control (gender not revealed) villages. Column 4 reports the t-test for the difference. There are no statistically significant differences in the village level characteristics between the treatment and control villages.[12] Column 7 shows that the sample is balanced across male and female headed villages on observable characteristics. Finally, column 11 shows the sample is balanced on observable characteristics by the number of female heads over the last three elections: the χ^2 statistic cannot reject the null hypothesis that the observable characteristics are similar on average across the different categories of villages.

3.2.3 Participant recruiting

To recruit participants for the experiment, two members of the research team (one male and one female) visited each village the day before the scheduled session. Each visit included informing villagers of the event and distributing flyers containing information about participation

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[12] Recall that only one session was conducted in each village and therefore the villages can be categorized as either a treatment or control village by session.

requirements including eligibility (18 or older and literate), remuneration, time and location of the experimental session. Flyers were posted at prominent village landmarks such as community centers, bus stops, tea shops, temples and mosques. See Figure 3.4 for the English and Hindi version of the flyers that were circulated.

3.2.4 Procedure

Each of the 40 sessions had 24 participants, who were divided into groups of four, with each group comprising of two men and two women. We collected experimental data from 239 groups and 956 individuals.[13] One member of each group was randomly selected as the leader. In the control sessions, the gender of the leader was not revealed in any of the six groups. The gender of the leader was revealed to the group members in the treatment sessions. In all sessions, three of the groups had a male leader while the other three had a female leader. To ensure anonymity of the leader, in all sessions, decisions on proposed contributions in the first stage were made after the quiz questions were answered but before collecting the answer sheets. After all leaders made their decision, the sheets (including answers to quiz questions) were collected from all participants and sorted in private. At the beginning of the second stage the leader's proposed contribution was revealed to the other three members of the group. Then the second stage contribution decision was made simultaneously by all participants. In all interactions of the experimenter with the participants, care was taken to not single out any participant, so as to preserve the anonymity of the leader and the group members. Decision sheets were handed out and collected from everyone simultaneously.

Subjects also participated in a separate trust game before the leadership experiment but were not provided any feedback on this task.[14] Subjects were paid for only one task, randomly chosen at the end of the experiment. Finally, an incentivized risk task was embedded in the post-experiment survey [80]. The average earnings of participants was Rs. 420, or approximately two days wage for a semi-skilled laborer. Including the post-experiment surveys, each session lasted for four hours on average. Data was entered twice and subsequently checked and reconciled by two different research assistants. The results were compared against hard copies in case of inconsistencies.

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[13]Upon arrival, participants were screened for eligibility, and then their names were recorded on a participant list. Once seated, they were given stationary and a number tag representing their identification number. The identification number helped keep all the data for participants together and the matching of this number with each participant was random. The experimenter read aloud instructions to establish common knowledge. To determine whether subjects understood the instructions, each participant answered a set of quiz questions in private before the experiment commenced. The experimenter cross-checked the answers and started the experiment once satisfied that all subjects understood the task. Note that one village had 20 participants. Additionally, the survey data for one participant could not be used, though experimental data is available for this subject. We therefore have experimental and survey data for 955 participants.

[14] The treatment and control scenarios in the trust experiment were similar to the leadership experiment. We do not find any gender based differences in trust and trustworthiness. This implies that our results relating to the behavioral response to the gender of the leader are not driven by gender differences in trust and trustworthiness.

3.2.5 Survey data

In addition to the experiment, we collected data using three surveys.[15] In the post-experiment survey, each participant answered questions on attitudes towards governance, corruption, political competition and on individual and household level demographic and socio-economic characteristics. A community survey collected information from the village head (or another influential person if the village head was unavailable) on characteristics such as population, public programs implemented by the village council, sources of village income etc. Finally, the research team conducted an infrastructure survey to record the coordinates of the key village infrastructure landmarks.

3.2.6 Belief elicitation experiment

To investigate social norms associated with women in leadership positions, as well as potential barriers to female leadership, we conducted a second artefactual field experiment involving a coordination game and a belief elicitation task.[16] Following Krupka and Weber [59], we use an incentivized methodology to identify social norms separately from realized behavior, and then use these elicited norms to predict behavior *a priori*. We conducted the belief elicitation experiment in villages *similar* to those where we conducted the leadership experiment.[17]

We collected data from 267 participants in 21 villages, approximately half of whom were females. The recruiting procedure was identical to the leadership experiment. The participants were presented with the leadership experiment and all possible actions were described. The participants did not make any decisions relating to the experiment. Instead, they were informed that villagers, similar to them and residing in villages similar to theirs, had already participated in the experiment. Then the participants completed three sets of tasks. The first two tasks described possible decisions made by subjects in the original leadership experiment and then required participants to rate the social appropriateness of these decisions.[18] All tasks were incentivized such that participants aim to match the response of others, similar to that in a coordination game. Those who gave the same response as that most frequently given by other men (Task 1) and

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[15] The data from the surveys were directly entered into tablets, reducing data entry errors.

[16] The belief elication experiment was conducted on tablets using CORAL [81].

[17] We conducted the belief elicitation experiment in 21 villages in the same three districts where the original leadership experimental sessions were conducted, approximately seven months after the leadership experiment. Table 3.12 shows that the 21 villages where the belief elicitation experiment was conducted are similar to the original 40 villages where the leadership experiment was conducted on various observable characteristics.

[18] Participants were asked to rate the appropriateness of a *x* citizen that contributes 0, 50, 100, 150 and 200 towards a *x* leader (where *x* is either male or female) as either *very socially inappropriate*, *somewhat socially inappropriate*, *somewhat socially appropriate* or *very socially appropriate*. We convert responses to numeric scores with *very socially inappropriate* = 1 and *very socially appropriate* = 4. So higher scores imply that people believe men (women) view a particular action as more socially appropriate.

other women (Task 2) in a similar baseline village received Rs. 200.[19] Task 1 can be interpreted as what villagers think men believe is socially appropriate, while Task 2 is what villagers think women believe is socially appropriate. Task 3 elicits general measures of social norms and identity in their village context. This task gathered information about social norms regarding female leaders, in a simple and relate-able context for villagers. Participants were given different vignettes on topics ranging from female leaders to identity. This task was also incentivized with participants being paid in accordance with the modal response of villagers in the baseline village (as defined in footnote 19).

3.3 Data

3.3.1 Baseline balance

Column 1 in Table 3.2 presents the means for the explanatory variables included in our regressions. Participants in the leadership experiment are on average 27 years old, from an average household size of 7.7 and predominantly Hindu (91%), with a mix of upper caste (26%), SC (24%) and Other Backward Castes (42.5%). Close to half the sample has completed high school, with evidence of significant intergenerational mobility in educational attainment. 39% percent of participants report being in paid employment, though a large proportion (63%) of participants did not earn any income in the month before the experimental session.

To examine whether the random assignment of participants to treatments was effectively implemented, column 4 of Table 3.2 reports differences in participant characteristics in sessions where the gender of the group leader was revealed and where it was not. Individuals assigned to the treatment and the control exhibit only minor differences on most characteristics and the overall F-statistic (0.42) cannot reject the joint hypothesis that the observable characteristics are similar on average across the two groups. Further, within the treatment (gender revealed) sessions, individuals were randomly assigned to male and female-led groups. Column 7 of Table 3.2 shows no difference in terms of observable characteristics between subjects assigned to male and female-led groups, with an F-test (F-statistic = 0.65) failing to reject the null hypothesis that the observable characteristics are similar on average across the two groups. Column 10 of Table 3.2 reports no observable differences between individuals assigned to be leaders and those assigned to be citizens. Finally, the t-statistics in column 13 and the Kruskal-Wallis (K-W) statistics in column 17 do not offer evidence that participant characteristics were systematically different either across male and female headed villages or by the intensity of exposure to female

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[19] The session in the baseline village was conducted at the start of the belief elicitation experiment and this baseline village is in addition to the 21 villages we collected data from. In this village, participants were paid based on decisions made by others in the same session.

village heads. These results suggest that we can interpret our findings as causal effects of having male and female leaders on contributions to group account.

3.3.2 Decisions in the leadership experiment

Table 3.3 presents the decisions made in the leadership experiment by male and female citizens.[20] Panel A focuses on overall decisions made in the experiment. Three findings emerge from this table. First, men contribute significantly more to the group account than women (column 3, row 1). Second, men contribute significantly more to the group account compared to women when the group leader is male (column 3, row 2), but there is no gender difference in contribution to the group account in female led groups (row 3). Third, men contribute significantly less to the group account when the group leader is female (column 2, row 4), while the contribution of women is not statistically different by group leader's gender (column 1, row 4). Figure 3.2 presents the distribution of the contribution to the group account by male and female citizens in male and female led groups. Using a two-sided Kolmogorov-Smirnov test, the null hypothesis of equality of distributons is rejected for male citizens ($p - value = 0.045$). The mass of the distribution of contributions to the group account for male citizens when the group leader is female lies to the left of that when the group leader is male. For female citizens, the null hypothesis of equality of the distributions cannot be rejected ($p - value = 0.985$)

Panels B and C report citizens' decisions conditional on residence in female and male headed villages. Men contribute significantly more to the group account than women in male headed villages (column 3, row 5). Men contribute significantly less to the group account in female headed villages than in male headed villages (see column 2, row 7). The contribution level of women however does not vary by the gender of the village head (column 1, row 7).

Column 2, row 13 shows that men contribute significantly less to female led groups in female headed villages, compared to male headed villages. On the other hand, column 2, row 12 shows no evidence of differential contribution by men in male headed groups across male and female headed villages. Finally, column 1, rows 12 and 13 shows no evidence of differential contribution by women across male and female headed villages, irrespective of the gender of the group leader. Figure 3.3 presents the distribution of the contribution to the group account by male and female citizens in male and female led groups, conditional on the gender of the village head. For female citizens (see Panel B of Figure 3.3) the null hypothesis of equality of distributions can never be rejected. For male citizens however the null hypothesis of equality of distributions is rejected for female headed villages ($p - value = 0.017$).

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[20]The discussion in this section restricts the sample to the gender revealed sessions. In the control (gender of leader not revealed) sessions, male citizens contribute on average Rs 100.04 and female citizens contribute Rs 97.02 to the group account. This difference is not statistically significant ($p - value = 0.57$). In the analysis conducted in Section 3.4, we include data from all sessions.

One striking feature consistent in all three Panels of Tables 3.3 is that men contribute differently to male versus female led groups and in male versus female headed villages. This behavior on the part of male citizens is suggestive of male backlash against female leaders. We examine these results in more detail in Section 3.4, where we use regression analysis to examine the behavior of female and male citizens in the leadership experiment. The multivariate regression approach controls for village fixed effects and helps avoid potentially confounding implications of heterogeneity across villages.

3.4 Empirical analysis

3.4.1 Effect of gender of the group leader

We examine gender differences in citizens' contribution to the group account by estimating the following regression:

$$
\begin{aligned}
C_{ijk} \;=\; & \beta_0 + \beta_1 female_{ijk} + \beta_2 L_{jk}^f + \beta_3 L_{jk}^m + \beta_4 (female_{ijk} \times L_{jk}^f) + \beta_5 (female_{ijk} \times L_{jk}^m) \\
& + \; \gamma \mathbf{X}_{ijk} + \eta_k + \varepsilon_{ijk}
\end{aligned}
\tag{3.2}
$$

where C_{ijk} is the contribution to the group account of citizen i belonging to group j in village k; $female_{ijk}$ is a dummy variable that denotes that the citizen is female; L_{jk}^f and L_{jk}^m are dummy variables that indicate if the group leader is female and male, respectively. Since the group leader's gender could have differential effects on the decisions made by male and female citizens, we add variables ($female_{ijk} \times L_{jk}^f$ and $female_{ijk} \times L_{jk}^m$) that interact the gender of the leader and that of the citizen. Thus, β_4 and β_5 indicate the marginal propensity to contribute to the group account by female citizens, when the group leaders are female and male, respectively. Therefore, $\beta_2 - \beta_3 < 0$ implies lower contributions by males in groups where the group leader is female compared to groups where the group leader is male. Correspondingly, $(\beta_2 + \beta_4) - (\beta_3 + \beta_5) < 0$ implies that female citizens contribute less in groups where the group leader is female compared to groups where the group leader is male. Note that in all regressions, the reference category is the contribution of male citizens in a control session (where the gender of the group leader is not revealed). So β_1 captures the difference between the contributions of female and male citizens when the gender of the group leader is not revealed.[21]

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[21] As a robustness check we conduct and report the results where citizens' deviation from leader's proposed amount is the dependent variable. See Table 3.10 and the discussion in Section 3.4.3. These results are consistent with our main reported results.

Also included in the specification is a vector of individual controls ($\mathbf{X}_{ijk}$) that might influence a citizen's contribution – educational attainment, occupational status, income, age, religion, caste, household size, father's school completion and amount proposed by the leader. Finally, the specification includes village fixed-effects (η_k) to account for all village-level factors and session-specific variations that might impact individual contribution. Standard errors are clustered at the group level to account for within group correlation in citizen choices.

The results from estimating equation (3.2) are presented in Table 3.4. Column 1 shows that men contribute Rs. 13.34 ($\approx 7\%$ of their endowment) less to the group account when the group leader is female, compared to when the group leader is male, a difference that is statistically significant. In contrast, the gender of the group leader does not have a significant effect on the contributions of women. The regression results presented in column 1 of Table 3.4 therefore corroborate those presented in Table 3.3 and in Figure 3.2. This leads to the first result in our paper, which can be summarized as follows:

Theorem 3.1. *Men contribute significantly less to the group account when the group leader is female as compared to male. This can be interpreted as evidence of male backlash against female leaders.*

3.4.2 Effect of gender of the village head

Next, we examine whether the behavior of the citizens might depend on their perception of female leaders and norms relating to women as leaders. The main experience with female leaders for most participants in our experiment comes from women elected to positions in village councils, including the position of the village head. Thus, we investigate the extent that participant behavior is influenced by perceptions of or experience with female village heads. We modify equation (3.2) to control for exposure to female village heads by defining H_k^f as 1 if the village is female headed and 0 otherwise. The interaction of H_k^f with L_{jk}^f and L_{jk}^m determines the effect of the female village head on citizens' perceptions of female and male leaders.

$$
\begin{aligned}
C_{ijk} &= \beta_0 + \beta_1 female_{ijk} + \beta_2 L_{jk}^f + \beta_3 L_{jk}^m + \beta_4(female_{ijk} \times L_{jk}^f) + \beta_5(female_{ijk} \times L_{jk}^m) \\
&+ \beta_6(L_{jk}^f \times H_k^f) + \beta_7(L_{jk}^m \times H_k^f) + \gamma \mathbf{X}_{ijk} + \eta_k + \varepsilon_{ijk}
\end{aligned} \tag{3.3}
$$

In this specification, β_6 and β_7 capture the effect of a female and male group leader in a female headed village.[22] Hence, $(\beta_2 + \beta_6) - (\beta_3 + \beta_7) < 0$ implies that in a female headed village the citizen's contributions to the group account in female led groups are lower than those in male led

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[22] The separate effects of female village head are included in village fixed-effects.

groups. We estimate equation (3.3) separately for men and women and compute the difference estimates $(\beta_6 - \beta_7)$ and $(\beta_2 + \beta_6) - (\beta_3 + \beta_7)$ in the two cases.[23] Columns 3 and 4 of Table 3.4 present estimates for these difference effects for men and women, respectively.

The key finding is that men in female headed villages contribute Rs. 24.34 (or about 12% of their endowment) less to the group account when the group leader is female than when the group leader is male and this difference is statistically significant. In contrast, contributions to the group account by citizens of either gender are not significantly affected by the group leader's gender in male headed villages. Contributions by female citizens are unaffected by the gender of the group leader in either male or female headed villages. Result 3.2 can therefore be stated as follows:

Theorem 3.2. *Men in female headed villages contribute significantly less to the group account when the group leader is female as compared to male.*

3.4.3   Robustness to alternate dependent variables and additional issues

The main reported regressions use citizen's contribution towards the group rather than deviation from the leaders proposed contribution as the dependent variable. We do this for three reasons. First, approximately 30% of citizens contribute more than the amount proposed by their leader, while over 50% contribute less than proposed. Subjects who contribute more than the leader's proposal exhibit very different behavioral patterns than those who contribute less. The considerable heterogeneity in how citizens react to the leader's proposal makes deviation measures difficult to interpret. Second, regressions in which contribution to the group account is the dependent variable control for the amount proposed by the leader. Since groups are randomly allocated and we control for the amount proposed by the leader, if differences exist between group contributions, this can be attributed to the leader's gender. Third, villagers sampled here commonly work in communities and small teams in both their daily life and in performing other civic duties. The design of this experiment primes subjects both by assigning subjects to groups and by informing subjects that their group is assigned a random leader (and the leader's gender). Therefore, contribution to the group account could be interpreted as a measure of effort or attitude about the suitability of this leader.

That said, we examine the robustness of the results to using deviation from the leader's proposal as the dependent variable. This variable is 0 if the contribution to the group account is equal to or greater than the leader's proposal. The results in the bottom row of column 3 of Table 3.10 show that in female headed villages, male citizens deviate more from the proposed contribution

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[23] Regression on the pooled data taking into account triple differences give very similar results, both qualitatively and quantitatively. These results are available on request.

of the group leader when the group leader is female than when the group leader is male. While the sign of the estimate is in the right direction, the effect is not statistically significant.[24]

Next, the current specification includes village fixed effects to control for observed and unobserved sources of heterogeneity across villages. To explicitly examine the role of differences across villages, we estimate equations (3.2) and (3.3) with block fixed effects. These results are similar and available on request.

Further, one might question whether this backlash against female leaders is a manifestation of backlash against *any* form of affirmative action policies. For example, positions of village heads are also reserved based on caste. If backlash is based solely on the policy of reservation rather than gender of the village head then backlash towards village heads should also exist in villages with a caste reservation system. To examine this, we ask a number of different questions as a part of post experiment survey in the belief elicitation experiment. First, we asked the following question: *Do you agree with the following statement: "Villages where the chief position must be reserved for a female perform better than villages where the chief position is unreserved"?* We find that 56% of villagers in female headed villages at least agree with this statement compared to 66% of villagers in male headed villages and the difference is statistically significant ($p-value = 0.097$, using a two sided sign-rank test). This implies that experience with a female village head reduces the likelihood that villagers agree with the statement. We then ask *Do you agree with the following statement "Villages where the head position must be reserved for either ST/SC caste perform better than villages where the head position is unreserved"?* We find that villagers in caste reserved and unreserved villages do not have different perceptions about the effectiveness of the village head under the caste reservation policy ($p-value$ of difference = 0.51, using a two sided sign-rank test). This result suggests that backlash is not a result of resentment against affirmative action policies *per se*.

Finally, while not the focus of this paper, our findings are consistent with the actions of the leaders. We find that female group leaders are significantly more deceptive than male group leaders (deception as defined in footnote 6) and this behavior is driven by the choices made by the female group leaders in female headed villages. One possible reason for this deceptive behavior is that female leaders expect to be treated poorly (females in female headed villages may observe this around them), which leads to a self-fulfilling prophecy where female leaders behave in a negative manner contributing less than proposed. Alternatively, in environments where there are few opportunities for women to be leaders, they act myopically and take one-off decisions as they do not expect to be re-elected. A third explanation is that women usually observe leaders to be men and believe that by engaging in deceptive behavior they are emulating the male leaders around them. Gangadharan et al. [60] report these results in detail.

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[24] Interestingly, we find that female citizens deviate significantly more from the leader's proposed contribution if the group leader is a woman in female headed villages.

3.4.4 Understanding backlash

We combine the data from the belief elicitation experiment with post-experiment survey data on gender attitudes, opinions on leadership and governance, and services provided by the village council to understand male backlash against female leaders. We start with the analysis of the data from the incentivised belief elicitation experiment. Since the respondents in this experiment did not participate in the leadership experiment, we can identify the effect of social norms separately from realized behavior. Table 3.5 presents differences in participants' perceptions of mens' and womens' beliefs on whether specific contributions by male citizens to the group account are socially appropriate when the group leaders are female versus male.

The means presented in Panel A of Table 3.5 show that participants think men believe that contributing 50% or less of the endowment to the group account in the leadership experiment is more socially appropriate, when the group leader is a woman compared to a man. This pattern is not evident in Panel B that relates to perceptions about womens' beliefs.[25]

These beliefs are consistent with Result 3.1 in that male citizens contribute significantly less to the group account in a female led group; men incur lower social costs when they contribute less to female led groups compared to male led groups as they are deviating less from what is considered socially appropriate.

Panels C and D of Table 3.5 report differences in participants perceptions about men's contributions being socially appropriate depending on whether they resided in male headed villages or female headed villages. Our earlier result largely holds: we find that it is less socially costly for males to contribute 50% or less of their endowment towards female leaders compared to male leaders and this holds in both female and male headed villages.

Task 3 in the belief elicitation experiment allows us to examine beliefs associated with women as leaders by examining the response to the following two questions.[26]

1. Do you think men believe it is socially appropriate for women to become head of the village?

2. Do you think women believe it is socially appropriate for women to become head of the village?

The responses are very striking. Table 3.6 reports that all respondents uniformly think that men consider it is less socially appropriate for women to become the village head. For example,

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[25] More than 50% of all subjects in both male and female led groups think that males contributing less than 50% to the group is at least somewhat socially inappropriate, indicating that a majority consider this behaviour to be socially inappropriate.

[26] We retain the earlier scale: very socially inappropriate (1), somewhat socially inappropriate (2), somewhat socially appropriate (3) and very socially appropriate (4).

female respondents think that men give an average appropriateness score of 2.97 to this question as compared to a significantly higher score of 3.48 given by women. Male respondents also believe that men regard female village heads as significantly less appropriate as compared to how women regard them (scores of 3.16 versus 3.61). These results hold in both female and male headed villages. More generally, the results suggest that social norms against women in leadership positions lead men to cooperate less with female group leaders in the leadership experiment.[27]

Social norms that govern behaviour are however harmful towards female leaders even when the village head is a female. Since these negative perceptions are observed in both male and female headed villages, social norms by themselves are not sufficient to explain Result 3.2. This implies that while they can explain overall male backlash against female leaders, they have less power in explaining the differential backlash that is observed depending on the gender of the village head.

Barriers to female leadership might originate from gender related prejudice if assigning women in the position of village head impinges upon male identity. Since backlash found in the leadership experiment is only perpetuated by men and in female headed villages, a violation of male identity and as such social norms that govern male identity may further explain backlash behaviour. More generally, identity and social norms are intrinsically related because groups often develop their own norms that govern group behaviour. Identity and more specifically social identity refers to an individuals' own perception of self, based on his or her group membership [83]. Individuals' gender is a particularly strong identity. Being male or female in developing countries is often associated with group specific norms that govern behaviour such as the appropriate dress code and role within a village. These norms build group characteristics and enforce behavioural standards within the group. Conforming to these norms validate individuals' identity as group members. Perceived lack of conformity to group norms could be interpreted as a threat to group legitimacy. So when group identity is threatened, identity becomes more salient leading to stronger enforcement of group norms and antipathy to those seen as a threat (see Bisin and Verdier [84] and references cited therein).

In our context, in both male and female headed villages, men are more likely to be the family decision maker and the main breadwinner, and therefore they associate their identity with positions of leadership and power. Women selected as leaders may threaten the identity of men. Male group identity becomes more salient as a result of this threat in female headed villages. Men respond to this identity threat by taking action against women leaders (contributing less to groups led by females).

---

[27] Subjects completed a fourth task designed to elicit descriptive norms about female leaders by asking participants to estimate the decisions made by individuals who had participated in the original leadership experiment. This is a measure of perceptions or beliefs about the behavior that is expected in this situation. Participants were paid Rs. 200 if their decisions were within Rs. 10 of the average in the original experiment. Gangadharan et al. [82] discuss these results in more detail.

We empirically examine the saliency of identity using two questions from Task 3 in the belief elicitation experiment.

1. Do you think other people believe it is socially appropriate for men to work as a home maker?

2. Do you think other people believe it is socially appropriate for men to work as a nurse?

If men perceive threats to their identity in female headed villages, they may seek to strengthen their identity. As a consequence, people may believe that a man working in predominately female occupations (like nursing or being a home maker) is less socially acceptable. In female headed villages 68% of respondents believe that men acting as home maker is socially inappropriate compared to 52% in male headed villages and this difference is statistically significant ($p - value = 0.02$, using a two sided sign-rank test). On the other hand, 72% of participants in female headed villages and 68% of participants in male headed villages believe that a man working as a nurse is socially inappropriate. While the effects are in the right direction i.e., more villagers in female headed villages believe that this occupation is socially inappropriate for men, the difference is not statistically significant ($p - value = 0.63$, using a two sided sign-rank test).

The above discussion suggests male identity is more pronounced in female headed villages. These results might not be specific to Bihar or India as social norms of traditional female roles in society are common across many countries [85]. In 19 developing countries studied by the World Bank a wife with a higher income was generally seen as a threat to male identity rather then a boost to household income [86]. Such attitudes might be difficult to change in the short run.

We can examine these results in a framework where citizens care not only for their pecuniary payoffs, but also "identity"-based payoffs in the spirit of Akerlof and Kranton [87].

$$u_i = \pi_i + I_i(.) \tag{3.4}$$

In this modified payoff function, π_i represents standard pecuniary payoffs and $I(.)$ represents identity payoffs from when social norms are maintained. Then, the citizen's optimization problem can be written as follows by augmenting equation (3.1).

$$\max_{g_i} u_i = e - g_i + \beta \sum_n g_{-i} + I_i(\tilde{g} - g_i, L, H) \tag{3.5}$$

where, as before, e is the endowment, n is the group size and β represents the returns to the amount contributed to group account ($\beta < 1 < n\beta$). The decision variable for player i is $g_i \geq 0$, which is the amount contributed to the group account. The decision also increases a citizen's

identity payoffs if g_i is less than the leader's proposal $\tilde{g}$, i.e., contributing less than the leader's proposed amount may restore a sense of identity. The leader's gender is represented by $L \in \{m, f\}$, whereas the village head's gender is $H \in \{m, f\}$.

Suppose in the absence of identity payoffs, there are two potential equilibria – the Nash equilibrium strategy $g_i = 0 \forall i$ and the cooperative strategy $g_i = \tilde{g} > 0 \forall i$. The introduction of identity incentives changes the likelihood of participants playing Nash equilibrium, based on L and H,

1. If $H = m$, neither men's or women's social identity is threatened. So, $g_i = g_{-i} = \tilde{g}$ is likely to be sustained as an equilibrium.

2. If $L = m, H = f$, men's social identity is threatened. However, since the leader is male, men are less likely to take corrective action in the experiment, and $g_i^m = \tilde{g}$. Women are also likely to contribute $g_i^f = \tilde{g}$ since women's identity is (presumably) not threatened, and men are less likely to deviate from the cooperative equilibrium. Hence, $g_i = g_{-i} = \tilde{g}$ is more likely to be sustained as an equilibrium.

3. If $L = f, H = f$, men's social identity is significantly threatened and they can take corrective action by reducing their contributions to the group account when the leader is revealed as female. By setting $g_i^m = 0$, men increase utility from $I_i(.)$, simultaneously leading to lower group contributions. Thus, for women, equilibrium contribution is also $g_i^f = 0$, leading to lower overall investment when the leader is female in a female headed village.

Thus, an identity-based explanation is consistent with our empirical findings. Men who believe their gender identity is violated when women are leaders may act out to bolster a sense of self or to salve a diminished self image.

To further examine the strength of the identity-based explanation we use the post-experiment survey data, that was collected after the leadership experiment. We asked participants their agreement with the statement *in this village women have too much political influence*. From responses to this question, we create a variable, *Women Too Much Power* = 1 if the respondent agreed or strongly agreed with the statement, and 0 otherwise. A situation where women have too much power could be viewed as transgressing male identity. Column 4 of Table 3.11, shows that men and women in female headed villages do not differ in their perception of whether or not women in the village have too much power.

To explicitly account for citizens' perceptions about women and power, we estimate equation (3.6)

$$
\begin{aligned}
C_{ijk} = & \ \beta_0 + \beta_1 L_{jk}^f + \beta_2 L_{jk}^m + \beta_3 (\textit{Women Too Much Power})_{ijk} \\
& + \beta_4 ((\textit{Women Too Much Power})_{ijk} \times L_{jk}^f) + \beta_5 ((\textit{Women Too Much Power})_{ijk} \times L_{jk}^m) \\
& + \gamma X_{ijk} + \eta_k + \varepsilon_{ijk}
\end{aligned} \tag{3.6}
$$

The difference effects, $(\beta_1 + \beta_4) - (\beta_2 + \beta_5)$, presented in Panel A of Table 3.7 imply that men in female headed villages who agree that women have too much power contribute Rs. 58.39 (almost 30% of their endowment) less to female-led groups compared to male-led groups. This finding supports the argument that the experimental behavior corresponds to a backlash against women having too much power.

3.4.5 Alternative Explanations for male backlash in female headed villages?

In this section we examine other potentail channels for male backlash in female headed villages. First, women may be or are perceived to be ineffective leaders (*ineffective leaders*). Second, women may be viewed as tokens for their spouses or other powerful elites within the village, and thus have no influence as leaders (*tokenism*).

We first investigate if male backlash is due to participants perceiving women to be ineffective as leaders or due to actual performance inadequacies of female leaders. To address potential gender differences related to perceptions of female leaders, we examine responses from the following survey question: *Do you agree with the following statement: "Villages where women have more power perform better"?* Column 1 of Table 3.11 shows that women and men do not have different perceptions about the effectiveness of female leaders; both are equally likely to report that villages where women have more power perform better, i.e., they do not have varying perceptions on the ability of female village heads to govern.

To explicitly account for citizens' perceptions regarding women's ability to govern, we re-estimate (3.6) replacing *Women Too Much Power* with the variable WPB, which takes the value of 1 if the participants agree with the statement "villages where women have more power perform better" and 0 otherwise. Panel B of Table 3.7 reports results from four different regressions: contributions by men and women in male or female headed villages. We compute and present the estimated value of $(\beta_1 + \beta_4) - (\beta_2 + \beta_5)$ for each of the four sub-samples. Even when they agree that villages where women have more power perform better, men are significantly less likely to cooperate with female leaders in female headed villages – men contribute Rs 30.67 less to female led groups in female headed villages. The gender of the group leader has no effect on women's contribution (irrespective of being in a female or a male headed village) or on men's behavior in male headed villages. The observed male bias therefore does not appear to be driven by perceived incompetence of female leaders.

This perception may however not be an accurate representation of the actual effectiveness of female leaders. So we next examine the effect of the actual performance of the village head. Participants were asked to report the schemes their household benefited from in the last five

years.[28] Using this information, *Village Council Service High* = 1 if the citizen reported bene-
fiting from more than two schemes, and 0 otherwise. Columns 2 and 3 of Table 3.11 show that
males and females do not differ in their reporting of actual service delivery, which we interpret
as absence of evidence for differences in actual service provision by male and female village
heads. We re-estimate equation (3.6) replacing *Women Too Much Power* with *Village Council
Service High* to explicitly account for actual ability of female village heads and then interact
this variable with the gender of the group leader. Again, we are interested in the estimated value
of $(\beta_1 + \beta_4) - (\beta_2 + \beta_5)$. Results for four different cases (male or female citizen in a male or
female headed village) are presented in Panel C of Table 3.7. The main finding is that even in the
absence of gender-based differences in the performance of the village head, men contribute Rs.
27.56 less to the group account in female-led groups than in male-led groups in female headed
villages (column 1). Hence performance, actual or perceived cannot explain backlash.

We next investigate if participants regard female leaders as having less power or influence, which
can be an important consideration in assessing their effectiveness. This impression is often in-
dependent of their actual performance. Men might resent female leaders if they are perceived
to be surrogates, or tokens, for their spouses or other influential elites within the village. To
examine whether tokenism drives male resistance to female leaders, the survey asked partici-
pants the position and gender of the three most influential people within the village, ranked by
influence. Using this data, we define *Most Influential Female* = 1 if the most influential person
within the village is female, and 0 otherwise. If female village heads are merely surrogates for
influential men within the village, then in female headed villages both men and women should
be less likely to report that the most influential person in the village is a woman.

To examine male–female difference in perceptions about the gender of the most influential per-
son in the village in male and female headed villages, we consider the following regression:

$$I_{ik} = \alpha_0 + \alpha_1 \text{female}_{ik} + \alpha_2 H_k^f + \alpha_3(\text{female}_{ik} \times H_k^f) + \delta \mathbf{Z}_{ik} + \eta_k + \epsilon_{ik} \tag{3.7}$$

The dependent variable I_{ik} is 1 if individual *i* in village *k* reports that the most influential person
in the village is a woman. The estimated coefficient α_1 gives the additional probability that a
female citizen in a male headed village (compared to a male citizen in a male headed village)
reports that the most influential person in the village is a female. The estimated coefficient α_2
gives the difference in the likelihood a male citizen reports that the most influential person in
the village is a female in a female compared to a male headed village. Finally $\alpha_2 + \alpha_3$ gives the
difference in the likelihood a female citizen reports that the most influential person in the village
is a female in a female compared to a male headed village.

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[28]The list of schemes included Public Distribution System, MNREGA, Anganwadi program, Indira Gandhi Awaas
Yojana, Jawaharlal Nehru Swarojgar Yojana, Antodya Yojana, Mid-day meal for school children, Mukhyamantri
Cycle Yojana and Sarvasiksha Yojna.

Table 3.8 shows that both male and female citizens are significantly more likely to report that the most influential person in the village is a female in a female headed compared to a male headed village. While the likelihood of a male citizen doing so is lower in a female headed village than in a male headed village, the effect is positive and statistically significant. These results jointly imply that male bias against female leaders is unlikely to be driven by tokenism.

3.4.6   Does increased exposure affect behavior?

The empirical analysis indicates strong behavioral resistance to women in leadership positions. However, increased exposure might change attitudes towards female leaders and change social norms regarding the role of women in public life. We examine whether an increase in the intensity of exposure to female village heads can change men's perceptions about group leaders. We substitute the binary variable for (at least one) female village head in the last three village council elections, with $H_k^{1f} = 1$ if the village had one female head and $H_k^{2f} = 1$ if the village had two or more female heads, and estimate equation (3.8) separately for men and women. The reference category is that the village has never been exposed to a female head (i.e., is always a male headed village).

$$
\begin{aligned}
C_{ijk} &= \beta_0 + \beta_1 L_{jk}^f + \beta_2 L_{jk}^m + \beta_3 (L_{jk}^f \times H_k^{1f}) + \beta_4 (L_{jk}^f \times H_k^{2f}) \\
&+ \beta_5 (L_{jk}^m \times H_k^{1f}) + \beta_6 (L_{jk}^m \times H_k^{2f}) + \gamma \mathbf{X}_{ijk} + \eta_k + \varepsilon_{ijk}
\end{aligned}
\tag{3.8}
$$

Column 1 of Table 3.9 shows that in villages which have had a female village head only once, men contribute Rs. 41.65 more to male led groups, than to female-led groups. However, this difference ceases to be statistically significant in villages that have had two or more female village heads. For women, the number of female village heads has no statistically significant effect on their contribution to the group account.

The above findings suggest that increased exposure reduces male bias against female leaders. This result is similar to that obtained by Beaman et al. [65] and Afridi et al. [70] from other parts of India. Thus, to be effective and to increase acceptance of women's leadership, affirmative action needs to persist over time. We also examine whether social norms change as a result of extended exposure to female heads. Consistent with the results reported in this section, results from the belief elicitation experiment suggest that citizens in villages with greater exposure to a female head *do not* believe that it is more socially appropriate for males to contribute less to female led groups compared to male led groups.

3.5 Conclusion

To counter the scarcity of women in leadership positions, policy makers have introduced gender-based quotas both in the public and the private sector. With little known about the behavioral response to mandated quotas for women, this paper breaks new ground by combining novel artefactual field experiments with survey data and a natural policy experiment to explore barriers to the effectiveness of and behavioral response to female leaders.

We find that men are significantly less likely to contribute towards public goods when women are assigned the role of a group leader. We use a unique method of eliciting data on social appropriateness of decisions made by participants in the experiment, our results suggest that individuals face lower social costs when acting negatively towards female leaders compared to male leaders. In villages with female heads, men are significantly less likely to contribute towards public goods under female group leaders, suggesting male backlash against female leaders. We find that this behaviour is not a result of the real or perceived ineffectiveness of women leaders or their being thought of as tokens for powerful elites. Rather, male backlash in female headed villages is inextricably linked to norms of male identity. Social norms and, in particular, identity is an important driver of perceptions and behaviour towards female leaders. Increased exposure to women in leadership positions helps mitigate this backlash suggesting that persistent affirmative action policies may reduce behavioral barriers to women's leadership.

Increased representation of women in governance and business can potentially improve both gender equality as well as the quality of governance and state capacity. Challenging the status quo requires voices that speak in favour of gender equality. This involves continued involvement by women in the decision making process and quotas provide an instrument to achieve this. Indeed quotas are viewed as being successful in increasing women's participation in policy making. The UN argues that *29 countries around the world have reached the 30 percent mark in women's representation in parliament; at least 24 of those 29 have used quotas.*[29] However, our results suggest that simply mandating female leadership positions may not necessarily lead to better outcomes, and that to be effective, affirmative action policies should persist over a longer period of time and importantly social norms regarding women's appropriate roles must change. Changing social norms is often a slow and complex process but policies such as gender quotas can influence the cost of complying with pre exiting norms, and this can eventually lead to a change.

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[29] See http://www.learningpartnership.org/resources/facts/leadership

FIGURE 3.1: **Experimental districts**
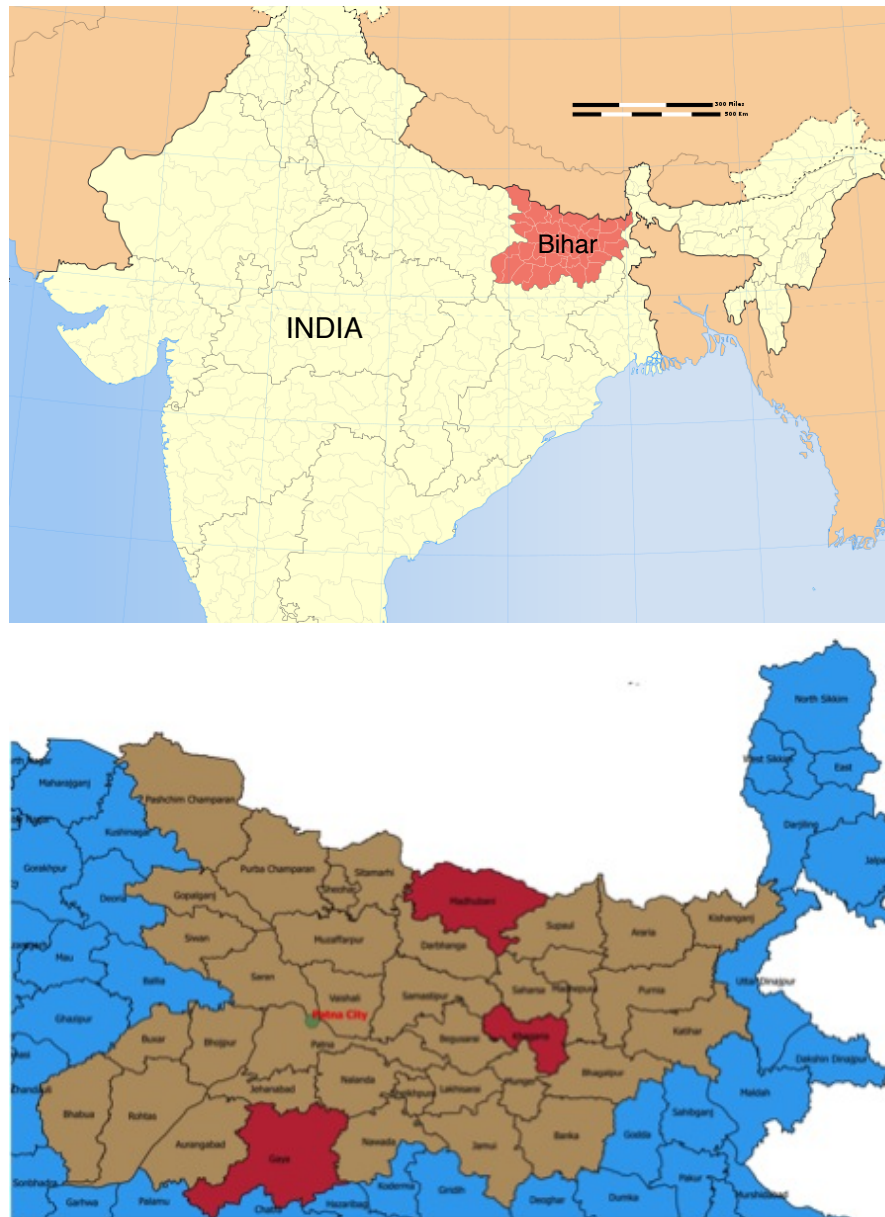
Notes:
The brown color highlights the state of Bihar. The districts where the surveys and experiments were undertaken are highlighted in red. Patna city is the capital of the state.

TABLE 3.1: **Randomization at the village level**

	Pooled Sample (1)	Treatment/Control			Gender of Village Head			Number of Female Head			
		Gender Revealed (2)	Gender Not Revealed (3)	Difference (4)	Male (5)	Female (6)	Difference (7)	0 (8)	1 (9)	2 (10)	K-W Statistic[†] (11)
Number of households	566.07	580.55	551.6	28.95	614.13	501.06	113.07	501.05	629.06	580	0.125
Total population	2923.55	3133.9	2713.2	420.7	3250	2481.30	769.14	3250	3332.44	3063	0.154
Male to female ratio	1.05	1.06	1.04	0.02	1.05	1.06	-0.015	1.06	1.04	1.06	0.535
Fraction Scheduled Caste	0.33	0.33	0.32	0.01	0.36	0.29	0.07	0.29	0.36	0.34	1.412
Fraction Scheduled Tribe	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.141
Fraction literates	0.44	0.44	0.43	0.01	0.44	0.43	0.01	0.43	0.46	0.39	1.642
Fraction male literate	0.52	0.49	0.55	0.06	0.50	0.52	-0.02	0.51	0.54	0.48	1.00
Fraction female literate	0.35	0.32	0.38	0.06***	0.35	0.35	0.00	0.35	0.37	0.30	3.228
Fraction workers	0.38	0.38	0.38	0.00	0.40	0.35	0.05*	0.35	0.40	0.40	3.722

Notes: This table shows the *ex ante* balance in the characteristics of villages chosen for experiments. [†]: Kruskal-Wallis (K-W) Statistic is distributed as χ^2 with 2 degrees of freedom. Gender of village head is female if the village has had at least one female head following the last three village council elections. Gender of village head is male if the village has never been exposed to a female head. Data source: Census of India, 2011. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

TABLE 3.2: **Randomization at the individual level**

	Full Sample	Gender of group leader			Gender of Group leader‡			Role in Experiment		
		Revealed	Not Revealed	Difference	Male	Female	Difference	Citizen	Leader	Difference
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
No Schooling	0.295	0.309	0.282	0.027	0.310	0.308	0.001	0.300	0.280	0.020
	(0.456)	(0.463)	(0.450)		(0.463)	(0.463)		(0.459)	(0.450)	
Primary Schooling	0.228	0.228	0.229	-0.001	0.247	0.208	0.039	0.226	0.234	-0.008
	(0.420)	(0.420)	(0.421)		(0.432)	(0.407)		(0.419)	(0.424)	
Secondary Schooling	0.150	0.173	0.126	0.047**	0.184	0.163	0.022	0.149	0.151	-0.001
	(0.357)	(0.379)	(0.332)		(0.388)	(0.370)		(0.357)	(0.358)	
Higher Secondary Schooling	0.277	0.246	0.309	-0.062**	0.226	0.267	-0.041	0.281	0.268	0.013
	(0.448)	(0.431)	(0.462)		(0.419)	(0.443)		(0.450)	(0.444)	
Father: No Schooling	0.381	0.361	0.401	-0.040	0.351	0.371	-0.019	0.378	0.389	-0.011
	(0.486)	(0.481)	(0.491)		(0.478)	(0.484)		(0.485)	(0.489)	
Father: Primary Schooling	0.238	0.255	0.221	0.034	0.268	0.242	0.026	0.243	0.222	0.021
	(0.426)	(0.436)	(0.415)		(0.444)	(0.429)		(0.429)	(0.416)	
Age	27.024	27.303	26.743	0.560	27.272	27.333	-0.061	27.122	26.732	0.389
	(10.812)	(10.771)	(10.857)		(10.676)	(10.887)		(10.807)	(10.844)	
Household Size	7.770	7.263	8.279	-1.016***	7.126	7.400	-0.274	7.862	7.494	0.368
	(3.661)	(3.038)	(4.138)		(2.898)	(3.171)		(3.714)	(3.493)	
Hindu	0.907	0.887	0.926	-0.039**	0.900	0.875	0.025	0.904	0.916	-0.013
	(0.291)	(0.317)	(0.261)		(0.301)	(0.331)		(0.295)	(0.277)	
General Caste	0.257	0.241	0.273	-0.033	0.261	0.221	0.040	0.268	0.223	0.045
	(0.437)	(0.428)	(0.446)		(0.440)	(0.416)		(0.443)	(0.417)	
Scheduled Caste	0.240	0.215	0.265	-0.049*	0.210	0.221	-0.011	0.240	0.239	0.001
	(0.427)	(0.412)	(0.442)		(0.408)	(0.416)		(0.428)	(0.428)	
Other Backward Caste	0.425	0.448	0.401	0.046	0.441	0.454	-0.013	0.409	0.471	-0.061*
	(0.495)	(0.498)	(0.491)		(0.498)	(0.499)		(0.492)	(0.500)	
Currently Working	0.387	0.407	0.368	0.039	0.389	0.425	-0.036	0.378	0.414	-0.036
	(0.487)	(0.492)	(0.483)		(0.489)	(0.495)		(0.485)	(0.494)	
No income in past 30 years	0.631	0.603	0.660	-0.057*	0.618	0.588	0.030	0.634	0.623	0.010
	(0.483)	(0.490)	(0.474)		(0.487)	(0.493)		(0.482)	(0.486)	
F-Test of Joint Significance				0.42			0.65			1.11

Continued . . .

Table 3.2 (Continued): Randomization at the individual level

| | Village Head | | | Number of Female Village Head | | | |
	Male (11)	Female (12)	Diff. (13)	0 (14)	1 (15)	2 or more (16)	K-W Statistic† (17)
No Schooling	0.285 (0.452)	0.303 (0.460)	-0.018	0.285 (0.452)	0.279 (0.449)	0.357 (0.481)	2.354
Primary Schooling	0.235 (0.425)	0.223 (0.417)	0.012	0.235 (0.425)	0.235 (0.425)	0.196 (0.398)	0.620
Secondary Schooling	0.144 (0.351)	0.154 (0.362)	-0.011	0.144 (0.351)	0.154 (0.361)	0.155 (0.363)	0.080
Higher Secondary Schooling	0.285 (0.452)	0.272 (0.446)	0.012	0.285 (0.452)	0.282 (0.451)	0.250 (0.434)	0.466
Father: No Schooling	0.366 (0.482)	0.392 (0.489)	-0.026	0.366 (0.482)	0.402 (0.491)	0.369 (0.484)	0.843
Father: Primary Schooling	0.260 (0.439)	0.221 (0.416)	0.038	0.260 (0.439)	0.219 (0.414)	0.226 (0.420)	1.051
Age	27.438 (11.527)	26.720 (10.255)	0.718	27.438 (11.527)	26.435 (10.207)	27.369 (10.365)	3.006
Household Size	7.663 (3.562)	7.848 (3.734)	-0.184	7.663 (3.562)	7.786 (3.726)	7.988 (3.759)	0.820
Hindu	0.866 (0.341)	0.936 (0.244)	-0.070***	0.866 (0.341)	0.909 (0.289)	1.000 (0.000)	6.359***
General Caste	0.302 (0.460)	0.224 (0.417)	0.078***	0.302 (0.460)	0.199 (0.400)	0.280 (0.450)	6.568**
Scheduled Caste	0.225 (0.418)	0.251 (0.434)	-0.026	0.225 (0.418)	0.209 (0.407)	0.345 (0.477)	6.910***
Other Backward Caste	0.384 (0.487)	0.455 (0.498)	-0.071**	0.384 (0.487)	0.500 (0.501)	0.351 (0.479)	11.250***
Currently Working	0.389 (0.488)	0.387 (0.487)	0.002	0.389 (0.488)	0.360 (0.481)	0.446 (0.499)	2.598
No income in past 30 years	0.628 (0.484)	0.633 (0.482)	-0.006	0.628 (0.484)	0.663 (0.473)	0.565 (0.497)	3.363
F-Test of Joint Significance			1.38				

Notes: This table shows the *ex post* balance in the characteristics of participants in the experiments. $^{***} p < 0.01, ^{**} p < 0.05, ^{*} p < 0.10$. ‡: sample restricted to Gender Revealed Sessions. †: Kruskal-Wallis (K-W) Statistic is distributed as χ^2 with 2 degrees of freedom. Gender of village head is female if the village has had at least one female head following the last three village council elections. Gender of village head is male if the village has never been exposed to a female head.

TABLE 3.3: **Amount sent to the group account by citizens in leadership experiment**

		Female (1)	Male (2)	Diff. (3)
Panel A.				
1.	All groups	91.99	102.28	-10.29**
2.	Male led groups	90.01	110.19	-20.16*
3.	Female led groups	95.61	97.95	-2.32
4.	Diff.: Female led groups – Male led groups (3–2)	5.60	-12.24*	
Panel B.				
5.	Male headed village	94.82	109.90	-15.09**
6.	Female headed village	89.60	95.82	-6.22
7.	Diff.: Female headed village – Male headed village (6–5)	-5.22	-14.09**	
Panel C.				
8.	Male led group, Female headed village	86.26	109.71	-23.44**
9.	Male led group, Male headed village	94.80	110.73	-15.93
10.	Female led group, Female headed village	96.38	88.44	7.94
11.	Female led group, Male headed village	94.84	109.43	-14.60
12.	Male headed village: Diff.: Female led groups – Male led groups (11–9)	-0.03	-1.30	
13.	Female headed village: Diff.: Female led groups – Male led groups (10–8)	-10.11	-21.27**	

Notes: Sample restricted to treatment (gender revealed) sessions only. Columns 1 and 2 show the average contribution to the group account by men and women, respectively. Column 3 shows the difference in means (3 = 1–2) using a t-test. Gender of village head is female if the village has had at least one female head following the last three village council elections. Gender of village head is male if the village has never been exposed to a female head. $^{***}p < 0.01,$ $^{**}p < 0.05,$ $^{*}p < 0.1$.

FIGURE 3.2: **Distribution of contribution to the group account by citizens in male and female led groups**
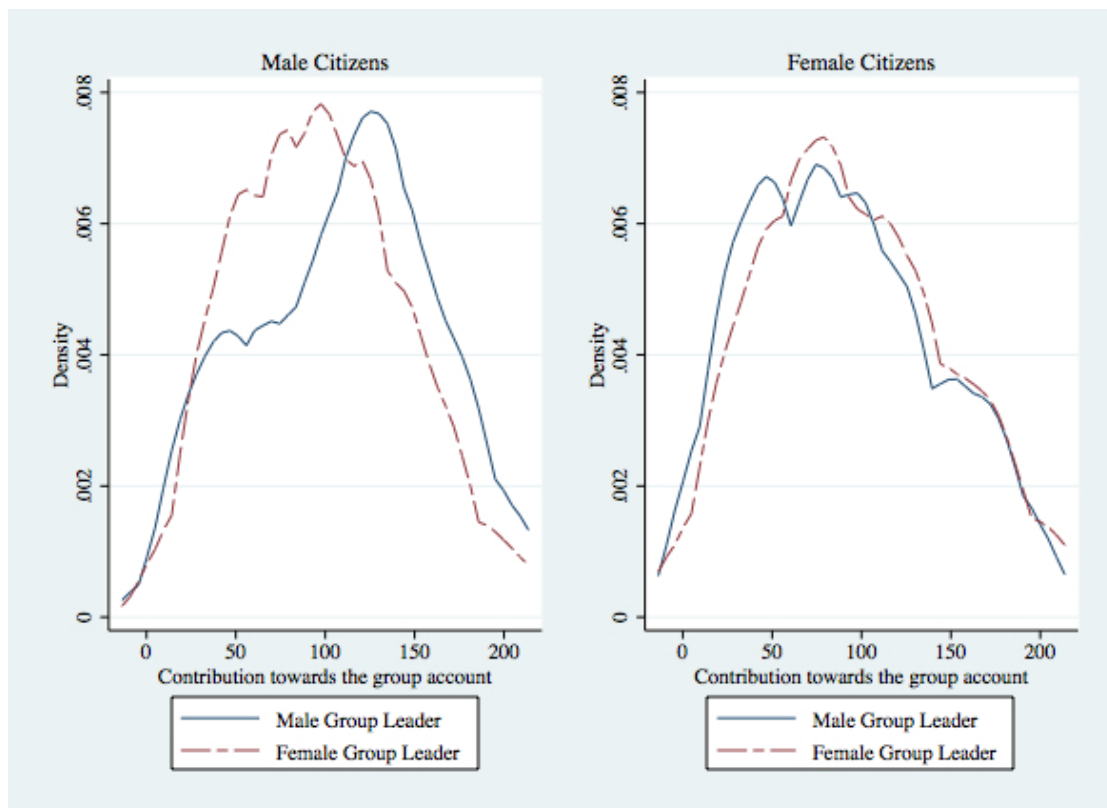
Notes:

Sample restricted to treatment (gender revealed) sessions only. For male citizens, the null hypothesis of equality of distribution of contributions to the group account is rejected using a two-sample Kolmogorov-Smirnov test of equality of distributions ($p-value = 0.045$). For female citizens, the null hypothesis of equality of distribution of contributions to the group account cannot be rejected ($p-value = 0.985$).

FIGURE 3.3: **Distribution of contribution to the group account by citizens in male and female led groups, in male and female headed villages**

Panel A: Male Citizens

Panel B: Female Citizens
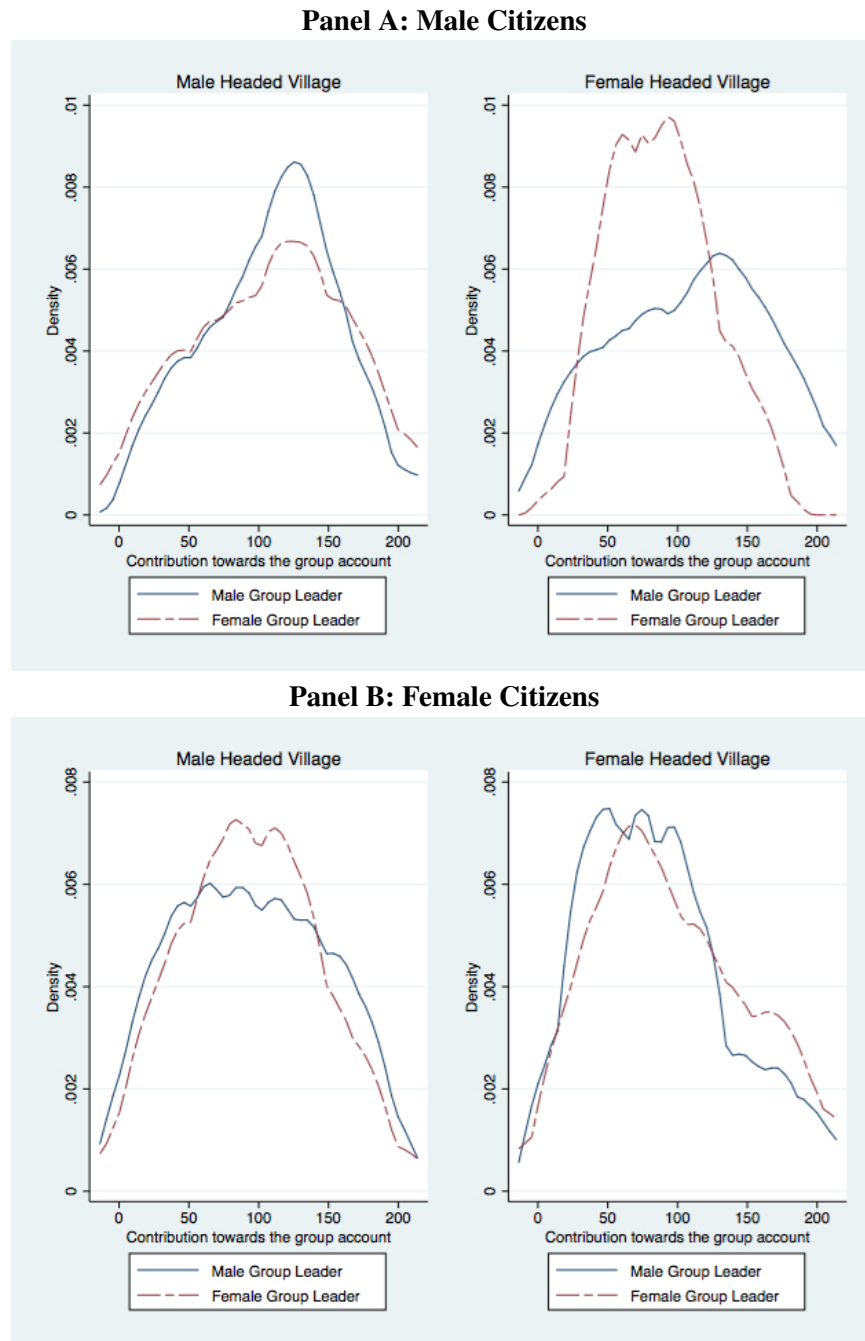
Notes:
Sample restricted to treatment (gender revealed) sessions only. **Panel A:** The null hypothesis of equality of distribution of contributions to the group account is rejected in the case of using a two-sample Kolmogorov-Smirnov test of equality of distributions ($p-value = 0.017$) in female headed villages. The null hypothesis of equality of distribution of contributions to the group account cannot be rejected ($p-value = 0.985$) in male headed villages ($p-value = 0.999$). **Panel B:** The null hypothesis of equality of distribution of contributions to the group account can never be rejected using a two-sample Kolmogorov-Smirnov test of equality of distributions ($p-value = 0.964$ in female headed villages and 0.821 in male headed villages). Gender of village head is female if the village has had at least one female head following the last three village council elections. Gender of village head is male if the village has never been exposed to a female head.

TABLE 3.4: **Citizen contribution to group account**

	All (1)	Male (2)	Female (3)
Males: Female led groups – male led groups[†]	-13.342*		
	(8.191)		
Females: Female led groups – male led groups[††]	5.557		
	(8.000)		
Male headed village: Female led groups – male led groups[‡]		0.349	0.871
		(12.137)	(11.979)
Female headed village: Female led groups – male led groups[‡‡]		-24.343**	9.427
		(10.876)	(10.179)
Sample Size	714	359	355

Notes: Difference estimates from OLS regression presented. Dependent variable: Contribution to the group account by citizens (in stage 2 of the leadership experiment). Regression in column 1 includes gender of the citizen, gender of the group leader and the interaction of the gender of the citizen and that of the group leader. Regressions in columns 2 and 3 include the interaction of the gender of the group leader and the gender of the village head. All regressions also control for set of individual and household characteristics (age, own educational attainment, father's educational attainment, current work status, income earned in the last month, caste and religion, household size), amount proposed by the leader and for village fixed effects. Sample restricted to citizens. Gender of village head is female if the village has had at least one female head following the last three village council elections. Gender of village head is male if the village has never been exposed to a female head. Standard errors clustered at the group level in parenthesis. ***$p < 0.01$,** $p < 0.05$,* $p < 0.1$. [†] is estimated value of $\beta_2 - \beta_3$ from equation (3.2). [††] is estimated value of $(\beta_2 + \beta_4) - (\beta_3 + \beta_5)$ from equation (3.2). [‡] is estimated value of $\beta_6 - \beta_7$ from equation (3.3). [‡‡] is estimated value of $(\beta_2 + \beta_6) - (\beta_3 + \beta_7)$ from equation (3.3).

TABLE 3.5: **Social appropriateness of contributions by male citizens when group leader is male or female**

	Female Leaders (1)	Male Leaders (2)	Difference‡ (3)
Panel A. Male beliefs			
Male citizens contribution=0	1.23	1.15	0.08**
Male citizens contribution=50	2.47	2.33	0.14***
Male citizens contribution=100	3.10	2.97	0.13***
Male citizens contribution=150	3.54	3.49	0.05
Male citizen contribution=200	3.72	3.76	-0.04
Panel B. Female beliefs			
Male citizens contribution=0	1.22	1.17	0.05
Male citizens contribution=50	2.43	2.31	0.12***
Male citizens contribution=100	3.04	3.08	-0.04
Male citizens contribution=150	3.58	3.56	0.02
Male citizen contribution=200	3.76	3.77	-0.01
Panel C. Male beliefs in Female Headed Villages			
Male citizens contribution=0	1.27	1.20	0.07
Male citizens contribution=50	2.54	2.36	0.18***
Male citizens contribution=100	3.14	2.98	0.16***
Male citizens contribution=150	3.55	3.52	0.03
Male citizen contribution=200	3.67	3.65	0.02
Panel D. Male beliefs in Male Headed Villages			
Male citizens contribution=0	1.22	1.09	0.13**
Male citizens contribution=50	2.47	2.25	0.22***
Male citizens contribution=100	3.14	2.94	0.20***
Male citizens contribution=150	3.55	3.50	0.05
Male citizen contribution=200	3.73	3.75	-0.02

Notes: Statistical significance of difference computed using a Wilcoxon sign rank test. *** $p < 0.01$,** $p < 0.05$,* $p < 0.1$.

TABLE 3.6: **Beliefs about social appropriateness of women as village heads**

	Male Belief (1)	Female Belief (2)	Difference (3)
All	3.06	3.55	-0.49***
Female respondents	2.97	3.48	-0.51***
Males respondents	3.16	3.61	-0.45***
All respondents in Female headed village	3.10	3.52	-0.42***
All respondents in Male headed village	3.00	3.60	-0.60***
Female Respondents in Female headed village	3.04	3.51	-0.47***
Male Respondents in Female headed village	3.17	3.53	-0.36***
Female Respondents in Male headed village	2.86	3.45	-0.58***
Male Respondents in Male headed village	3.14	3.75	-0.60***

Notes: Statistical significance of difference computed using a Wilcoxon sign rank test. *** $p < 0.01$,** $p < 0.05$,* $p < 0.1$.

TABLE 3.7: **Potential explanations for male bias**

	Men in female headed villages (1)	Men in male headed villages (2)	Women in female headed villages (3)	Women in female headed villages (4)
Panel A. Women have too much political influence				
Female led groups – male led groups	-58.389***	11.217	8.726	3.025
	(15.803)	(21.034)	(12.017)	(14.096)
Panel B. Villages with women leaders are better governed				
Female led groups – male led groups	-30.671**	0.495	12.767	-8.139
	(13.212)	(15.093)	(11.930)	(11.310)
Panel C. Benefitted from two or more village council schemes				
Female led groups – male led groups	-27.559*	-24.995	-12.942	6.662
	(16.562)	(16.209)	(17.605)	(17.411)

Notes: Difference estimates $((\beta_1 + \beta_4) - (\beta_2 + \beta_5))$ from OLS regression of equation (3.6) for each sub-sample presented. Dependent variable: Contribution to the group account by citizens (in stage 2 of the leadership experiment). Regressions in Panel A include dummy Women Too Much Influence and interaction with gender of group leader. Regressions in Panel B include dummy Women Better Govern and interaction with gender of group leader; finally those in Panel C include dummy Village Council service High and interaction with gender of group leader. All regressions control for gender of the group leader, set of individual and household characteristics (age, own educational attainment, father's educational attainment, current work status, income earned in the last month, caste and religion, household size), amount proposed by the leader and for village fixed effects. Sample restricted to citizens. Gender of village head is female if the village has had at least one female head following the last three village council elections. Gender of village head is male if the village has never been exposed to a female head. Standard errors clustered at the group level in parenthesis. $^{***}p < 0.01,^{**}p < 0.05,^{*}p < 0.1$.

TABLE 3.8: **Tokenism as an explanation for male bias**

	(1)
Male headed Village: Female – Male (α_1)	0.059**
	(0.029)
Males: Female headed village – Male headed village (α_2)	0.160***
	(0.040)
Females: Female headed village – Male headed village ($\alpha_2 + \alpha_3$)	0.109*
	(0.056)
Sample Size	867

Notes: Difference estimates from OLS regression presented. Dependent variable is a dummy variable = 1 if a participant believes the most influential person within their village is female. α_i's are estimated coefficients from equation (3.7). All regressions control set of individual and household characteristics (age, own educational attainment, father's educational attainment, current work status, income earned in the last month, caste and religion, household size) and for village fixed effects. Gender of village head is female if the village has had at least one female head following the last three village council elections. Gender of village head is male if the village has never been exposed to a female head. Standard errors clustered at the session (village) level in parenthesis. $^{***}p < 0.01,^{**} p < 0.05,^* p < 0.1$.

TABLE 3.9: **Citizen behavior with intensity of exposure**

	Male (1)	Female (2)
Female led groups – male led groups: Number of Female village heads = 0†	-0.073 (12.124)	0.928 (12.028)
Female led groups – male led groups: Number of Female village heads = 1††	-41.651*** (11.845)	3.162 (12.040)
Female led groups – male led groups: Number of Female village heads ≥ 2 ‡	21.945 (19.702)	24.566 (18.074)
Sample Size	359	355

Notes: Difference estimates from OLS regression presented. Dependent variable: Contribution to the group account by citizens (in stage 2 of the leadership experiment). Regressions include gender of the group leader, interaction of the gender of the group leader and the number of female village heads in the last 3 elections and for set of individual and household characteristics (age, own educational attainment, father's educational attainment, current work status, income earned in the last month, caste and religion, household size), amount proposed by the leader and for village fixed effects. Gender of village head is female if the village has had at least one female head following the last three village council elections. Gender of village head is male if the village has never been exposed to a female head. Standard errors clustered at the group level in parenthesis. $^{***}p < 0.01,^{**} p < 0.05,^* p < 0.1.$ † is estimated value of $\beta_1 - \beta_2$ from equation (3.8). †† is estimated value of $(\beta_1 + \beta_3) - (\beta_2 + \beta_5)$ from equation (3.8). ‡ is estimated value of $(\beta_1 + \beta_4) - (\beta_2 + \beta_6)$ from equation (3.8).

TABLE 3.10: **Citizen deviation from leader proposal**

	All (1)	All (2)	Male (3)	Female (4)
Female led groups – male led groups	1.456 (4.134)			
Males: Female led groups – male led groups		-7.334 (6.973)		
Females: Female led groups – male led groups		7.382 (6.230)		
Male headed village: Female led groups – male led groups			-0.496 (8.970)	2.956 (9.388)
Female headed village: Female led groups – male led groups			-13.564 (9.724)	13.393* (7.151)
Sample Size	711	711	359	355

Notes: Difference estimates from Tobit regression presented. Dependent variable Percent Deviation = $100\times$ (Amount contributed to the group account - Amount proposed)/Amount Proposed. Deviation percent < 0, otherwise deviation percent is equal to zero. Regressions in columns 1 and 2 control for gender of the citizen and gender of the group leader while column two also includes an interaction between the gender of the group leader and the gender of the citizen. Regressions in columns 3 and 4 include an interaction between the gender of the group leader and the gender of the village head. All regressions also control for set of individual and household characteristics (age, own educational attainment, father's educational attainment, current work status, income earned in the last month, caste and religion, household size), amount proposed by the leader and for village fixed effects. Sample restricted to citizens. Gender of village head is female if the village has had at least one female head following the last three village council elections. Gender of village head is male if the village has never been exposed to a female head. Standard errors clustered at the group level in parenthesis. $^{***}p < 0.01,^{**} p < 0.05,^{*} p < 0.1$.

TABLE 3.11: **Attitudes and services in villages with male and female heads**

	Women Power Better (1)	Village Council Service High (2)	Village Council Service Total (3)	Women Too Much Power (4)
Male headed village: Female – Male	0.053	-0.012	0.017	0.118**
	(0.049)	(0.058)	(0.163)	(0.053)
Males: Female headed village – Male headed village	-0.036	0.045	0.041	0.079
	(0.044)	(0.061)	(0.194)	(0.057)
Females: Female headed village – Male headed village	-0.045	-0.054	-0.269	0.042
	(0.048)	(0.059)	(0.183)	(0.053)
Sample Size	952	952	952	952

Notes: Difference estimates from OLS regression presented. In Column 1, the dependent variable is 1 if a participant agrees or strongly agrees with the statement that "villages where women have more power perform better", and 0 otherwise. In Column 2, the dependent variable is 1 if a participant or his/her household benefited from two or more government services. In Column 3, the dependent variable is the total number of government services received by a household. In Column 4, the dependent variable is 1 if a participant agrees or strongly agrees with the statement "in this village, women have too much political influence". Regressions include gender of the participant, the gender of the the head of the village and the interaction of the gender of the citizen and that of the village head. All regressions also control for set of individual and household characteristics (age, own educational attainment, father's educational attainment, current work status, income earned in the last month, caste and religion, household size), and for district fixed effects. Gender of village head is female if the village has had at least one female head following the last three village council elections. Gender of village head is male if the village has never been exposed to a female head. Standard errors clustered at the session (village) level in parenthesis. $^{***}p < 0.01, ^{**}p < 0.05, ^{*}p < 0.1$.

TABLE 3.12: **Village level balance between leadership and belief elicitation experiment villages**

| | Pooled | | | Village Head Gender | | | | | |
| | | | | Female | | | Male | | |
	Belief Elicitation Experiment (1)	Leadership Experiment (2)	Diff. (3)	Belief Elicit. Exp. (4)	Leadership Exp. (5)	Diff. (6)	Belief Elicit. Exp. (7)	Leadership Exp. (8)	Diff. (9)
Number of Households	836.71	566.07	270.6	919.64	614.13	305.4	702.12	501.05	201.06
Total Population	4405.5	2923.5	1482	4749.2	3250.4	1498.79	3847.12	2481.29	1365.83
Male to female ratio	1.06	1.05	0.006	1.07	1.04	0.02	1.04	1.06	0.02
Fraction Scheduled Caste	0.248	0.328	0.08	0.261	0.356	0.095	0.226	0.29	0.064
Fraction literates	0.481	0.435	0.046*	0.472	0.438	0.035	0.497	0.431	0.066
Fraction male literates	0.566	0.517	0.049	0.553	0.523	0.029	0.588	0.509	0.079
Fraction female literates	0.392	0.349	0.043	0.385	0.349	0.036	0.403	0.349	0.054
Fraction workers	0.365	0.38	0.01	0.372	0.404	0.031	0.353	0.347	0.006

Notes: This table shows the *ex ante* balance in the characteristics of villages chosen for the different sets of experiments. Gender of village head is female if the village has had at least one female head following the last three village council elections. Gender of village head is male if the village has never been exposed to a female head. Data source: Census of India, 2011. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

FIGURE 3.4: **Recruitment Flyer**

EARN CASH

AS A RESEARCH PARTICIPANT

We invite you to participate in a research project conducted at
_____ _____

You will definitely earn **Rs 100** and you can earn more money according to your decisions (between Rs 100- 600). The research project will take 180 minutes. The experimental sessions will be conducted during the period:

Date:

Location:

Time:

To participate in the project, you must be able to read and write in Hindi.

If you have any questions, please contact:

Dr Tarun Jain (Indian School of Business) on +91.40.2318.7267

रिसर्च में भाग ले और

पैसे कमाएँ!

आपको निश्चित रूप से 100 रुपेये मिलेंगे इसके अलावा आपके निर्णयों के आधार पर आप और भी पैसे (100-600) रुपेये के बीच) कमा सकते हैं| रिसर्च प्रॉजेक्ट में 180 मिनिट लगेंगे| एक्सपेरिमेंटल सेशन इस समय के भीतर होंगे :

तिथि:

स्थान:

समय:

इस प्रॉजेक्ट में भाग लेने के लिए आपको हिन्दी लिखनी व पढ़नी आनी ज़रूरी हैं| अगर आप समय पर नही हैं तो आप भाग नही ले सकते|

अगर आपको कोई भी सवाल हैं तो संपर्क करें : ड़. तरुण जैन – 91.40.2318.7267

Chapter 4

Does status effect trust in leaders?

4.1 Introduction

Leadership and its qualities continue to be widely analysed and are the topic of many 'self-help' texts [1]. Skills enabling leadership are highly sought after by both individuals and organisations. Leaders such as politicians and managers are important in part because they play a crucial role in society through the facilitation of cooperation and resource allocation (see, e.g., [54]; [55]; [88]. Previous research offers compelling evidence that leaders encourage group cooperation and, further, that some leaders encourage more cooperation than others. Previous work in the latter area identifies that high status leaders, those leaders that are considered of higher rank than the majority, perform better in a number of outcomes. High status leaders are followed more often by their peers [89], boost donations when they donate first [90]; [91], and encourage coordination in a team [92]. These results are in spite of the fact that there is little evidence that high status leaders perform better than other groups. [2]

Leaders are followed by their peers because of their position in society, this position may be irrespective of their actual capacity to be an effective leader. As we discuss below, the source of high status leaders' superior outcomes and under what situations they exist remains unclear. This is the main focus of this paper. For example, a leader of high status such as a politician or celebrity may be followed because of their social standing rather than their capacity for and qualities of effective leadership.

Understanding the source of high status leaders' superior outcomes and why they differ from those of low status leaders provides direct insight into the relationship between status and leadership. This paper focuses on two possibilities: One possible explanation is that followers trust

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[1]Throughout this chapter a leader is someone who is an inherit position to lead both because of their position but also because of their superior information about the value of the project in hand

[2]In earlier work Ball et al. [93] identify that high status subjects face lower prices in market games

high status subjects more than those of low status, therefore we examine the effect of status on trust. We hypothesise that when subjects are made aware of a status they become reliant on stereotypes. High status subjects have the most positive stereo types and thus are more trusted. We then differentiate between two measures of trust. Secondly, it is possible that status influences individual behaviour in that those in the same status grouping as the leader are inclined to cooperate, thus demonstrating an in-group bias.

To examine these two possibilities we utilise two experiments. Similar to Ball et al. [93] we define status based on the outcomes of an arbitrary quiz. All individuals participate in two tasks. In the first task, a trust experiment similar to that of Berg et al. [94] is implemented. The novel component of this task is that the subjects are told the status of their partner before making decisions. This task examines our first and standard measure of trust- trust that a partner will reciprocate a risky move. In the second task we design an innovative public goods game in which leaders send a costly signal to their followers after which followers make their contributions towards the group account. In this task subjects follow a leader because they trust the leaders signal. This task provides our second measure of trust–trust that a leader will be honest. The design of the public good experiment provides valuable insight into status, building on the literature of Alesina and La-Ferrara [95]; [93]; Eckel and Wilson [92]; Eckel et al. [89] and Gächter et al. [96].

Using this design we ask : Do subjects trust high status participants more than low status participants? Further, do participants trust high status leaders more than low status leaders? The specific focus on the role of trust and status in this research extends the work of Eckel and Wilson [92] who find that a high status central player encourages more group cooperation compared to a low status player. [3] This paper also extends this current work by examining two different measures of trust. The degree to which someone trusts another person is an aspect of both honesty and reciprocity. For this reason we explore these aspects separately and examine whether a high leader is more likely to be followed when they are perceived to reciprocate a risky move or alternatively people believe they are being honest.

According to the social identity theory of leaders, leaders are followed because they communicate a group orientated vision that followers can identify with [98]. This is often termed in-group bias. We examine the effects of in-group and out-group bias under status-influenced leadership. We highlight how status could play a significant role that is more influential than the qualities of the leadership presented. This presents the third central research question of this paper: Does in-group or out-group bias impact follower behaviour towards a leader? This question further

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[3]Previous researchers (see[96] have examined the empirical relationship between trust measured in a survey and cooperation in a one shot public goods game, finding that subjects who are more trusting will contribute more in the public goods setting. In the context of trust and status, Alesina and La-Ferrara [95] use surveys to examine trust and status measured by social class. They find that social class is correlated with measures of trust in the United States, while Whiteley [97] finds a similar result for Europeans.

contributes to the literature on in-group bias [99]; [100]; [77]; [101]; [102]; [103]; [104]; [105]. These studies show that simple categorisation of people into groups encourages people to treat their own group more favourably. Despite significant literature on inter group favouritism, it is not clear where the underlying motivation for such favouritism comes from. We include variables from the trust experiment to observe whether trust is a potential factor in in-group and out-group decision making. Recently, Burns (2012) has shown in the context of South Africa that in-group favouritism leads subjects to trust perceived high status (White) students more than they trust those of other racial identities. [4] To reveal the racial identity of subjects in the trust game Burns [77] uses photos of students. Our design simplifies this experiment and overcomes complications related to the use of photos as the defining feature of a group.

Lastly, our experiment is related to the literature on trustworthiness and deception, in which researchers have found variation in trustworthiness across populations [106]; [107]. Specifically, for our fourth question we examine: If followers continue to follow untrustworthy and deceptive leaders, and if this differs according to the status of the leader. This is a pertinent focus of this study as it demonstrates how leaders decisions such as acting dishonesty, influence follower behaviour and in particular cooperation.

We report some suggestive findings. First, at the mean, subjects send more to high status partners in the trust experiment. Second, we do not find evidence, that followers are more likely to follow a high status leader compared to a low status. Third, *high status* subjects trust and contribute more towards *high status* leaders. This can partly be explained by a greater trust in high status individuals. Lastly, over time, high status leaders are followed more closely by their peers, except when a high status leader is untrustworthy and lies. The more often a high status leader lies, the lower the contributions by the followers compared to a low status leader who lies a similar amount.

4.2 Experimental Design and protocol

4.2.1 Procedure

All experimental sessions were computerised and executed with the program z-tree [108] at the Monlee Laboratory, Monash University, Australia, between September and November 2013. All subjects were recruited using the Online Recruitment System for Economic Experiments (ORSEE) [109]. A total of 84 undergraduate students from various disciplines participated in at most one session, earning on average 24 AUD including a show-up fee of 5 AUD. [5] In total

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[4] Burns [77] uses an experiment to measure trust between subjects of different racial identity in South Africa. In their design White students are considered high status.

[5] All subjects had participated in other economics experiments, but all were inexperienced in that they had never participated in a similar trust or public good experiment.

five sessions were undertaken which each consisted of either 4 or 6 three-person groups in the public goods task and either 6 or 9 two person groups in the trust task, yielding 42 groups in the trust task and 28 groups in the public goods task. Subjects were paid for one task, decided at the end of the experiment by a coin toss.

All subjects received written instructions that were read aloud to establish common knowledge.[6] Instructions for the second task were only given once the first task was completed. There was no feedback given to subjects between tasks including the amount earned in Task 1. Understanding of the rules was assured by a control questionnaire that subjects were required to answer before the experiment commenced. Answers to these questions were checked and the experiment did not begin until all subjects indicated that they understood the instructions. Due to our chosen experimental design we cannot explicitly test for order effects; however, paying for one game with no feedback between games, minimizes such a concern. Paying for one game also helps reduce wealth effects

4.2.2 Allocating Status

Status is allocated according to a procedure adapted from Ball et al. [93] and Eckel and Wilson [92]. Prior to the first task, subjects were administered a quiz using z-tree, which consisted of five obscure questions that required numerical answers such as, "What was the inflation rate in Australia in the last decade?" Questions were based on different topics and were not only related to economics (see [93] and [90]). Subjects were classified into two types. High scoring players were assigned a high status; low scoring players were allocated a low status. [7] Subjects were informed that their answers to the quiz would be used throughout the experiment. The main aim of the status assignment is to allocate and inform subjects of the status of their partner in task 1 and their leader in task 2. Inducing status in the laboratory ensures all subjects jointly recognised the allocation of status and allows for a more robust identification of the impact of status. Further the arbitrary nature of the quiz ensures that there should be no difference in observable characteristics between high and low status subjects. It is noteworthy that at no time were subjects told their own status. Withholding information on own status reduces confounding effects as it avoids subjects' comparison between their assigned status and perceived status. Instead we examine subjects' perceptions of their own status, by incentivising a post experiment survey question asking subjects if they believed they were high status in these tasks. We find that

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[6]The instructions were adapted from Kumru and Vesterlund [90] and Güth et al. [54].

[7]Subjects that scored in the top 50% of the session are identified as high status with the remaining identified as low status. Subjects were only informed that high scoring subjects would be allocated a high status and low scoring subjects a low status.

30% of participants believe they were high status, we label this variable perceived own status. We use this variable throughout the econometric analysis to control for own status. [8] [9]

4.2.3 Task 1: Trust experiment

A strategy method trust experiment similar to Berg et al. [94] and Bahry and Wilson [110] was implemented, consisting of a single period. The strategy method was chosen and no information was disseminated regarding partners decisions to reduce contamination between decisions made in Task 1 and future decisions in Task 2. [10] Subjects play as both a sender and receiver. Before the experiment commences subjects are told the status of their partner (high or low), making the status of the anonymous partner salient. Within each session subjects are randomly assigned a partner based on a block sampling method so that there is an equal distribution for all combinations of status, i.e high status subject with high status partner and high status subject with low status partner... ect.

Subjects then send an amount between $0-10 to their partner in intervals of $2.5 (we refer to this as the amount sent by the sender). This amount is subsequently tripled. The receiver must then state the amount they will return for every possible amount they can receive. The maximum total payout occurs when the sender transfers their entire endowment to the receiver, thus tripling the initial value. On the other hand, the sub-game perfect equilibrium stipulates there is no transfer from the sender to the receiver.

Given that subjects remain anonymous throughout the experiment, a key reason that a sender will send money to their partner is trust. The more the sender trusts their partner, the more they will be willing to send as they believe a receiver will reciprocate at a cost to themselves; thus, this experiment is often used to measure trust (see, e.g., [112]). For example, in this context subjects are informed the status of their partner. If subjects sends more to a high status partner compared to low status, this indicates that they trust high status subjects more than low. This is our first measure of trust. An important caveat is that other factors such as risk aversion and altruism also influence the amount that subjects send. To avoid inequality between subjects and decisions based on altruism rather than trust, both senders and receivers are given an initial $10 [113]. Further, we believe that due to the nature of the allocation of status (subjects are allocated status based on quiz questions that are not related to ability), subjects who are allocated high

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[8]As a test of differences between subjects assigned a high and low status we also include the assigned status in all estimations. Results are nearly identical, this variable is not statistically significant in any tested empirical model. Results are available on request

[9]Specifically, subjects were asked the questions "In this task do you think you were high or low status", subjects were paid $2 AUD for a correct answer. We interpret this measure as an indicator of perceived status.

[10]In a review of the literature, Brandts and Charness [111] find that the strategy method does not lead to differences in treatment effects from that of the game design.

status are not likely to be different in terms of altruism or risk aversion than those who have been allocated low status. [11]

4.2.4   Task 2: Public Goods Experiment

Task 2 is based on the voluntary contribution game (VCM) as introduced by Isaac et al. [114]. The experiment consists of ten separate periods in which the subjects are placed in groups of three. Groups remain the same in all ten periods. [12] At the beginning of each period, each subject receives an amount of endowment e denoted in experimental dollars. Each subject receives 100 experimental dollars per period (1 AUD=50 Experimental dollars (ED)).[13] The task of the subjects are to decide how much of their endowment they want to contribute to a group account. Whatever they do not contribute they keep for themselves. Each dollar placed in the private account earns ED 1 for the subject, while each dollar placed in the group account earns β for each member of their group (including themselves). In summary, the payoff function is as follows:$P_i = e - g_i + \beta \sum_n g_j$ where g_j is the amount of initial endowment that the subject i places in the group account; β is the marginal payoff of the public good; and $\sum_n g_j$ is the sum of the n individual contributions to the public good. The main difference between this design and other VCM games is that our level of β takes on two values, that is, either $\beta_1 = 0.1$ or $\beta_1 = 0.6$. For $\beta_1 = 0.1$ it is fully efficient and socially optimal for players not to contribute to the group account but rather to retain all their endowment in their private account since $n\beta < 1$. In the case of $\beta_1 = 0.6$, since $0 < \beta < 1 < n\beta$, the Nash equilibrium is for each subject to invest their entire endowment in the individual account. However, since $n\beta > 1$, the socially efficient outcome is to contribute everything to the group account. This set up is most similar to Potters et al. [115] analysis of differing qualities of public goods. In their experiment the leader informs the subjects of a proposed contribution level; thus, this provides the signal of the true state of β.

The task involves two treatments. In the first, half of all subjects are assigned to a group with a high status leader with the remaining allocated low status leaders. To ensure uniformity, all groups comprise one randomly selected high status subject and one randomly selected low status subject in addition to the leader. [14] Subjects who are not leaders are referred to as followers. The task is broken into two distinct phases that are identical in each period. The first is labelled the proposal phase, which begins after leaders have been allocated to each group. In this phase the leader is informed of the true state of β. The true state of β is determined randomly by the

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[11]If this task is chosen for payment then a coin is tossed. Half of the subjects are paid as senders while the other subjects are paid as receivers.

[12]Groupings are not fixed across tasks.

[13]If this task is chosen for payment, subjects are paid based on the cumulative earnings in all periods.

[14]Subjects are randomly allocated to groups conditional on the uniform composition of groups. In other words we use a block sampling method to assign subjects to groups such that the distribution holds. Since we randomise on assigned status as mentioned we also run all econometric analysis controlling for this variable. Results are unchanged and are available on request

experimenter. The random draw of β in each period is chosen once for all sessions to ensure that the ordering does not change between treatments or sessions (see table A1 in Appendix 1). This means that all sessions will receive the same random ordering of β. After this, the leader informs the followers the value for β. As this information is non-binding, the leader can communicate either $\beta_1 = 0.1$ or $\beta_2 = 0.6$ irrespective of the true value of β.

In the second decision phase, subjects are informed of the status of their leader (either high or low) and the leader's announcement of β. [15] All subjects then contribute towards the group account. Contributions are in intervals of 25 (0-100). At the end of each period, all subjects are informed of their earnings and the actual value of β, while the leader is also informed of their fellow group members' contributions (as in [54]). Followers are never informed of the leaders' actual contribution towards the group account to avoid confounds with the signal of β. Other than status differences between treatments (either high or low status leader), the experimental design for all treatments is identical.

An example is useful to illuminate this situation: if in the first period the true state of the world is $\beta_2 = 0.6$. In the first phase a leader has two options, that is, to lie and misreport the value of β or to report the truth. In the second phase the followers are informed of the leader's signal (reported value of β). Followers' subsequent contributions provide a measure of whether followers believe the leader is behaving honestly and that they trust the leaders signal. A leader who seeks to maximise her own earnings should report $\beta_2 = 0.6$ to her group members. A follower is provided with two forms of information, that is, the leader's status and their proposed β. If followers believe the signal ($\beta_2 = 0.6$), previous research informs us that subjects in early periods will contribute > 0. However, if subjects do not believe the leader, then a profit-maximizing subject will contribute nothing towards the group account (as they must believe the true state of the world is $\beta_1 = 0.1$.[16] If there is a difference in the first period between follower contributions and that of different status leaders, this can be attributed to the effect of trusting behaviour and, more precisely, that subjects trust that a leader with status (high or low) will be honest and report the correct signal rather than a coordination effect resulting from commonly observed information [116].

4.2.5 Measures of Trust

We measure different forms of trust in Task 1 and Task 2. In the trust game people behave in a trusting manner because they expect their partner to reciprocate a risky move. This involves the preference of reciprocity. In the leadership game the leader can be honest and report the true

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[15]We refer to leaders throughout the instructions as 'first decision maker' to avoid framing effects.

[16] It is true that a subject that is other regarding may have an incentive to contribute > 0 when $\beta_1 = 0.1$ however this occurs in a small number of cases (approx. 15%) and there is no reason to believe followers in high status led groups will do this more often than low status groups.

state of the world, a follower that trusts that the leader is behaving honestly will follow the leader by contributing towards the group (when the true state is 0.6). This involves the preference of honesty. Between subjects the cost of violating the norm of honesty may differ compared to violating the norm of reciprocity, this will lead to different beliefs and consequently decisions to trust in the trust game compared to the leader game. For example, if you believe the cost of violating the norm of honesty is higher than reciprocity you maybe more inclined to trust a leaders signal but less inclined to send to a receiver, since you perceive people are more likely to be honest than reciprocate. This distinction is important because leaders may be followed because people believe they are acting honestly and or ethically, this may differ to people who follow a leader because they expect to receive benefit i.e the firm will perform better improving profits and in turn wages.

4.3 Results

Do subjects trust high status subjects more than low status subjects? Further, do subjects trust high status leaders more than low status leaders?

4.3.1 Results Task 1

The design of Task 1 allows us to study the amount a subject sends to their partner after being informed of their partner's status. Results in Table 4.1 report p-values from non-parametric paired Wilcoxon rank sum tests. The first section of the table reports the results of the trust experiment that reveal that subjects on average send more to high status partners, indicating that on average subjects trust high status partners more than low status partners. In particular, subjects send \$4.40 to high status partners compared to \$3.86 to low status partners. This difference is statistically significant.

4.3.2 Results Task 2

In Task 2[17] whether subjects follow a leader provides our second measure of Trust. Trust measured in Task 2 based on the belief that a leader will be honest may be different from trust measured in Task 1. Specifically, we analyse follower contribution rates under leaders of high and low status for the first period only. These decisions are not influenced by past behaviour; providing a better measure of response to a leader's signal. In all sessions, the first period $\beta = \beta_2 = 0.6$ was the true state of the world, and in all cases leaders were truthful.

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[17]In nearly all cases for the public good experiment we report decisions made by followers only, as the main focus of this paper is how and why followers respond to leader's decisions, rather than why leaders make decisions.

In Table 4.1 (row B) we illustrate that high status groups contribute on average 160.71 experimental dollars compared to low groups who contribute 135.71. Breaking this down, high status group followers contribute more to the public good (48.2 vs. 41.8). This difference is statistically insignificant at any reasonable level (Table 4.1 row C, $p = 0.55$, Wilcoxon rank sum test). This outcome suggests that we do not have enough evidence to infer that subjects follow a high status leader more than a low status leader.

4.3.3   Trust in Task 1 and Follower Behaviour

Subjects that are more trusting of high status people in Task 1 may also be more likely to follow a high status leader. To examine whether trust measured in task 1 (trust based on reciprocity) can explain decisions made in Task 2, we include the amount sent in Task 1 as a covariate in the public goods task. To implement this, we conduct a censored Tobit regression of individual follower contributions as a function of the amount sent to receivers in Task 1. We include a number of controls: *High status group=1* if the follower was led by a high status leader and *perceived (high) status=1* if the follower had a high perceived status. Results are shown in Table 4.2. Model A provides evidence that the amount a subject sends in the trust game is an important predictor of the amount they will contribute towards the group account in Task 2. In this case subjects who are more trusting of a high status partner contribute more on average to the group account while subjects who send more to a low status partner do not.

Two issues arise from this result that requires further analysis. First, it is possible that subjects who are more trusting of a high status partner in Task 1 may be more altruistic. Second, this result provides little information on whether the the amount sent in the trust game to a high status partner is also correlated with the amount sent to a high status leader.

To assess both these issues, we break down the Task 1 trust variables into four groups: i) amount sent to a low status Task 1 partner and belongs to a high status led group; ii) amount sent to a low status Task 1 partner and belongs to low status led group; iii) amount sent to a high status Task 1 partner and belongs to high status led group; and iv) amount sent to a high status Task 1 partner and belongs to a low status led group. These interaction terms can be interpreted as measures of trust in a certain status. For example, if *Amount sent to HS partner X LS Group* was significantly positive, this would indicate that a subject who is more trusting of a high status partner (sends more in Task 1) is also more likely to contribute towards the group account of a low status led group.

We include the aforementioned variables in a Tobit regression of the average contribution of followers in the first period. Results are reported in Table 4.3. Two features of these results are noteworthy. First, subjects that send more in Task 1 to a high status partner contribute a larger

amount towards a high status led group. Second, subjects that send more to a high status partner in Task 1 do not contribute more to the group account of a low status led group in the public goods experiment ($p = 0.80$). From this result we can infer that subjects who send more to a high status partner may be responding to their partner's status and are not driven by general altruism motives. This suggests that subjects that trust *high status participants* are on average more likely to trust the signal of a high status leader.

In summary, our results for this section can be stated as follows:

Result 1: Subjects send more in the trust game when they are paired with a high status partner.
Result 2: We do not find evidence that followers are more likely to follow a high status leader compared to a low status leader.
Result 3: Subjects that are more trusting of a high status partner will contribute more towards a high status led group in comparison to a low status led group in the public goods experiment.

2) Does in-group or out-group bias impact follower behaviour towards a leader?

A number of recent papers (see, e.g., Abbink and Harris [99]; Burns [77];Goette et al. [101];Gupta et al. [102]; Stephan and Stephan [104]; demonstrate that group identity can play an important role in decision-making. These studies suggest that this arises when individuals who share the same social identity as the group treat members more favourably to enhance the group's positive image. In our context for example, high status subjects may support their fellow high status members more than out-group low status members because of their affiliated high status identity. To test whether in-group or out-group bias influences behaviour we incentivise a question asking subjects to identify their perceived status. Since subjects were not informed of their assigned status, we use this as a measure of their actual status. Again, we report results for Task 1 and Task 2 separately.

4.3.4   Task 1 Results

To assess differences between treatments in Task 1, we report the results of a Wilcoxon rank sum test in Table 4.4 Row A1. The test reveals that when subjects believe they are high status, they on average send more to a high status partner than to a low status partner. On the other hand, low status subjects on average do not send more to high status partners compared to low status partners ($p = 0.48$). This suggests that high status subjects are more trusting of similar high status partners compared to low status partners.

4.3.5 Task 2 Results

In the first period, the Wilcoxon test in Table 4.5 reports that subjects who believe they are high status contribute on average more to high status led groups, whereas those who believe they are low status contribute a similar amount to both high and low status led groups ($p = 1$). These results are consistent with Burns [77] and Mullen et al. [103] who both identify that in-group bias is often stronger when subjects are of a higher status.

Summing up, these insights highlight that high status subjects exert a strong group bias, in particular high status subjects contribute more towards high status led groups in the public goods game consistent with in-group bias.

4.3.6 Trust in Task 1 and Follower Decisions

We proceed to examine whether trust in high status subjects in Task 1 may explain in-group behaviour. Results are reported in Model A of Table 4.6. We estimate a Tobit regression on follower contributions in the first period and include three new variables. The first variable labelled HS subject *X* HS Group is an indicator variable taking a value of 1 if a subject considers themselves high status and their leader is high status, while LS subject *X* LS Group refers to a subject that considers themselves low status and their group leader is low status. The variable HS subject *X* LS Group can be interpreted in a similar way. All interaction terms carry positive signs but only the first (HS subject *X* HS Group) is significantly different from zero. Thus, high status subjects are more likely to contribute towards a high status led group, consistent with the in-group bias observed from the Wilcoxon rank sum test in Table 4.5.

Part of this result is due to the fact that high-status subjects show in-group bias; hence, they tend to contribute more to fellow high status subjects. However, another possibility is that trust in high status subjects may partly influence subjects' decisions. To examine this we estimate Model A of Table 4.6, but include an interaction term between Task 1 sending decisions and whether a subject is in a high or low status group (in Task 2). As mentioned previously, these variables can be interpreted as measures of trust. For example, if Amount sent to HS partner *X* HS Group is positive, this would suggest that a subject that is more trusting of a high status partner is more likely to contribute to the group account led by a high status leader.

Results are shown in Model B of Table 4.6. Similar to Model A, results reveal that a subject who considers themselves as high status will send more on average to a high status leader in the public goods experiment. However, subjects that are more trusting (send more) to a high status partner in the trust experiment will also contribute more to the group account led by a high status leader. A further insight is that after including the senders' decisions from Task 1 the in-group bias variable *high status subject and high status leader* declines by 14 points between Models A

and B. This indicates that some of the effect attributed to in-group bias may be derived from the greater level of trust in high status leaders. From these results it is possible to establish that at the aggregate level both in-group bias and trust are important factors for in-group cooperation.

This leads to our fourth result:

Result 4: High status subjects trust high status partners more than low status partners and contribute more to high status led groups than low status led groups. This relationship does not exist for low status subjects.

3) Do followers continue to follow untrustworthy and dishonest leaders, and does this differ according to the status of the leader.

To study the impact of trustworthiness on follower behaviour, we report in Figure 4 the average individual contributions when a leader reports $\beta=\beta_2 = 0.6$ as the proposed level of β. We ignore the cases in which leaders report $\beta=\beta_1 = 0.1$ as contributions are close to zero. The highlighted columns in Figure 3 represent cases when the actual state of $\beta=\beta_2 = 0.6$. We consider a leader that lies more often as being more deceptive and thus less trustworthy. Figure 3 shows that high status led groups contribute on average more in all periods when the true value of $\beta=\beta_2 = 0.6$. This difference is only statistically significant in the 5th period. This provides some evidence that subjects are more likely to believe and follow the signal of a high status led group over time. As expected, we find a decrease in contributions over time. However, it appears that high status led groups report a quicker decline in group contributions, particularly after the 7th period.

Since we are examining behaviour over a number of periods we estimate a Tobit model where the dependent variable is the contribution of followers in periods in which the true state of $\beta=\beta_2 = 0.6$. Estimating contributions only when the actual $\beta=\beta_2 = 0.6$ ensures that the signal is constant across treatments (in close to all cases all leaders are truthful and report 0.6). Therefore, differences across treatments can be attributed to previous behaviour and/or the leaders' status, rather than their proposed β. We then create a numeric variable labelled *the cumulative number of lies*. This is the count of the number of times a leader lied by the period of interest. For example, if by the 5th period a leader lied twice, this variable would be equal to two in the 5th period. We include the standard controls similar to Eckel and Wilson [92] and the cumulative number of lies on the right hand side. Results are reported in Model A of Table 4.7. [18][19] We find that lying directly impacts the contributions of followers. When a leader lies at least once, followers contribute on average 45 experimental dollars less than when a leader does not lie in previous periods. We also find that followers in a high status group (High status group) are not more likely to contribute to the group account compared to low status group followers.

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[18]This variable is the sum of the number of times a leader has lied by a given period.
[19]Excluding the first period.

Our fifth result can be summarised as follows:

Result 5: Over successive periods, controlling for the number of lies and contributions over time, a high status leader who does not lie has larger levels of follower cooperation than a low status leader. However, a high status leader who lies more often will have lower levels of group contributions than a low status leader who lies.

4.4 Conclusion and discussion

The primary aim of this paper is to study why high status leaders are followed more often by their peers and under which conditions. One of our main insights is that followers cooperate with high status leaders for at least two reasons. The first is trust. On average, subjects trust high status partners more than low status partners in the trust experiment. Furthermore, on average, subjects who are more trusting of high status partners in the trust experiment contribute more to a group with a high status leader. This suggests that trust and in particular trust as examined by the trust task can partly explain why people follow high status leaders. Despite this followers are *not* more likely to follow a high status leader suggesting they do not believe a high status leader is more honest than a low status leader. The second insight relates to in-group bias. Subjects who consider themselves high status are on average more likely to trust high status partners compared to low status partners in the trust experiment and to contribute to a high status led group in the public goods experiment. It is difficult to know exactly why this group bias occurs. Stephan and Stephan [104] suggest that group bias can occur due to factors such as negative stereotypes of the out-group or a symbolic threat concerning norms and values of the in-group. Our results suggest that greater trust in high status subjects is a possible reason for high status subjects' greater propensity to follow other people of high status. Next we examine the trustworthiness of a leader over time. Subjects contribute less to the group account of a high status leader who lies over successive periods relative to a low status leader. However, when a leader is truthful over time, followers are more likely to contribute to a high status led group. These results provide some insight into the effectiveness of leaders and the cost involved in deceptive untrustworthy behaviour. This result is novel and can be related to fields that differentiate between followers and leaders.

An example will illustrate this finding: Consider an election pitting a high status politician against a low status politician. According to these results, high status politicians can expect votes from their fellow high status peers; the high status politician can also expect to be more trusted, at least initially, than the low status politician. However, if both politicians are found to have lied about their promises, the high status politician is likely to be punished more by the voters than the low status politician.

TABLE 4.1: **Summary Statistics**

	Variable (1)	High Status Partner (2)	Low Status Partner (3)	Z-stat (4)
A	Ave. amount sent in Task 1	4.40	3.86	-1.675*

		High Status Group	Low Status Group	Z-stat
B	Avg.Group Contribution	160.71	135.71	-1.602*
C	Avg. Follower Contribution	48.21	41.76	-0.755
D	Avg. Follower Contribution when leader lies	47.91	37.5	-0.588

Notes:
Source: *Differences in means are statistically significant at 10% level. The number of observations in row A and B is (N =84), and in row C and D (56).

TABLE 4.2: **Tobit regression of follower contribution, with amount sent in Task 1**

	Model (A) Contribution
Task1- Amount sent to LS partner	2.305 (1.47)
Task1- Amount sent to HS partner	3.431** (1.409)
High status group	6.240 (7.891)
Perceived (High) Status	1.055 (9.174)
Session Fixed Effects	Y
Observations	56

Notes:
Standard errors in brackets **Significance at the 5% level. Estimation restricted to followers in the first period only.

TABLE 4.3: **Tobit regression including the amount sent in Task 1**

	Model
	(A)
	Contribution
Amount sent to LS partner*X* HS Group	0.878
	(1.867)
Amount sent to LS partner*X*LS Group	2.151
	(2.333)
Amount sent to HS partner*X*HS Group	4.825**
	(1.920)
Amount sent to HS partner*X*LS Group	0.474
	(2.138)
High status group	-2.383
	(13.108)
Perceived (High) status	0.012
	(8.983)
Session Fixed Effects	Y
Observations	56

Notes:
Standard errors in brackets **Significance at the 5% level. Estimation restricted to followers in the first period only.

TABLE 4.4: **Wilcoxon rank sum test on the average amount sent in Task 1 based on perceived status**

	Variable (1)	High Status Partner (2)	Low Status Partner (3)	Z-stat (4)
A	Ave. amount sent if subject believes they are high status	4.792	3.07	-1.347*
B	Ave. amount sent if subject believes they are low status	4.25	4.22	-0.029

Notes:
Source: *Differences in means are statistically significant at 10% level. The number of observations in row A and B is (N =84).

TABLE 4.5: **Wilcoxon rank sum test on the average contribution to a leader if a subjects perceived status is either high or low**

	Variable (1)	High status leader (2)	Low status leader (3)	Z-stat (4)
A	Ave. contribution if subject believes they are high status	62.5	37.5	-1.678*
B	Ave. contribution if subject believes they are low status	43.05	43.75	0.00

Notes:
*Differences in means are statistically significant at 10% level. The number of observations in row A and B is (N =84).

TABLE 4.6: **Tobit regression of follower contribution including perceived status and amount sent in Task 1**

	(1) Contribution	(2) Contribution
HS subject *X* HS Group	58.148*** (12.174)	44.934*** (11.231)
LS subject*X*LS Group	23.881 (20.31)	15.790 (23.547)
HS subject*X*LS Group	43.25 (26.92)	1.003 (26.65)
Amount sent to LS partner*X*HS Group		0.282 (2.010)
Amount sent to LS partner*X*LS Group		2.730 (2.584)
Amount sent to HS partner*X*HS Group		4.712*** (1.537)
Amount sent to HS partner*X*LS Group		0.890 (2.128)
High status group	17.891 (25.115)	-17.743 (23.411)
Perceived (High) Status	-33.33* (18.164)	1.300 (15.098)
Constant	73.776*** (25.051)	39.434 (22.798)
Session Fixed Effects	Y	Y
Sample Size	56	56

Notes:
Standard errors are clustered at the subject level. Standard errors in brackets. ∗ Significance at the 10% level ∗ ∗ ∗ Significance at the 1% level. LS subject*X*HS Group is the excluded variable. Both models A and B are from period 1. Estimation restricted to followers in the first period only.

TABLE 4.7: **Tobit regression of follower contribution over time including the number of times a leader lied**

	(1)	(2)
	Contribution	Contribution
Lag of average group contribution	-0.425*	-0.5348**
	(0.2538)	(0.2479)
High_status_group × cumulative_no._lies		-18.710***
		(6.054)
High status group	6.3473	25.737***
	(7.903)	(9.500))
Perceived (High) status	12.369	12.370
	(8.355)	(8.355)
Own contribution lagged	0.6704***	0.6724***
	(0.1858)	(0.1823)
Lagged contribution below group mean	0.7802**	0.7856*
	(0.3801)	(0.3634)
Cumulative number of lies.		
1	-45.702***	-34.720***
	(9.0153)	(9.5066)
2	-63.190***	-42.282***
	(12.199)	(13.406)
3	-37.318***	-17.814
	(11.769)	(12.877)
4	-47.859***	-8.6799
	(22.204)	(26.487)
5	-9.677	6.531
	(17.900)	(18.227)
6	8.559	111.866**
	(55.187)	(56.282)
Session Fixed Effects	Y	Y
Period	Y	Y
Sample Size	224	224

Notes:
Both models estimate contributions for those periods where $[\beta = \beta_2 \ (0.6)]$ is the true value, that is, periods 5, 6, 7 and 10. Standard errors are clustered at the subject level. Standard errors in brackets * Significance at the 1% level **Significance at the 5% level. Similar to Eckel et al. (2007), we include lagged contributions below the mean. We include these variables as they are found to influence follower decision making and are thus used as a control.

FIGURE 4.1: **Contribution over time**

Average Follower Contribution when Leader Reports 0.6
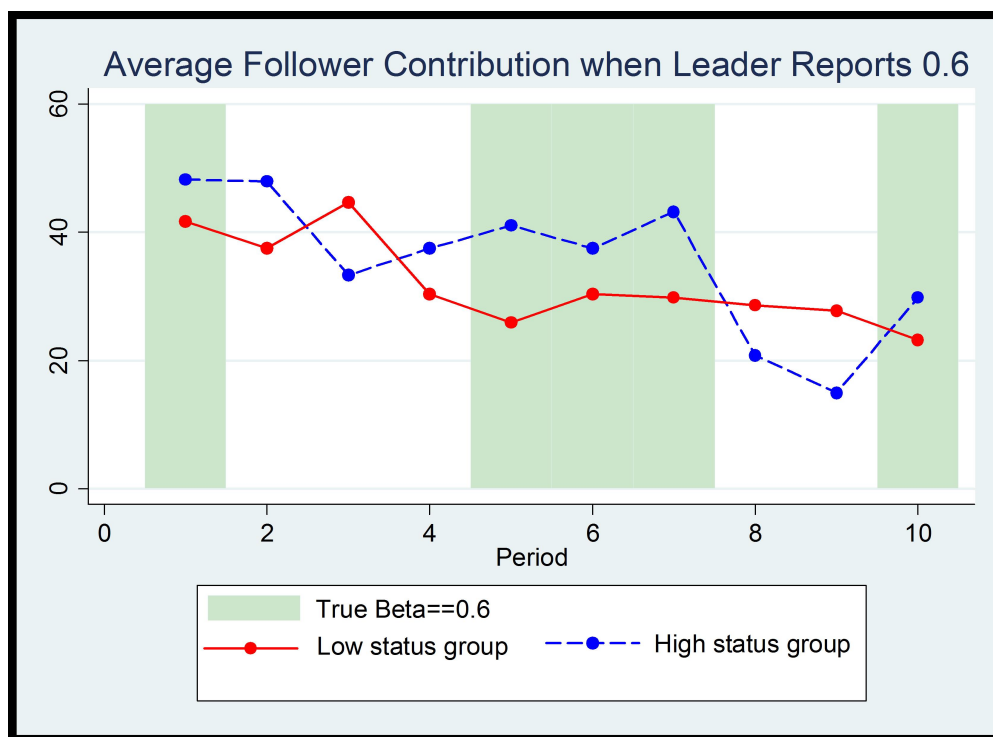
Chapter 5

Concluding Remarks and Directions for Future Research

5.1 Conclusion

In this chapter I will summarise the main findings from each paper, suggesting limitations and direction of future research.

5.1.1 Paper 1: Matrilineal Villages

In the first paper we investigate whether the surrounding ecology of a society is an important determinant of the prevalence of female land inheritance also known as matrilineal inheritance. We found that reef density predicts the prevalence of matrilineal inheritance in a sample of 186 societies across the world and in a sample of 59 small-scale horticultural fishing communities in the Solomon Islands. We show that this result holds even controlling for common descent by relying on variation within ethno-linguistic groups in our Melanesian micro-sample, where matriliny is ancestral. We thereby establish that reef density and, indirectly, reliance on fishing, is a robust predictor of the persistence of matrilineal inheritance. We also document some of the demographic consequences of matrilineal inheritance, including smaller household and village population size.

A limitation of this paper is that we are not able to identify whether matrilineal villages and in particular females in these villages have better development outcomes than in patrilineal villages. Higher levels of female development such as household decision making, level of education, health and income would suggest that female control over land assets may improve female empowerment and local societal outcomes in general. Alternatively, development outcomes and

in particular female empowerment measures maybe be similar between matrilineal and partilineal villages. Males maybe inclined to leave land assets to females if the relative return from land ownership and cropping is less than fishing. This suggests that females and as a consequence matrilineal villages may not be better off in this context. Future research should investigate the impact of matrilineal inheritance on female outcomes in a similar context.

5.1.2   Paper 2: Behavioural Response to Female Leaders

In the second paper we use data from artefactual field experiments and surveys conducted in 61 villages in India to examine whether men and women respond differently to women as leaders. We find a large and statistically significant behavioral response to women as leaders. Men contribute significantly less to the public good when women, rather than men, are group leaders. We term this behaviour *male backlash*. This behaviour can largely be explained by social norms and social identity. We use a novel method of belief elicitation to infer social norms relating to the role of men and women as leaders. In general, we find that participants believe that it is more socially appropriate for men to cooperate less with female leaders than with male leaders. Additionally compared to women, men believe that it is more socially inappropriate for women to become village heads. The results on male bias against female group leaders, are considerably stronger in villages that have been exposed to female heads (*mukhiyas*, also known as *pradhan* or *sarpanch*). Our analysis suggests that male backlash is driven by ingrained social norms associated with male identity in these societies, and not because of either the ineffectiveness of women leaders, or the perception that they are ineffective leaders or tokens for powerful elites. The assignment of women as leaders threatens the identity of men who believe these positions of power are directly associated with their masculinity and identity, thereby creating resentment.

An interesting twist to our findings is that male bias disappears with greater exposure to female leaders. This suggests that despite entrenched social norms against women leaders, persistent engagement with female leaders, perhaps via affirmative action policies, can potentially change social norms relating to identity and gender roles within the society

The results of this paper highlights the need for future research examining the effects of social norms on behaviour and in particular behaviour towards females. We show that the effects of norms on policies such as gender quotas are far from marginal. An important question that arises from this research is: How are social norms transferred and what factors influence social norms. To effectively change social norms, research must be conducted that identifies the factors that influence social norms such as media, parents and social network and subsequently how these norms are transferred to children. Another possible avenue for future research is to use experiments such as those implemented here to evaluate the effectiveness of programmes that

attempt to influence social norms. Changing social norms is often a slow and complex process but policies such as gender quotas can over time lead to a changes in behaviour.

5.1.3 Paper 3: Does Status Effect Trust in Leaders?

The third paper attempts to understand why high status leaders are followed more often by their peers and under what conditions.We find that at the mean, subjects send more to high status partners in the trust experiment. We do not find evidence, that followers are more likely to follow a high status leader compared to a low status. We then find *high status* subjects trust and contribute more towards *high status* leaders. This suggests that subjects are inclined to follow and trust a leader with the same identity as them. Lastly, over time, high status leaders are followed more closely by their peers, except when a high status leader is untrustworthy and lies. The more often a high status leader lies, the lower the contributions by the followers compared to a low status leader who lies a similar amount.

These findings suggest several research paths. While our discussion has predominately focused on the decision of followers, it is also important to understand whether high status subjects are 'better' leaders; it is of particular interest to determine if they discriminate against those of different status or practise favouritism towards those of their own group. For example, the notion of 'elite capture' in development literature occurs when leaders within communities use their position to redistribute resources for their own benefit. Further analysis in this area using a similar experimental design with *actual* leaders should examine whether some leaders are better than others. Finally, this design could be used for future permutations in which researchers are interested in deception, deception in groups.

Appendix A

Survey Instrument for Chapter 1

Community Leaders' Survey

TO BE COMPLETED BY TEAM	
Data Collection Team Number:	Name of Village:
Province:	Planning Unit Number:
Ward Name:	Ward Number:
Sub-project Type:	Round/cycle number:
% Implementation completed:	Date started:
Latitude: Longitude: Altitude:	Topography: ☐Coastal/Lagoon ☐Inland Plains ☐Hills ☐Inland Valley
Village number:	

Participant Name	Role (Chief / SIC member / women rep.)

Part A. General information

A1	What is the main language spoken in this village? Wat na mein language ufala spikin lo ples blo yufala?	_____
A2	How many households live in this village? (need to probe and establish village in respondents mind, larger village not sub village) Hao meni haus nao lo vilij blo yu?	Number: _____
A3	How many people live in this village? (if not known, estimate) Hao meni pipol nao stap lo vilij blo yu?	Number: _____
A4	How many different tribal groups live in this village? Hao meni traebol grups na stap lo ples blo yu?	Number: _____
A5	How is land inherited in this village? Hao na yufala garem onasip lo lan lo ples blo u?	1. ☐ Father 2. ☐ Mother 3. ☐ Both
A6	When people in this village marry, does the couple live in the bride's village or in the groom's village? Taem pipol lo ples blo u olketa marit olketa stap togeta lo ples blo mere o olketa stap lo ples blo man?	1. ☐ Bride 2. ☐ Groom 3. ☐ It depends
A7a	When people marry, does the family of the groom have to pay for the wife, or does the family of the wife pay the family of the groom? Taem olketa pipol lo ples blo yu maret, waswe famili blo man bae peim gele o famili blo gele peim man?	1. ☐ Bride's family (dowry) 2. ☐ Groom's family (bride price) 3. ☐ It depends 4. ☐ Both

A7b	When people in this village marry, who has to pay for most of the wedding celebrations (i.e. feast, ceremony)? Taem pipol maret, hu na peim staka samting fo taem wedding?	1. ☐ Bride's family 2. ☐ Groom's family 3. ☐ It depends 4. ☐ Both
A8	What percentage of land in this village is customary? Wat percentage lo lan na hem kastomari?	1. ☐ 76 – 100% 2. ☐ 51 – 75% 3. ☐ 26 – 50% 4. ☐ 0 – 25%
A9	How long have people been settled in this village? (How long has this village existed) Hao long na pipol bin stap lo disfala ples?	1. ☐ 0 to 10 years 2. ☐ 11-40 years 3. ☐ 41-70 years 4. ☐ 71-100 years 5. ☐ > 100 years/forever 98. ☐ Don't Know
A10	Who governs this village? ***(Mark all that apply)*** Hu na lukaftam disfala ples?	1. ☐ Elected leader 2. ☐ Traditional/Custom/Paramount (non elected) Chief 3. ☐ Church leader 4. ☐ Village committee 5. ☐ Other: _____
A11	What are the main denominations in this village? ***(Mark all that apply and give percentage of the people belonging to each)*** Wat na olketa mein lotu lo ples blo u?	1. ☐ Anglican Church _____ % 2. ☐ Catholic _____ % 3. ☐ Charismatic Church _____ % 4. ☐ Methodist _____ % 5. ☐ Seventh Day Adventist _____ % 6. ☐ SSEC _____ % 7. ☐ United Church _____ % 8. ☐ Other: _____
A12	How many people from this village live as migrants in Honiara? (live permanently in Honiara; If not known, provide estimate; mark 0 for "none") Hao meni pipol lo ples blo u nao stap olsem migrants lo Honiara	Number: _____

A13	Has this village been impacted by the following natural hazards within the last year? ***(Mark all that apply)*** In saed lo las yia hao meni taem ma disasta kasem yufala?	1. ☐ Drought 2. ☐ Earthquake 3. ☐ Flood 4. ☐ Typhoon 5. ☐ Landslide/debris flow 6. ☐ Tsunami 7. ☐ Heavier than usual rain 8. ☐ Volcano eruption

Part B. Economic Activities

B1	What are the main sources of money/ cash for people in this village? (Please write in your selection, order of importance is determined by what is the main and consistent source of income) Wat na samfala mein sos blo seleni fo pipol lo ples blo u? *Most important source >* *Second most important source >* *Third most important source >*	a. Sell produce in markets (crops, livestock, fish, marine products) b. From family/Wantok/Friends c. Paid Work d. Businesses e. Cocoa/Copra other cash crops f. Logging royalties/sawn timber g. Shell money/crafts h. Churches i. Mining prospecting (Use numbering as code) 1. _____ 2. _____ 3. _____
B2	What percent of people in this village depend on the subsistence economy? (or semi-subsistence) Hao meni percent lo ples blo u nao dipend lo subsistence farming? **(provide examples)**	1. ☐ More than 75% 2. ☐ 51 – 75% 3. ☐ 26 – 50% 4. ☐ 0 – 25%

B3	How many businesses are there in this village? *(Write type and number)* Hao meni taep bisnis nao ples blo u?	Type: _____ Number: ___ Type: _____ Number: ___ Type: _____ Number: ___ Type: _____ Number: ___ Type: _____ Number: ___ Type: _____ Number: ___ Type: _____ Number: ___
B4	How many of the businesses listed above are owned by women? Hao meni lo olketa bisnis ya nao olketa woman onam?	Number: _____
B5	How many of the businesses listed above are **jointly** owned by women? (husband and wife together, family) Hao meni lo olketa bisnis ya nao olketa woman onam?	Number: _____

Part C. PARTICIPATION / ELECTIONS

C1	In the last 5 years, has this village benefited from:
	
	Insaed, las faev yias disfala ples nem benefit long
	
	    a) Rural Water and Sanitation (RWSS) Project?
	
	    b) Other Provincial Government Project?
	
	    c) Rural Advancement Micro project (RAMP), or MPP1, MPP2?
	
	    d) Constituency Fund Project?
	
	    e) Project by NGO?
	
	    f) Other Donor?
	
	    g) National Government?
		
		0. ☐ No
		1. ☐ Yes
		
		0. ☐ No
		1. ☐ Yes
		
		0. ☐ No
		1. ☐ Yes
		
		0. ☐ No
		1. ☐ Yes
		
		0. ☐ No
		1. ☐ Yes
		
		0. ☐ No
		1. ☐ Yes
		
		0. ☐ No
		1. ☐ Yes

C2	Is anybody in this village involved with logging activities? Lo ples blo yu eni logging o timber milling activities take ples?	0. ☐ No 1. ☐ Yes - **skip to C4**
C3	Have there been enquiries in this village about potential logging activities? Ufala toktok abaotem logging o milling activities lo ples blo u?	0. ☐ No 1. ☐ Yes
C4	Is anybody in this village involved with mining prospecting? Lo ples blo u garem mining prosepecting?	0. ☐ No 1. ☐ Yes - **skip to C6**

C5	Have there been enquiries in this village about potential mining prospecting? U garem toktok abaotem potential mining prospecting le ples blo u?	0. ☐ No 1. ☐ Yes
C6	Who is the MP who represents this village? Who na memba blo ufala?	_____
C7	How many times did this MP visit this village over the last year? **(Mark 0 for "never")** Hao meni taems nao memba blo u bin visitim ples blo u lo las yia?	_____
C8	Does this MP have family members in this village? (nuclear or extended family) Memba blo u garem famili o wantok members lo ples blo u?	0. ☐ No 1. ☐ Yes
C9	Did the majority of people in this village vote for the current MP? Waswe, staka pipol lo ples blo u nao votim memba blo u?	0. ☐ No 1. ☐ Yes 98. ☐ Don't know
C10	Did this village benefit from distribution of food and goods by this MP? Waswe, village blo u benefit lo goods wea memba givin kam?	0. ☐ No 1. ☐ Yes
C11	How many times did the MPA for this village visit this village over the last year? **(Mark 0 for "never")** Hao meni taems na MPA lo ples blo you visitim u las yiar?	_____
C12	Did this village benefit from a development project led by this MPA? Lo ples blo yu benifit lo development project wea MOA givim kam?	0. ☐ No 1. ☐ Yes
C13	Did this village benefit from distribution of food and goods by this MPA? Lo ples blo yu benifit lo goods wea MPA givin kam?	0. ☐ No 1. ☐ Yes

C14	How often are religious services held in this village, on average? Hao meni taems lo 1 wik/1 manis nao riligis sevices save happen lo vilij blo u?	_____ per ☐ Week ☐ Month
C15	How often does the Church distribute food packages or other goods, approximately? Hao meni taems ma Church givem aut kaikai or goods?	1. ☐ Never, no distribution 2. ☐ Once a year 3. ☐ Several times a year but less than once a month 4. ☐ Once a month 5. ☐ Once a week or more

Part D Access to Infrastructure and services

D1	Has your household's access to primary school and kindy improved during the past few years? (e.g. New or renovated kindy of school building, new bridge, land or sea transport better etc.) *Waswe, haushol blong iu access iu primary skul and kinoli wea hem impruved lo las dast yias?*	0. ☐ No - **Skip to D4** 1. ☐ Yes 98. ☐ Don't Know - **Skip to D4**

D2	If Yes how has it improved?	
D3	Who funded the improvement? (funded not built) (**Mark all that apply)** *Hu na famdim disfala projea ia?*	1. ☐ RDP 2. ☐ Community 3. ☐ Other_____ _____ 98. ☐ Don't Know
D4	Has your household's access to Health Care improved during the past few years? (New or renovated buildings, staff houses, bridge, transport etc improved service - nurses medicines or equipment etc) *Waswe haushol biomg iu access tu lo helt care. Wea hem impruved lo las past yias?*	0. ☐ No - **Skip to D7** 1. ☐ Yes, 98. ☐ Don't Know - **Skip to D7**
D5	If Yes, how has it improved?	
D6	Who funded the improvement? (funded not built) *Hu na famdim disfala projea ia?*	1. ☐ RDP 2. ☐ Community 3. ☐ Other_____ _____ 98. ☐ Don't Know
D7	Have the roads, bridges and wharfs around the village improved during the past few years? *Waswe rods bridges and waf raunim vilis ia hem impruv lo las past yias?*	0. ☐ No - **Skip to D10** 1. ☐ Yes 98. ☐ Don't Know - **Skip to D10**
D8	If Yes how has it improved?	
D9	Who funded the improvement? (funded not built) *Hu na famdim disfala projea ia?*	1. ☐ RDP 2. ☐ Community 3. ☐ Other_____ _____ 98. ☐ Don't Know
D10	Has your households access to clean drinking water improved during the past few years?	0. ☐ No - **Skip to D13** 1. ☐ Yes

	Waswe haushol blo u hem access lo kiln drinking wata lo las past yias?	98. ☐ Don't Know - **Skip to D13**
D11	If Yes how has it improved?	
D12	Who funded the improvement? (funded not built) *Hu na famdim disfala projea ia?*	1. ☐ RDP 2. ☐ Community 3. ☐ Other_____ 98. ☐ Don't Know
D13	Has your household's access to sanitation facilities improved during the past few years?	0. ☐ No - **Skip to D16** 1. ☐ Yes 98. ☐ Don't Know - **Skip to D16**
D14	If Yes how has it improved?	
D15	Who funded the improvement? (funded not built) *Hu na famdim disfala projea ia?*	1. ☐ RDP 2. ☐ Community 3. ☐ Other_____ 98. ☐ Don't Know
D16	Has your households access to electricity /power / solar improved during the past few years? *Waswe haushol bio u access tu lo electrik wea hem impruv lo las past yias?*	0. ☐ No - **Skip to D19** 1. ☐ Yes 98. ☐ Don't Know - **Skip to D19**

D17	Who funded the improvement? (funded not built) *Hu na famdim disfala projea ia?*	1. ☐ RDP 2. ☐ Community 3. ☐ Other_____ _____ 98. ☐ Don't Know
D18	If Yes how has it improved?	
D19	Has there been improvements to the community meeting place during the past few years? (New structure, renovations etc) *Dia lo las past yias komiumiti miting ples blo is fala hem impruv tu?*	0. ☐ No - **Skip to E1** 1. ☐ Yes 98. ☐ Don't Know - **Skip to E1**
D20	If Yes how has it improved?	
D21	Who funded the improvement? (funded not built) *Hu na famdim disfala projea ia?*	1. ☐ RDP 2. ☐ Community 3. ☐ Other_____ _____ 98. ☐ Don't Know

Part E. Organization for RDP Subprojects

Now I want to talk to you about the RDP subproject/s this community
has been involved with the construction of.

E1	How often did you hold meetings to inform the community about the progress of the project? Hao Meni taem nao iu holem miting fo letem pipol save aboutem project waka?	1. ☐ Frequently 2. ☐ Sometimes 3. ☐ Rarely 4. ☐ Not at all
E2	What did you discuss at those meetings? *(mark all that apply)* Wat nao iu discasim lo taem lo meeting?	1. ☐ Work schedule 2. ☐ Community contributions 3. ☐ Contractors 4. ☐ The use of RDP Funds 5. ☐ Technical design 6. ☐ Raising additional funds 7. ☐ Other _____
E3	Who attended the meetings? *(mark all that apply)* Oketa hu nao kam lo miting	1. ☐ Community leaders only 2. ☐ SIC only 3. ☐ Men 4. ☐ Women 5. ☐ Youths 6. ☐ All (everybody)
E4	Who organized and coordinated the community contribution, labour, raw materials money etc within the community? Hu nao hem waka fo organaesim an coodinatim waka fo komuniti lo saed lo leiba, raw materials ad saed lo seleni?	1. ☐ Chief/community leaders 2. ☐ SIC 3. ☐ SIC through the Chiefs/leaders 4. ☐ Contract a group 5. ☐ CH 6. ☐ Other _____
E5	Was information about the project posted/displayed in a public space for community members to see? Waswe, lu talem toktok abaotem project lo pablik ples fo komuniti memba fo lukim?	0. ☐ No 1. ☐ Yes
E6	Was having a SIC an effective way of coordinating the subproject implementation? Waswe fo garem SIC hem effective we fo coodinatim subproject implementation?	0. ☐ No 1. ☐ Yes

E7	Can you recommend a better option than having a SIC? If so what? Waswe u save talem eni nara gud tingting	_____
E8	Other than <sub-project funded by RDP>, have people in this village participated in the selection of projects in the past four years?	0. ☐ No - **Skip to E11** 1. ☐ Yes 98. ☐ Don't know
E9	What was the name of the program that funded this project?	
E10	If any, describe the benefits of the selection process for this project in comparison to RDP?	
		98. ☐ Don't know
E11	**Only ask this at villages with terminated subprojects otherwise skip to E12** Why was the subproject was terminated? (open ended – ask what they think the reasons for the termination were)	
E12	Did community members support the SIC's efforts by providing raw materials and their labour as and when needed? Waswe komuniti hem sapotim SIC waka an providim materials an leiba taem nidim?	0. ☐ No 1. ☐ Yes
E13	Explain the reason for your last answer. (if yes, explain why, if no explain why)	

E14	Do you think RDP processes enables women to influence decision-making more than other community projects? Waswe, iu tingim RDP process mekem olketa mere fo garem decision makin go moa den nara komuniti projects?	0. ☐ No 1. ☐ Yes 98. ☐ Don't know –**Skip to E16**
E15	If YES explain how, If NO, then why not? Sapos ya explen hao, sapos namoa explenim wae?	
E16	Did/do you have any women as members of your SIC? Waswe, iu garem mere olsem hem memba blo SIC blo iu?	0. ☐ No 1. ☐ Yes 98. ☐ Don't know
E17	If so, was/is this their first major community responsibility? Sapos ya, waswe hem fest major komuniti waka?	0. ☐ No 1. ☐ Yes 98. ☐ Don't know
E18	If there was/is a women on the SIC, has her/their activity in the village changed since joining the SIC? Sapos mere go hem insaed lo SIC waswe waka lo komuniti hem change sins hem joinim SIC?	1. ☐ More active 2. ☐ Same as before 3. ☐ Not as active 98. ☐ Don't know
E19	If there was/is a women on the SIC, has her/their activity **outside** of the village changed since joining the SIC? Sapos mere go insaed lo SIC, waswe waka blo hem aotsaed lo komunity change sins hem joinim SIC?	1. ☐ More active 2. ☐ Same as before 3. ☐ Not as active 98. ☐ Don't know
E20	Do you think women who participated in the SIC increased their status in the community? Waswe, iu ting mereusud tekpat lo waka blo SIC, insaed komuniti, bae pipol tingting hae lo hem tu?	0. ☐ No 1. ☐ Yes 98. ☐ Don't know

E21	Was the CH important in the process and a help with the subproject implementation? Waswe, komuniti helper hem impotant tu lo iosaed blo waka lo komuniti wetem subproject implimentation?	0. ☐ No - **skip to E22** 1. ☐ Yes - **skip to E23** 98. ☐ Don't know
E22	In what ways did they assist? Wat kaen wei nao ya?	
E23	Explain why they were not useful Why nao hem no useful?	
E24	Were there any disagreements or disputes before or during the construction? Waswe, eni disagreement an disputes before o during construction waka?	0. ☐ No 1. ☐ Yes
E25	If yes what were those disagreements over? *(mark all that apply)* Sapos ya, wat nao olketa disagreement abaotim?	1. ☐ The subproject design 2. ☐ Selection of contractor 3. ☐ Land 4. ☐ Community contribution 5. ☐ Raw materials (sand, timber etc) 6. ☐ Labour 7. ☐ Use of funds 8. ☐ SIC members 9. ☐ Other _____
E26	How were these disagreements resolved? Hao nao olketa disagreement hem stret?	1. ☐ Chiefs or elders 2. ☐ SIC 3. ☐ CH 4. ☐ RDP 5. ☐ Church 6. ☐ Family 7. ☐ Other _____ _____

E27	What were the two main challenges you faced during the subproject implementation. (***mark the 2 main ones)*** Waswe, wat nao mein samting iu fesim taem subproject hem waka?	1. ☐ Community participation 2. ☐ Contractor not performing 3. ☐ Purchasing materials 4. ☐ Managing finances/book keeping 5. ☐ Getting raw materials from community (contribution) 6. ☐ SIC not working/ inactive 7. ☐ RDP procedures 8. ☐ Community politics 9. ☐ Other _____
E28	Where did you purchase the majority of the materials needed for the subproject? ***(Mark one)*** Waswe, wea nao iu beim staka samting wea iu nidim fo subproject?	1. ☐ Honiara 2. ☐ Provincial capital 3. ☐ Other _____
E29	What is the main form of transport from your village to the provincial centre? ***(Mark one)*** Waswe, wat nao mein fom of transport iu usim from vilij blo iu kasem provincial centre?	1. ☐ Ship 2. ☐ OBM canoe 3. ☐ Paddle canoe 4. ☐ Car/truck 5. ☐ Tractor 6. ☐ Walk 7. ☐ Others _____
E30	How long does it take you to travel from your village to the provincial centre? Hao long nao savve tekem iu from vilij blo iu go kasem provencial centre?	Days _____ Hours _____
E31	How long does it take you to travel from your village to Honiara? Hao long nao savve tekem iu from vilij blo u go kasem Honiara?	Days _____ Hours _____
E32	How often/regularly does the ship (boat) travel to this village (or close to it)? Waswe, hao meni taems nao ship(boat) savve tekem yu fo go kasem difala vilij (o clos lo hem)?	_____ times per: 1. ☐Week 2. ☐Month 3. ☐ 6 months 99. ☐ Not applicable

E33	How long did it take to purchase the materials needed? Hao long nao savve tekem fo peim oketa material wea nidim?	_____ months
E34	Were the purchased materials required for the project readily available locally? Waswe, olketa materials nidim fo disfala project, hem available locally?	0. ☐ No 1. ☐ Yes –**Skip to E36**
E35	If the materials were not readily available locally, how did you solve this problem? **(Open ended)** Sapos materials fo project hem no avaialble locally, hao nao bae iu savve solvem problem?	
E36	Would you prefer if someone else had purchased the materials for you? Iu laekem samwan els nao for peim kam materials fo iu?	0. ☐ No - **Skip to E38** 1. ☐ Yes
E37	if YES, then who? Sapos ya, hu nao iu laekem?	
E38	Did you hire a contractor for the subproject? Waswe, iu haerem contractor fo subproject?	0. ☐ No – **Skip to E40** 1. ☐ Yes
E39	If YES, how satisfied are you with the contractor's performance? (complete work on time, did a good job, manage material and fund well, etc) Sapos ya, waswe iu satisfae tu wetem waka blo hem?	1. ☐ Very satisfied 2. ☐ Satisfied 3. ☐ Not satisfied
E40	Was the land needed for the subproject readily available? (land for project not problematic) Was we lan fo subproject hem redi finis?	0. ☐ No 1. ☐ Yes – **skip to E42**
E41	If not, how was the land use resolved? Sapos namoa, hao nao bae heus resolve?	

E42	Please comment on the technical quality of construction in comparison to other similar infrastructure built in the community or nearby? Plis, mekem teknikol kuality lo constraction waka comperem wetem nara samting wabild lo komuniti or ples klosap.	1. ☐ Same 2. ☐ Better 3. ☐ Worse
E43	What were the reasons for your last answer? **(Open ended)**	
E44	Who in the community may use the subproject? _**(mark all that apply)**_ Waswe, hunao lo komuniti bae usim subproject?	1. ☐ Men 2. ☐ Women 3. ☐ Children 4. ☐ Everybody 5. ☐ Other: _____
E45	Do community members have to pay to use it? Waswe, komuniti memba bae peim fo usim ?	0. ☐ No 1. ☐ Yes
E46	Do people from outside the community have to pay to use it? Waswe, pipol aoutsaed icomuniti bae pei fo usim?	0. ☐ No 1. ☐ Yes
E47	If YES in D44 or D45 – what is the money used for? Sapos ya lo D44 o D45, wat nao seleni used fo?	1. ☐ Replacement parts/materials 2. ☐ Pay someone to maintain 3. ☐ Other community projects 4. ☐ Other _____
E48	Is there anything else that limits who may use It? Waswe, eni samting moa stopem fo hu nao bae usim?	0. ☐ No – **Skip to E50** 1. ☐ Yes

E49	Explain what limits who may use it. **(Open ended)**	
E50	Has any maintenance already been carried out on this subproject? Waswe, eni waka hem bin careaotfinis lo disfala subproject?	0. ☐ No – **Skip to E52** 1. ☐ Yes 98. ☐ Don't know – **Skip to E52** 99. ☐ Not needed yet- **Skip to E52**
E51	What maintenance has been carried out?	
E52	Is there a plan for future maintenance of this subproject? (O&M Plan) Waswe, eni futsa plan fo gud disfala subproject?	0. ☐ No – **Skip to E55** 1. ☐ Yes 98. ☐ Don't know – **Skip to E55**
E53	If so, from where will the funds for the maintenance come? *(Mark all that apply)* Sapos olsem, wea nao bae tekem seleni for mekem gud?	1. ☐ Every household with access (monthly fee) 2. ☐ Individuals when they use it 3. ☐ Fundraising 4. ☐ Others: _____
E54	Who will be responsible for carrying it out? Waswe, hu nao bae hem responsible fo carem aot?	1. ☐ SIC 2. ☐ Other committee 3. ☐ Chief/community leader 4. ☐ Individual 5. ☐ Other: _____
E55	Is there an operations and maintenance plan for other similar infrastructure (non RDP funded) in the village? Waswe, eni opareson an mentenes plan fo olketa semsem waka lo vilij?	0. ☐ No 1. ☐ Yes 98. ☐ Don't know

E56	Did any Government Ministries/department (education, health, etc.) agree to provide support to your project (e.g. supply staff)? Waswe eni Garmen depatment olsen educason, helt etc olketa agree fo help sapotim project blu iu e.g givim kam staff o waka man?	0. ☐ No – **Skip to E58** 1. ☐ Yes 98. ☐ Don't know – **Skip to E58**
E57	If so, to what extent has this support been provided? (by ministry/department) Sapos olsem, wat nao disfala suport bae provaedem?	1. ☐ Fully provided 2. ☐ Partially provided 3. ☐ Not provided at all 4. ☐ Too early (subproject not complete) 98. ☐ Don't know
E58	Was there any benefit in the SIC having a subproject bank account? Waswe, eni benefit lo SIC sapos gavem subproject bank AC?	0. ☐ No – **Skip to E60** 1. ☐ Yes 98. ☐ Don't know – **Skip to E60**
E59	What were the benefits? *(Mark all that apply)* Sapos ya, wanem?	1. ☐ Learnt some accounting 2. ☐ Learnt to use cheques 3. ☐ Easier to use money 4. ☐ Other: _____
E60	Is this the first bank account held by the community Was, diwan hem fes bank A/C komuniti holem?	0. ☐ No 1. ☐ Yes 98. ☐ Don't know
E61	Does the community plan to keep a bank account after the RDP program is completed? Waswe, konuniti plan fo kipim bank A/C afta RDP program hem complet?	0. ☐ No – **Skip to E63** 1. ☐ Yes 2. ☐ Maybe 98. ☐ Don't know – **Skip to E64**
E62	If YES or MAYBE, what will the account be used for? Sapos ya, wat nao bae A/c hem used fo?	**--- Skip to E64 ---**

E63	If NO why not (explain).	
E64	As a result of the community planning process used by RDP has this village put other development proposals to ward members, MPs or other sources, for funding? Olsem resalt blo komuniti planing process wea RDP usins, was we vilij putim nava development proposal go lo ward membas, MPS o nara ples moa wea save tekem funding?	0. ☐ No 1. ☐ Yes 98. ☐ Don't know
E65	How likely is it that you will be able to apply the procurement experience from RDP to another community project? Waswe, hao nao bae iu save aplaem procurement experience from RDP go lo nara Komuniti project?	1. ☐ Highly likely 2. ☐ Somewhat likely 3. ☐ Unlikely 98. ☐ Don't know
E66	Is there another RDP subproject in another village close by, that people from this village have access to and use (or will use when complete)? Waswe, eni nara RDP subproject lo vilij klosap wea pipol from disfala vilij garem access fo usim o bae usim taem finis?	**0.** ☐ No – **Skip to E69** 1. ☐ Yes 98. ☐ Don't know
E67	Were people from this village involved in the selection of that subproject in the other village? Sapos ya, waswe pipol lo komuniti lohia involved fo selection datfala subproject?	0. ☐ No 1. ☐ Yes 98. ☐ Don't know
E68	Were people from this village involved in providing community contribution (raw materials, labour etc) for that subproject in the other village? Waswe pipol lo komuniti blo iu help fo contribute lo raw materials, leiba etc fo disfala subproject?	0. ☐ No 1. ☐ Yes 98. ☐ Don't know

E69	How satisfactory did the range of subproject options eligible under RDP meet or fulfil the needs of your community? (Eligible subproject projects include: staff houses of school, clinics, water supplies, jetty, footbridges etc with funding range of $100,000 to $180,000). Waswe , wat nao samfala samting o we wea save mekem gud fo RDP funded komuniti projects hemgud fo mitim nids blo vilij?	1. ☐ Very satisfactory 2. ☐ Satisfactory 3. ☐ Somewhat satisfactory 4. ☐ Unsatisfactory
E70	If you could pick one project or activity which is a priority for the village, but you don't think that it would be eligible under RDP, what would it be? It has to be something that would cost about the same amount as the RDP project (less than $180,000). Sapos iu save pikim wanfala project waka wea hem prioriti to vilij/komuniti bat hem no fitim RDP wat nao ya? Hem mas samting klosap semsem amount olsem RDP project?	
E71	If you could change one thing about the RDP procedures and processes for selection and construction, what would it be? **(Open ended, pick the most important i.e. only one.)**	

F. Local Skills

Now I want you to think about the skills people in your community have to improve local services.

Distaem milaelcem project iu fo ting abaotem skills pipol lo komuniti garem fo improvem locol services

F1	If you wanted to repair or improve a local public building, is there a person in the community who could lead the design of this repair or improvement? Sapos iu laekem riperem o improvens local building, waswe, iu garem pipol insaed komuniti wea save ledim disaen blo disfala ripea o improvement?	0. ☐ No 1. ☐ Yes 98. ☐ Don't know
F2	If you wanted to improve your water supply by installing a new standpipe, is there a person in the community who could lead the design of this standpipe? Sapos iulaekem improvem wata suplae blo iu fo instolim ew stanbaeo, waswe iu garem pipol insaed komuniti wea save lidim disaen blo disfala paep?	0. ☐ No 1. ☐ Yes 98. ☐ Don't know
F3	Is there a person in the community who would be able to manage a bank account and the finances for this standpipe? Waswe, iu garem pipol insaed komuniti blo iu wea save lukafterarem bank account an seleni blo disfala paep?	0. ☐ No 1. ☐ Yes 98. ☐ Don't know
F4	Is there a person in the community who could purchase/ buy, the pipes and other supplies from a hardware store? Waswe, iu garem pipol wea save baem paeps an samfala nara samting moa from hardware store?	0. ☐ No 1. ☐ Yes 98. ☐ Don't know
F5	Is there a person who could perform any maintenance on the standpipe after it was built, if it were to break? Waswe, iu garem pipol wea save doins eni waka lo saed lo mentenens lo paep afta tiem built an sapos hem brek?	0. ☐ No 1. ☐ Yes 98. ☐ Don't know
F6	In your view, have the skills of the SIC members improved since the beginning of the RDP subproject? Waswe, lo tingting blo iu, save blo SIC membas hem improv tu sins lo bigining blo RDP subproject?	0. ☐ No 1. ☐ Yes 98. ☐ Don't know

Appendix B

Experimental Instructions Chapter 2

Leadership Experiment
Instructions[*]

Overview

As part of today's experiment, we will be performing some tasks. Any money that you earn in the experiment will be yours to take home. You will be paid for one of the tasks. I will toss a coin at the end of the tasks in front of everyone to determine which task you will be paid for. Since you do not know which task you will be paid for you should ensure you understand all tasks. In addition to any earnings you might have in these tasks, you will be given Rs100 for participating. In total the tasks are expected to take 2.5 hours. If you are not available for this time please raise your hand.

We are about to begin the first task. Please listen carefully. It is important that you understand the instructions of the task properly. If you do not understand, you will not be able to participate effectively. We will explain the task and go through some examples together. Do not talk or discuss the task with people around you. There will be opportunities to ask questions to be sure that you understand how to perform each task. At any time during this experiment, please wait at your seat and do not do anything unless instructed by the experimenter. Also, do not look at other's responses at any time during this experiment. If at any time you decide that you are not happy with the task that you have been invited to perform, you can decide not to participate by raising your hand, telling the experimenter and leaving the area. You will still receive Rs 100 as the participation fee.

After we have completed all the tasks, I would like you to answer some questions about yourself. Please take your time and answer honestly and as accurately as possible. You will not be identified and your survey answers will only be used for this experiment and will only be used by the researcher(s) involved in this project.

Before we begin, we will give everyone a consent form which will briefly explain the basic activities, and the rules to follow.

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[*] In the paper we discuss the results pertaining to Task 2 only.

If you wish to participate, please sign the consent form and return it to us. If you do not wish to participate, please advise us.

Thank you for agreeing to take part.If you are ready, we will then proceed.

Task 1 Instructions

Welcome and thanks for participating in this task.

Task 1 is performed by pairs of individuals. You will be randomly allocated a partner. You will not know the identity of your partner and your partner will also not know your identity. However your partner is one of the individuals in this room.

You will make one of two decisions either as the Sender or Receiver. If you are the Sender then your partner will be the Receiver and if your partner is the Sender then you will be the Receiver. Both you and your partner will get an opportunity to make decisions involving real money. Whether you are the Sender or Receiver will be randomly determined.

Both Senders and Receivers will get Rs200. No money will be given at this point. All actual payments will be made at the end of the experiment if this task is chosen as the one that you will be paid for.

Sender's Decision:

Each Sender will have the opportunity to keep all of Rs200 to himself/herself or allocate some or all of it to a Receiver. If you are a Sender,

you are able to send one of the following amounts to the receiver: Rs0, Rs25, Rs50, Rs75, Rs100, Rs 125 Rs150, Rs 175 or Rs200.

Each rupee that a Sender sends to a Receiver will be _tripled_ by the experimenter and given to the Receiver. So if you are a Sender and you send Rs 50, your matched partner (Receiver) will receive Rs 150.

The following table as shown on the flip board gives the corresponding amount Receivers will receive based on a Sender's decision. The highest amount Senders can send is 200 and the lowest is 0.

Sender sends	0	25	50	75	100	125	150	175	200
Receiver gets	0	75	150	225	300	375	450	525	600

When making a decision senders will need to circle the amount they wish to send to the receiver as shown on the flip board

Decision Sheet

Please circle the amount you want to send

0   25   50   75   100 125   150   175   200

Receiver's Decision:

Receivers will also have an opportunity to make a decision. The decision that a Receiver has to make is to indicate how much he/she is willing to return conditional on how much he/she received. This time the money will _not_ be tripled again. A Receiver, will however not know how much a Sender has passed on at the time of making the decision: thus a Receiver will need

to decide how much to send back to a Sender for every amount he/she could receive. The task ends at this point.

The following table as shown on the flip board gives the possible choices for the Receiver

Sender sends	0	25	50	75	100	125	150	175	200
Receiver gets	0	75	150	225	300	375	450	525	600
Possible amount Receiver could send back	0	0-75	0-150	0-225	0-300	0-375	0-450	0-525	0-600

When making a decision the Receiver must fill out every possible row on the table shown in the flip chart. Each row corresponds with a possible amount that could be sent by the Sender.

Decision Sheet

1. A sender sends you Rs 0 which is tripled and becomes **Rs 0**.

How much do you wish to send back to the sender_____

2. A sender sends you Rs 25 which is tripled and becomes **Rs 75**.

How much do you wish to send back to the sender_____

3. A sender sends you Rs 50 which is tripled and becomes **Rs 150**.

How much do you wish to send back to the sender_____

4. A sender sends you Rs 75 which is tripled and becomes **Rs 225**.

How much do you wish to send back to the sender_____

5. A sender sends you Rs 100 which is tripled and becomes **Rs 300**.

How much do you wish to send back to the sender_____

6. A sender sends you Rs 125 which is tripled and becomes **Rs 375**.

How much do you wish to send back to the sender_____

7. A sender sends you Rs 150 which is tripled and becomes **Rs 450.**

How much do you wish to send back to the sender_____

8. A sender sends you Rs 175 which is tripled and becomes **Rs 525**.

How much do you wish to send back to the sender_____

9. A sender sends you Rs 200 which is tripled and becomes **Rs 600**.

How much do you wish to send back to the sender_____

In Gender Revealed Treatment only:

Finally, in this task as mentioned you have been randomly matched with a partner you will be informed of your partner's gender either male or female.

It is important to remember that you will always remain anonymous to each other. No-one will be told who they are paired with. Further, you will not be informed of any decisions made by your partner nor will they be informed of yours until the experiment has ended.

How do we calculate the payoff?
Your partners and your payoff will be determined by both your own and your partner's choices.

Sender payoff for this stage is
Initial Rs 200 – Amount sent to receiver + Money Receiver chose to send back

Receiver payoff for this stage is
The tripled amount the Receiver received from his/her partner – Money Receiver chose to give back + initial 200 rupees

In summary:

1) Gender not revealed only–no information is distributed.

1) Gender revealed only–After subjects are paired, they are subsequently told their partners' gender in this task.

2) If you are selected as a Sender you must decide how much to send to a Receiver (either 0, Rs25, Rs50, Rs75, Rs100, Rs125, Rs150, Rs175 or Rs 200). Each rupee that is sent to a Receiver will be tripled by the experimenter.

3) If you are selected as a Receiver you must indicate how much you will give back to a Sender (your partner) for each possible value you could receive from a Sender.

4) Sender's income *<Reiterate that this experiment has real payoffs>*:

   Income: Initial Rs 200 – Amount sent to Receiver + Money Receiver chose to send back

5) If you are paid as the Receiver:

   Income= The tripled amount the Receiver received from his/her partner – Money Receiver chose to give back + initial 200 rupees

6) If this task is chosen as the one you will be paid for, you will be informed of your earnings and paid your earnings from this task, in **private** at the end of the experiment.

Here are 3 examples of what could happen, you can follow along on the diagrams at the front.

Example 1:

1) Both Senders and Receivers are given Rs 200

2) Suppose, the Sender sends Rs150. The amount given is then tripled.

3) The Receiver makes a decision on much he/she will give back to the Sender for each possible value he/she could receive from the Sender. The Receiver chooses to send back Rs 240 when he/she is sent Rs 150.

4) In summary the Sender sends 150 out of 200 rupees and this was tripled to 450. The Receiver chose to return 240 rupees out of the 450.

   The Sender's earnings will be:

   (200 – 150 = 50) + 240 = 290 rupees

   The Receiver received 450 rupees and chose to return 240 rupees. **Receiver's earnings will be:**

450– 240 + initial 200 rupees = 410 rupees

Note: Both players will only know the amounts chosen at the end of the experiment.

Example 2:

1) Both Senders and Receivers are given Rs 200

2) If the Sender decides to send Rs50. The amount given is then tripled by the experimenter

3) The Receiver will not know the amount the Sender has sent. Therefore the Receiver must decide how much to send back to the Sender for each possible amount he/she could receive. In this case Receiver decided to send back Rs 80

4) In summary, the Sender sent Rs 50 out of Rs 200 this was tripled to Rs 150. The receiver chose to return 80 rupees.

   The Receiver's earnings will be:

150 – 80 + your initial 200 = 270Rs

Sender's earnings will be:

(200 – 50=150)+80 = 230Rs

Note: Both players will only know the amounts chosen at the end of the experiment.

Example 3: <Act out with real money>

1) Both Senders and Receivers are given Rs 200

2) The Sender decides to send Rs100. The amount given is then tripled.

3) The Receiver will not know the amount the Sender has sent. Therefore he/she must decide how much to send back to the Sender for each possible amount he/she could receive. In this case the Receiver decide to send back Rs 160

4) In summary the Sender sent 100 out of 200 rupees and this was tripled to 300. The Receiver chose to return 160 rupees out of the 300.

Receiver's earnings will be:

300-160 + initial 200 rupees = 340 Rs

The Sender's earnings will be:

(200 − 100 = 100) + 160 = 260 Rs

Note: Both players will only know the amounts chosen at the end of the experiment

Note that these are only examples. The actual decisions are up to you.

Task 2 Instructions

It is strictly forbidden to communicate with the other participants during this task. If you have any questions or concerns, please raise your hand. It is very important that you follow this rule. Otherwise we must exclude you from the experiment and from all payments.

Detailed information on the experiment:
In this task you will be grouped with three other participants from those in this room so the four of you form a group. You will never know which of the other participants are in your group. Your other group members will never know your identity.

What you have to do:
Each group member will receive an amount of Rs 200 called your endowment. Your task (as well as the task of your group members) is to decide how much of your endowment you want to contribute to a group account. Whatever you do not contribute, you keep for yourself called your private account. You can choose any amount to allocate to the group account from zero through 200.

When all of you are done making your decisions:
1) The experimenters will add up all the money allocated to the group account by all the people in your group and then double it.
2) Next, this doubled amount is divided equally between all participants in your group. Thus, every amount given to the group account is doubled and then divided evenly among group members.
3) Please note that each person receives an equal share of the group account regardless of how much he or she contributed to the group account.

This means that:
1. Each Rupee that you contribute to the group account raises YOUR income as well as the income of YOUR GROUP MEMBERS;
2. Each group member receives the same amount from the group account irrespective of their contribution to the group account.
3. The same is true for the contributions of your group members: each rupee that any of them contribute to the group account increases your earning. However, the rupees that you keep for yourself in your private account only raise YOUR earnings.

In summary, your income is made up of two parts *<Remind participates that their decisions will impact their actual payoff>*:
1) The part of the endowment which you keep (in the private account).

2) The return you obtain from your contribution and your group members contribution to the group account

Here are 3 examples of what could happen, you can follow along on the diagrams at the front:

Example 1: You contribute Rs120 and everyone else in your group contributes Rs120 each as well. This means that you are left with Rs80 in your private account. In the group account there is now 120*4=480, and this money is doubled by the experimenter. So there is now Rs 960 to be shared evenly between all members: so every member gets Rs 960/4= Rs 240 from the group account.

Thus in total your income from this task is: Rs80 +Rs240=Rs320. Each of your group member's income from this task is Rs 80 + Rs 240 = Rs 320.

Example 2: You contribute Rs100 and everyone else in your group contributes Rs150 each. This means that you are left with Rs100 in your private account. In the group account there is now 100+150*3=550, and this money is doubled by the experimenter. So there is now Rs 1100 to be shared equally between all members: so every member gets Rs 1100/4=Rs275 from the group account.

Thus your income from this task is Rs100+Rs275 =Rs375. Each of your group member's income from this task is Rs 50 + Rs 275 = Rs 325.

Example 3: You contribute Rs140 and group member two and three contribute Rs105 each, while group member four contributes Rs70. This means that you are left with Rs60 in your private account. In the group account there is now Rs (140+105+105+70) =Rs 420, and this money is doubled by the experimenter. So there is now Rs840 to be shared evenly between all members. So every member gets Rs840/4 = Rs210 from the group account.

Thus your income from this task is Rs60 +Rs210 = Rs 270. Income of group members two and three is Rs95+Rs210 = Rs 305 (each). Income of group member four is Rs 130 + Rs 210 = Rs 340.

How you interact with your group members:
Within your group you are identified by a number, this is a random allocation and has no bearing on outcomes. This number has been assigned to you privately at the beginning of the experiment.

Gender not revealed treatment read: (Please read out only in the gender not revealed sessions)
The task consists of the following stages:

1. One group member is chosen to be the group leader. The group leader must **propose** a contribution to the group account. This could be any amount between 0-200 rupees and is only a proposed contribution not their actual contribution.

2. After all group members are informed of the group leader's **proposed** contribution all group members must allocate simultaneously to the group account- including the group leader.

Remember that the identities of the group members are never revealed so the other members of the group will not have any information about your identity or the identity of the group leader.

Gender revealed treatment read: (Please read out only in the gender revealed sessions)

1. *One group member is chosen to be the group leader. Group members will be informed of the leaders gender.*
2. *The group leader must **propose** a contribution to the group account. This could be any amount between 0-200 rupees and is only a proposed contribution not their actual contribution.*
3. *After all group members are informed of the group leader's **proposed** contribution all group members must allocate simultaneously to the group account- including the group leader.*

Remember that the identities of the group members are never revealed so the other members of the group will not have any information about your identity or the identity of the group leader.

In summary :

1) A group leader is chosen

2) In gender not revealed.- no information

In gender revealed- Group members are informed of the leaders' gender. No other information on the identity of the leader is distributed.

3) The group leader must propose a contribution towards the group account.

4) Group members are then informed of the group leader's proposed contribution towards the group account.

5) All subjects in each group then decide how much they will contribute towards their group account. What they don't contribute will go towards their private account.

6) The experiment then ends.

Experiment Ends– Payment and Survey

After you have completed both tasks, and before we commence payment we would like you to answer some questions about yourself. You will be placed with one assistant who will go through the survey with you. Please take your time and answer honestly and as accurately as possible. You will not be identified and the assistant will not disclose any information about you. Your survey answers will only be used for this experiment and will only be used by the researcher(s) involved in this project.

After the survey is complete we will toss a coin in front of everyone to determine which task you will be paid for. If the coin toss results in heads you will be paid for task 1, while if the result is tails you will be paid your earnings from task 2. Please wait patiently; we will pay everyone individually and in private.

Belief Elicitation Experiment

Instructions[*]

Thank you for agreeing to participate in this experiment. Any money that you earn in the experiment will be yours to take home. For your participation, you will be paid Rs 100. In addition, you may receive some additional money based on your choices and the choices of others during the experiment. You will be paid for **one decision from each task**, the decision you will be paid for will be decided at random at the end of the experiment. Since you do not know which decision question you will be paid for you should ensure you understand all questions and tasks carefully. In the experiment, I will read descriptions of a series of situations, please listen to all situations carefully.

In total the experiment is expected to take 1 hour including a short survey at the end of the experiment. Before we begin, we will give everyone a consent form which will briefly explain the basic activities, and the rules to follow.

[Hand-out and Read Consent Statement]

If you wish to participate, please sign the consent form. If you do not wish to participate, please advise us.

We are about to begin the first task. In this task I will describe a scenario. Your task is to answer a series of questions based on this scenario.

Scenario:

Imagine 4 people are randomly placed in a group. Each group consists of 2 males and 2 females. Groups are anonymous, meaning that individual will never know the identity of the other individuals within their grouped. Each group member receives an amount of Rs 200 called an endowment. Their task is to decide how much of their endowment they want to contribute to a group account or keep for themselves.

- Whatever he/she does not contribute to the group account, they keep for themselves called their private account. They can choose any amount to allocate to the group account from zero through 200.
- Whatever is contributed to the group account will be added up and then doubled by the experimenter.

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[*] The paper analyses data from Tasks 1, 2 and 3.

- This doubled amount is divided equally between all participants in their group. Thus, every amount given to the group account is doubled and then divided evenly among group members.
- Note that each person receives an equal share of the group account regardless of how much he or she contributed to the group account.

To ensure you understand the scenario, I will go through a number of examples. Please note these are only examples.

Example 1: Group member 1 contributes Rs120 and everyone else in the group contributes Rs120. This means that group member 1 is left with Rs80 in his/her private account. In the group account there is now 120*4=480, and this money is doubled by the experimenter. So there is now Rs 960 to be shared evenly between all members: so every member gets Rs 960/4= Rs 240 from the group account.

Thus in total group member 1's income from this task is: Rs80 +Rs240=Rs320. The other group member's income from this task is Rs 80 + Rs 240 = Rs 320.

Example 2: Group member 1 contributes Rs100 and everyone else in his/her group contributes Rs150 each. This means that group member 1 is left with Rs100 in their private account. In the group account there is now 100+150*3=550, and this money is doubled by the experimenter. So there is now Rs 1100 to be shared equally between all members: so every member gets Rs 1100/4=Rs275 from the group account.

Thus group member 1's income from this task is Rs100+Rs275 =Rs375. The other group member's income from this task is Rs 50 + Rs 275 = Rs 325.

Example 3: Group member 1 contributes Rs140 and group member two and three contribute Rs105 each, while group member four contributes Rs70. This means that group member 1 is left with Rs60 in his/her private account. In the group account there is now Rs (140+105+105+70) =Rs420, and this money is doubled by the experimenter. So there is now Rs840 to be shared evenly between all members. So every member gets Rs840/4 = Rs210 from the group account.

Thus group member 1's income from this task is Rs60 +Rs210 = Rs 270. Income of group members two and three is Rs95+Rs210 = Rs 305 (each). Income of group member four is Rs 130 + Rs 210 = Rs 340.

Further Information:

1. Before group members are able to contribute an amount to their accounts, one group member is randomly chosen to be the group

leader. Each group will have either a male or a female leader. Group members who are not assigned as a leader are called citizens.

2. The group leader must **propose** a contribution to the group account. This could be any amount between 0-200 rupees and is only a proposed contribution not their actual contribution.

3. All group members are then informed of the group leader's **proposed** contribution and the group leaders gender (male or female) after which all group members must allocate simultaneously to the group account- including the group leader.

Task 1:

The following questions are related to the same scenario discussed above. Your task is to decide for each possible action, whether taking that action would be socially appropriate and consistent with proper social behaviour or socially inappropriate and inconsistent with proper social behaviour. By socially appropriate, we mean behaviour that most people agree is the correct thing to do. Another way to think about what we mean is that if individual A were to select a socially inappropriate choice, then someone else might be angry at Individual A for doing so. In each of your responses, we would like you to answer as truthfully as possible.

To give you an idea of how the experiment will proceed, we will go through an example and show you how you could indicate your responses.

Example:
Individual A is at a local store. While there, Individual A notices that someone has left a wallet at one of the tables. Individual A must decide what to do. The table below presents a list of the possible choices available to Individual A. For each of the choices, you will be asked to indicate whether choosing that option is very socially inappropriate, somewhat socially inappropriate, somewhat socially appropriate, or very socially appropriate.

Individual A's choice	*Very Socially Inappropriate*	*Somewhat socially inappropriate*	*Somewhat socially appropriate*	*Very socially appropriate*
Leave the wallet where it is				
Keep the wallet				

Payment: At the end of the experiment today, we will randomly select one of the possible choices shown below. For the choice selected, we will determine which response was selected by the most other **males** in our previous sessions in similar villages to yours, if your response is the same then you will receive Rs 200. In other words, **if you give the same response as that most frequently given by other males in similar villages to yours, then you will receive an additional Rs 200**. This amount will be paid to you, in cash, at the conclusion of the experiment.

For instance, if we were to select the example situation above and the possible choice "Leave the wallet where it is," and if your response had

been "somewhat socially inappropriate," then you would receive Rs 200, in addition to any other earnings you might receive, **if this was the response selected by most other males in similar villages to yours**. It is important you remember in this task you will be paid if your decision is the same decisions as other males in similar villages, rather than what you think is socially appropriate.

Please note: we will randomly select one of the questions to make payment. Since you do not know which question we will pay, you should ensure you understand all questions.

Questions:

No.	Choice	Very Socially Inappropriate	Somewhat socially inappropriate	Somewhat socially appropriate	Very socially appropriate
	If a female leader was assigned to a group, **how do you think other males** would rate each of the following decisions?				
1	A male group member contributes 0 to the group account				
2	A male group member contributes 50				
3	A male group member contributes 100				
4	A male group member contributes 150				
5	A male group member contributes 200				
	If a male leader was assigned to a group, **how do you think other males** would rate each of the following decisions?				
6	A male group member contributes 0				
7	A male group member contributes 50				
8	A male group member contributes 100				
9	A male group member contributes 150				
10	A male group member contributes 200				
	If a female leader was assigned to a group, **how do you think other males** would rate each of the following decisions?				
11	A female group member contributes 0				
12	A female group member contributes 50				
13	A female group member contributes 100				

1 4	A female group member contributes 150				
1 5	A female group member contributes 200				
	If a male leader was assigned to a group, **how do you think other males** would rate each of the following decisions?				
1 6	A female group member contributes 0				
1 7	A female group member contributes 50				
1 8	A female group member contributes 100				
1 9	A female group member contributes 150				
2 0	A female group member contributes 200				
	If a female leader proposed 100 to the group account **how do you think other males** would rate each of the following decisions?				
2 1	The same female leader then contributes 150				
2 2	The same female leader then contributes 100				
2 3	The same female leader then contributes 50				
	If a female leader proposed 200 to the group account **how do you think other males** would rate each of the following decisions?				
2 4	The same female leader then contributes 200				
2 5	The same female leader then contributes 150				
2 6	The same female leader then contributes 100				
2 7	The same female leader then contributes 50				
	If a male leader proposed 100 to the group account **how do you think other males** would rate each of the following decisions				
2 8	The same male leader then contributes 150				
2 9	The same male leader then contributes 100				
3 0	The same male leader then contributes 50				
	If a male leader proposed 200 to the group account **how do you think other males** would rate each of the following decisions				
3 1	The same male leader then contributes 200				

3 2	The same male leader then contributes 150				
3 3	The same male leader then contributes 100				
3 4	The same male leader then contributes 50				

Task 2:

This task is identical to task 1 except payment is different.

Payment: At the end of the experiment today, we will randomly select one of the possible choices shown below. For the choice selected, we will determine which response was selected by the most other **females** in our previous sessions in similar villages to yours, if your response is the same then you will receive R 200. In other words, **if you give the same response as that most frequently given by other females in similar villages to yours, then you will receive an additional Rs 200**. This amount will be paid to you, in cash, at the conclusion of the experiment. It is important you remember in this task you will be paid if your decision is the same decisions as other females in similar villages, rather than what you think is socially appropriate.

Please note: we will randomly select one of the questions to make payment. Since you do not know which question we will pay, you should ensure you understand all questions.

Questions:

N o	Choice	*Very Socially Inappropriate*	*Somewhat socially inappropriate*	*Somewhat socially appropriate*	*Very socially appropriate*
	If a female leader was assigned to a group, **how do you think other females** would rate each of the following decisions?				
1	A male group member contributes 0				
2	A male group member contributes 50				
3	A male group member contributes 100				
4	A male group member contributes 150				
5	A male group member contributes 200				
	If a male leader was assigned to a group, **how do you think other females** would				

	rate each of the following decisions?				
6	A male group member contributes 0				
7	A male group member contributes 50				
8	A male group member contributes 100				
9	A male group member contributes 150				
10	A male group member contributes 200				
	If a female leader was assigned to a group, **how do you think other females** would rate each of the following decisions?				
11	A female group member contributes 0				
12	A female group member contributes 50				
13	A female group member contributes 100				
14	A female group member contributes 150				
15	A female group member contributes 200				
	If a male leader was assigned to a group, **how do you think other females** would rate each of the following decisions?				
16	A female group member contributes 0				
17	A female group member contributes 50				
18	A female group member contributes 100				
19	A female group member contributes 150				
20	A female group member contributes 200				

	If a female leader proposed 100 to the group account **how do you think other females** would rate each of the following decisions				
21	The same female leader then contributes 150				
22	The same female leader then contributes 100				
23	The same female leader then contributes 50				
	If a female leader proposed 200 to the group account **how do you think other females** would rate each of the following decisions				
24	The same female leader then contributes 200				
25	The same female leader then contributes 150				

2 6	The same female leader then contributes 100				
2 7	The same female leader then contributes 50				
	If a male leader proposed 100 to the group account **how do you think other females** would rate each of the following decisions				
2 8	The same male leader then contributes 150				
2 9	The same male leader then contributes 100				
3 0	The same male leader then contributes 50				
	If a male leader proposed 200 to the group account **how do you think other females** would rate each of the following decisions				
3 1	The same male leader then contributes 200				
3 2	The same male leader then contributes 150				
3 3	The same male leader then contributes 100				
3 4	The same male leader then contributes 50				

Task 3:

This task is not related to the previous scenario. You task is to rate each of the following as either: *very socially inappropriate, somewhat socially inappropriate, somewhat socially appropriate and very socially appropriate*.

No	Choice **Do you think other people believe it is socially appropriate for…**	*VSIA*	*SWSI*	*SWSA*	*VSA*
1	Do you think other people believe it is socially appropriate for *women to become leaders (other than Mukhiya) of the village*				
2	Do you think other people believe it is socially appropriate for *women to spend more time in leadership activities compared to household duties*?				
3	Do you think other people believe it is socially appropriate for *women to have greater influence in village decision making compared to men*				
4	Do you think other people believe it is socially appropriate for *women to decide how to spend the majority of the households income*				
5	Do you think other people believe it is socially appropriate for a *male mukhiya to take money from the gram panchayat for their own benefit*				
6	Do you think other people believe it is socially appropriate for a *female mukhiya to take money from the gram panchayat for their own benefit*				
7	Do you think other people believe it is socially appropriate for a *male mukhiya to not fulfil their election promise to build a bridge.*				
8	Do you think other people believe it is socially appropriate for a *female mukhiya to not fulfil their election promise to build a bridge*.				
9	Do you think other people believe it is socially appropriate for a *male businessman to not fulfil their promise to build a bridge*.				
10	Do you think other people believe it is socially appropriate for a *female				

	businesswoman to not fulfil their promise to build a bridge.				
11	Do you think other people believe it is socially appropriate for *the husband of a female mukhiya to make the majority of village decisions instead of the female mukhiya?*				
12	Do you think other people believe it is socially appropriate for *males to work as a nurse?*				
13	Do you think other people believe it is socially appropriate for *males to work as a home maker?*				
14	Do you think other people believe it is socially appropriate for *females to work as a truck driver?*				
15	Do you think other males believe it is socially appropriate for *women to become Mukhiya of the village*				
16	Do you think other females believe it is socially appropriate for *women to become Mukhiya of the village*				

Payment: At the end of the experiment today if this task is chosen for payment, we will randomly select one of the possible choices shown below. For the choice selected, we will determine which response was selected by the most other people in similar villages to yours, if your response is the same then you will receive R 200. In other words, **if you give the same response as that most frequently given by other people in similar villages to yours, then you will receive an additional Rs 200**. This amount will be paid to you, in cash, at the conclusion of the experiment. It is important you remember in this task you will be paid if your decision is the same decisions as other people in similar villages, rather than what you think is socially appropriate.

Please note: we will randomly select one of the questions to make payment. Since you do not know which question we will pay, you should ensure you understand all questions. *VSIA= Very Socially Inappropriate, SWSI= Somewhat Socially Inappropriate, SWSA= Somewhat Socially Appropriate, VSA= Very Socially Appropriate*

Task 4:

The following questions are directly related to the scenario. Your task is to estimate the decisions made by people in similar villages to yours.

Payment: The following questions relate to the previously explained scenario. We previously ran this scenario in similar villages to yours. At the end of the experiment today, we will randomly select one of the possible choices shown below. You will be paid Rs 200 if your decision is within 10 rupees of the **actual** decision made by people in similar villages who previously participated in this scenario. In other words, if you give a response within 10 rupees of the average given by other people in similar villages, then you will receive Rs 200. This amount will be paid to you, in cash, at the conclusion of the experiment. It is important you remember in this task you will be paid based on the decisions of other people, and the decisions you think they made.

Please note: we will randomly select one of the questions to make payment. Since you do not know which question we will pay, you should ensure you understand all questions.

	Respondents name and ID:	
No.	**Question**	**Response**
1	If a female leader was assigned to a group, how much do you think the average female citizen would contribute? (Min 0, Max 200)	_____
2	If a female leader was assigned to a group, how much do you think the average male citizen would contribute? (Min 0, Max 200)	_____
3	If a male leader was assigned to a group, how much do you think the average female citizen would contribute? (Min 0, Max 200)	_____
4	If a male leader was assigned to a group, how much do you think the average male citizen would contribute? (Min 0, Max 200)	_____
5	How much do you think the average female leader proposed? (Min 0, Max 200)	_____
6	How much do you think the average male leader proposed? (Min 0, Max 200)	_____

7	How much do you think the average female leader actually contributed to the group account? (Min 0, Max 200)	_____
8	How much do you think the average male leader actually contributed to the group account? (Min 0, Max 200)	_____

***End of Experiment**

Thank you for participating, we will now commence a short survey after which you will be paid your earnings and show up fee.

Appendix C

Experimental Instructions Chapter 3

TASK #1 Instructions

Welcome and thanks for participating in this task.

Task 1 is performed by pairs of individuals. You will be randomly allocated a partner. You and your partner's identity will be kept anonymous. In this task there are two decision stages in which you participate once as Player A and once as Player B. You will make a decision first as Player A and then as Player B.

Both Player A and Player B will get $10. No money will be given at this point. All actual payments will be made at the end of the experiment if this task is chosen as the one that you will be paid for.

Each Player A will have the opportunity to keep all of $10 to himself/herself or allocate some or all of it to a Player B. Player A is able to send either $0, $2.5, $5, $7.5 or $10 to Player B. However, each dollar that Player A sends to Player B will be *tripled* by the experimenter and given to Player B.

Player B will then have an opportunity to keep all of the money sent to him/her from Player A or to send some or all of it back to Player A. This time the money will *not* be tripled again. When making your decision as Player B, you will not know how much money Player A has passed to you, thus you will need to decide how much you will send back to Player A for every amount you could receive as Player B. The experiment ends at this point.

Player B takes home whatever money he/she receives from Player A and does not give back to Player A and the initial $10 they received. Player A takes home whatever he/she did not give to Player B and whatever money Player B gives back.

In short, In this task you will play as both Player A and Player B, your partner will do the same, however neither your decisions or the decisions of your partner will be revealed to you until the experiment is complete. In the first stage as Player A you must decide to pass on either $0, $2.5, $5, $7.5 or $10 to Player B. In the second stage as Player B you must decide how much you give back to Player A. You will not know how much Player A has given you therefore you must indicate the amount you will give back to Player A for every possible amount you could receive. In other words, for each possible value that Player A could give you (0, 7.5, 15, 22.5, 30) you must indicate what value you will give back to Player A. If this task is chosen for payment, I will then toss a coin to determine which role you will be paid for. So for any given toss of the coin, half of you will go home with earnings as Player A, half of you will go home with earnings as Player B. If you are paid as Player A your partner is paid as Player B.

Finally, in this task you will be informed of the status of your partner. Your partner will take on a high status if they scored highly in the quiz and low status if they scored low in the quiz. Your partner's status will be the same in both stages.

It is important to remember is that you will always remain anonymous to each other. No-one will be told who they are paired with. Further, you will not be informed of any decisions made by your partner nor will they be informed of your's until the experiment has ended.

In summary:

1) After subjects are paired, they are subsequently told their partners status based on the outcome of the quiz. Your partners status remains the same in both stages.
2) Each participant firstly plays as Player A where they must decide how much to send to Player B (either 0, 2.5, 5, 7.5 or 10). Each dollar that is sent to Player B will be tripled by the experimenter.
3) Each player then plays as Player B where they must indicate how much they will give back to Player A (their partner) for each possible value they could receive from Player A.
4) If this task is chosen for payment, a coin is flipped to decide if you will be paid as a Player A or a Player B. Half of the Subject will be paid as Player A and half as Player B.
5) Player A's income;

Income= Amount you did not send to Player B + Amount Player B sends you.

If you are paid as Player B;

Income= Amount Player A sends you + Amount you do not send back to Player A+ Your initial $10

Here are 2 examples of what could happen:

Example 1:

1) If in the first stage Subject 1 gives $7.5 while you give $2.5. The amount given is then tripled. Both you and Subject 1 will not know the amount their partner selected as Player A. Therefore both you and Subject 1 must decide how much to send back to Player A for each possible amount Player A could send you. Thus, suppose, in the second stage both you and Subject 1 select the following amounts:
2) **Second Stage:**

Subject 1

Possible amount received from	Amount you wish to send back to

Player A (already tripled)		Player A
i)	0	0
ii)	7.5	2
iii)	15	8
iv)	22.5	12
v)	30	16

You

Possible amount received from Player A (already tripled)		Amount you wish to send back to Player A
i)	0	0
ii)	7.5	6
iii)	15	10
iv)	22.5	13
v)	30	23

 If this task is chosen for payment, the experimenter will then toss a coin to determine which pairing the participant will be paid for: If Subject 1 is paid as Player A and you are paid as Player B this means the decisions **you** made in the second stage will be used. Therefore;

Subject 1 will have;
> $15.5 ($10 minus the $7.5 sent to Player B and plus the $13 sent back by Player B (see row iv of your table).

You will have;
> $19.5 ($22.5 received from Player A minus the $13 sent back to Player A (see row iv of your table + your initial $10)).

Note: Both players will only know the amounts chosen at the end of the experiment.

Example 2:

1) If in the first stage Subject 1 gives $0 while you give $5. The amount given is then tripled. Both Subjects do not know the amount their partner selected as Player A. Suppose, in the second stage both you and your partner select the following amount as Player B:

2) **Second Stage**

Subject 1

Possible amount received from Player A (already tripled)		Amount you wish to send back to Player A
i)	0	0
ii)	7.5	6

iii)	15	9
iv)	22.5	15
v)	30	29

You

Possible amount received from Player A (already tripled)		Amount you wish to send back to Player A
i)	0	0
ii)	7.5	2
iii)	15	12
iv)	22.5	14
v)	30	15

If this task is chosen for payment, the experimenter will then toss a coin to determine which pairing the you and your partner will be paid for: If Subject 1 is paid as Player B and you are paid as Player A. Since as Player A you sent $5 to Subject 1:

You will have;
  $14 ($10 minus the $5 sent to Player B, plus the $9 send back by Player B (see row iii of Subject 1 table)).

Subject 1 will have;
  $16 ($15 received from Player A minus the $9 sent back to Player A + your initial $10).

Note: Both players will only know the amounts chosen at the end of the experiment

Note that these are only examples. The actual decisions are up to you.

Are there any questions? If you are ready, we will proceed.

Control Questions:

The questions below are used to ensure you understand the instructions explained previously. Please remember that these are only examples. The actual decisions are up to you. Please raise your hand if you have any questions.

Q1) The amount sent from Player A to Player B is?

a) Tripled	b) Doubled
c) Does not change	

Q2) Say you are Player A and you have $10. You choose to give $7.5 to Player B. How much will you have and how much will Player 2 receive (remember this is tripled?)

Player A (yourself):_____   Player B:_____

Q3) In this task do you play as both Player A and Player B

a) Yes, I play as both Player A and Player B	b) No, I only play as Player A or Player B

Q4) In this task how many decisions as Player B do you make?

a) One	b) Five
c) Four	d) Six

Q4) In task one when making your decision as Player B do you know what Player A has sent to you?

a) Yes, I are told the amount received from Player A	b) No, I am not informed of the amount received from Player A until the end of the experiment

Q5) Suppose Subject 1 is paid as Player A and participant two is paid as Player B. What will be Subject 1 and participant two's earnings if…

Subject 1 sends $7.5 to participant two and participant two makes the following decision:

Participant 2:

Possible amount received from Player A (already tripled)	Amount you wish to send back to Player A
0	0
7.5	3
15	8
22.5	12
30	20

   i)   Subject 1's earnings……………   Participant 2's earnings…………..

TASK #2 Instructions

Stage 1: The experiment.

Detailed information on the experiment:

The experiment consists of 10 separate periods, in which you will interact with two other participants. The three of you form a group that will remain the same in all 10 periods. You will never know which of the other participants are in your group. While your group members will never know your identity.

What you have to do:

All money in this task is denominated in experimental dollars (ED), which will be converted to Australian dollars at a rate of 1 AUD=50 ED at the end of the experiment. At the beginning of each period, each participant receives an amount of ED 100 called your endowment. Your task (as well as the task of your group members) is to decide how much of your endowment you want to allocate to a group account. Whatever you do not allocate, you keep for yourself called your private account. You can choose any amount to allocate to the group account from zero through 100.

What you allocate to the group account provides a return. The return for the group account depends on the total group contribution. Hence every ED 1 you allocate benefits everyone by some return amount and every ED 1 anyone else allocates will also benefit you by some return (R). This means that, each ED that you allocate to the group account raises YOUR income as well as the income of YOUR GROUP MEMBERS by R this also means that each group member receives the same amount from the group account. The same is true for the contributions of your group members, each ED that any of them allocate to the group account increases your earning by R. However, the ED that you keep only raises YOUR earnings

In summary, at the end of every period, your income is made up of three parts;

1) The endowment which you keep.
2) The return you obtain from contributing to the group account
3) The return you obtain from your group members contribution to the group account.
4) If this task is chosen for payment, your **total** payout is the sum of your income in each period.

That is:
Income=Private account + (What you contribute to the group account + What everyone else contributes to the group account)*the return (R)

The return (R) from the group account can be either 10cents or 60cents. This means that every 1ED that you allocate will either increase all group members' income by 10cents or 60cents. The value of the return (R) can have a large effect on your earnings from contributing to the group account. For example when the return is equal to 60cents (R=0.60): If you allocate $50 and everyone else in your group allocates ED 50. This means that you are left with ED 50 this is your private account. Plus your contribution to the group account of ED 50 provides you with ED 30 (50*0.6). Finally since all your group members allocated ED 50 to the group account you obtain a return from their contribution of ED 30 (50*0.6) since you have two other group members this equates to ED 60. Thus in total you are left with;

ED 50 (your private account) + ED 30(your return from the group account) +ED 60 (the return from your group members contribution to the group account) =ED 140

.On the other hand if the return (R) is equal to 10cents (R=0.10): If you allocate $50 and everyone in your group allocates $50. You are left with ED50 in your private account. Your contribution to the group account of ED 50 provides you with a return of ED 5 (50*0.1). Since all your group members allocated ED 50 to the group account you obtain a return from their contribution of ED 5. Since you have two other group members this equates to ED 10. Thus, in total you are left with;

ED 50 (your private account) + ED 5 (your return from the group account) + ED10 (the return from your group members contribution to the group account) = ED65

In other words, lower values of R reduce the return from contributing towards the group account. While higher values of R increase the return from contributing to the group account.

In addition each period consists of the following stages;

1) At the start of the experiment one group member is randomly chosen to make the first decisions. The first decision maker is also labelled with a status. The first decision maker is labelled as high status if they scored highly in the quiz and low status if they scored low in the quiz.
2) At the start of every period a value (either 10cents or 60cents) for the return (R) will be randomly selected. This return will be used in that period, this as shown above will change the payoff from the group account. The first decision maker will be informed of the value of the return randomly selected in each period. The first decision maker must than inform the other subjects in their group a value of the return (either 10cents or 60cents). The first decision maker can inform group members either 10cents or 60cents as a value of the return irrespective of the actual value of the return.
3) After all group members are informed of the return all group members must allocate simultaneously to the group account. You can contribute either (ED 0, ED 25, ED 60, ED 75, ED 100) to the group account.

The game will then repeat itself for 10 periods.

The information you receive at the end of each period

After all individuals have made their decisions for the round, you will receive information about your period-earnings as well as the actual return from contributing to the group account (R). However, only the first decision maker will be informed of all subjects' contributions towards the group account, all others will not be informed of their fellow group member's contributions. This means that the first decision maker will be aware of your contributions towards the group account.

In summary:

1) A first decision maker is chosen and labled with a status based on the quiz administered at the start of task 1.
2) The first decision maker is informed of the actual value of the return from contributing to the group account (R). This can either be 0.1 or 0.6. This is randomly selected.
3) The first decision maker then informs their group members a value of R, irrespective of the actual value of R.
4) All subjects in the group then decide how much they will contribute towards their group account. What they don't contribute will go towards their private account.
5) The period then ends and subjects are informed of their earning and the actual return from contributing to the group account. While the first decision maker is informed of the contributions towards the group account of all subjects in the group.
6) This is repeated for 10 periods, with the same first decision maker. Your **total** payout is the sum of your earnings in each period.

Control Questions:

The questions below are used to ensure you understand the instructions explained previously. Please remember that these are only examples. The actual decisions are up to you. Please raise your hand if you have any questions.

Q1) If you start off with ED $100 and you allocate ED 40 to the group account, how much do you allocate towards your private account?

a) ED 100	b) ED 40
c) ED 20	d) ED 60

Q3) If the return (R) from the group account is 10cents and you allocate $10 i) How much do you get in return from contributing to the group account? ii) How much do each of your group members get?

a) i)ED1 ii) ED 1	b) i) ED 0 ii) ED 1
c) i) ED 0.10 ii) ED 0.10	d) i) ED 1 ii)ED 0

Q4) If the return (R) from the group account is 60cents and you allocate ED 10 i) How much do you get in return from contributing to the group account? ii) How much do each of your group members get?

a) iED 5 ii) ED 5	b) i) ED 0 ii)ED 4
c) i) ED 6 ii) ED 6	d) i) ED 4 ii)ED 0

Q5) Suppose the return (R) from the group account is 60cents. What will be your earnings and the earnings of person 1 in your group if …?

i)   You allocate ED 50 to the group account and your group members contribute the following: person 1 allocates ED 25 to the group account, while person 2 allocates ED 75 to the group account ?

Total Contribution to the group account………..

Your period earnings……………..   Person 1's period earnings…………..

Note: You only need to put the calculation here.

Q6) Suppose the return (R) from the group account is 10cents. What will be your earnings and the earnings of person 1 you are paired with if …?

i)   You allocate ED 50 to the group account and your group members contribute the following: person 1 allocates ED 25 to the group account, while person 2 allocates ED 75 to the group account ?

Total Contribution to the group account……….

Your earnings…………….   Person 1's earnings…………..

Q7) At the start of each period the first decision maker announces a value of the return. Following this **all** group members make their actual contributions to the

group account. Does the first decision maker proposed return have to be the same as the actual return?

a) Yes, their proposed return must be the same as the actual return	b) No, their proposed return does not need to be the same as the actual return.

Bibliography

[1] Kenneth L. Sokoloff and Stanley L. Engerman. Factor endowments, institutions, and differential paths of growth among new world economies. *ournal of Economic History*, 57(2):513–513, 1997. doi: 10.1257/jep.14.3.217. URL http://www.aeaweb.org/articles.php?doi=10.1257/jep.14.3.217.

[2] D. Acemoglu, S. Johnson, and J.A Robinson. The colonial origins of comparative development: An empirical investigation. *American Economic Review*, 91(5):1369–1401, 2001.

[3] C.L. Apicella, E.M. Azevedo, N.A. Christakis, and J.H. Fowler. Evolutionary origins of the endowment effect: Evidence from hunter-gatherers. *American Economic Review*, 104 (6):1793–1805, 2014.

[4] U. Gneezy, A. Leibbrandt, and J.A. List. Ode to the sea: Workplace organizations and norms of cooperation. *The Economic Journal*, 2015. Forthcoming.

[5] L.J. Kotlikoff and L.H. Summers. The role of intergenerational transfers in aggregate capital accumulation. *Journal of Political Economy*, 89(4):706–732, 1981.

[6] M.De Nardi. Wealth inequality and intergenerational links. *Review of Economic Studies*, 71(3):743–768, 2004.

[7] E. Carranza. Soil endowments, female labor force participation, and the demographic deficit of women in india. *American Economic Journal-Applied Economics*, 6(4):197–225, 2014.

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

[9] A. Alesina, P.Giuliano, and N.Nunn. Fertility and the plough. *American Economic Review*, 101(3):499–503, 2011.

[10] G.P Murdock and D.R White. Standard cross-cultural sample. *Ethnology*, 8(4):329–369, 1969.

[11] D.F Aberle. Matrilineal descent in cross-cultural comparison. In D. Schneider and K. Gough, editors, *Matrilineal Kinship*. Berkeley: University of California Press, 1976.

[12] C.J. Holden, R. Sear, and R. Mace. Matriliny as daughter-biased investment. *Evolution and Human Behavior*, 24(2):99–112, 2003.

[13] R. Mace and C.J. Holden. A phylogenetic approach to cultural evolution. *Ecology and Evolution*, 20(3):116–121, 2005.

[14] Monique Borgerhoff Mulder, Jan Beise, Gregory Clark, William Irons, Donna Leonetti, Samuel Bowles, Tom Hertz, Adrian Bell, and Patrizio Piraino. Intergenerational wealth transmission among agriculturalists foundations of agrarian inequality. *Current Anthropology*, 51(1):65–83, 2010.

[15] H.S Kaplan, P.L Hooper, and M. Gurven. The evolutionary and ecological roots of human social organization. *Philosophical Transactions of the Royal Society: Biological Sciences*, 364(1533):3289–3299, 2009.

[16] L.M. Harris Kleiber, D. and A.C.J. Vincent. Improving fisheries estimates by including women's catch in the central philippines. *Canadian Journal of Fisheries and Aquatic Sciences*, 71(5):656–664, 2014. doi: 10.1126/science.179.4068.90. URL http://www.sciencemag.org/content/179/4068/90.abstract.

[17] J Hartung. Polygyny and inheritance of wealth. *Current Anthropology*, 23(1):1–11, 1982. doi: 10.1126/science.179.4068.90. URL http://www.sciencemag.org/content/179/4068/90.abstract.

[18] J Hartung. Matrilineal inheritance - new theory and analysis. *Behavioral and Brain Sciences*, 8(4):661–670, 1985. doi: 10.1126/science.179.4068.90. URL http://www.sciencemag.org/content/179/4068/90.abstract.

[19] P.J Richerson and R. Boyd. *Not by genes alone: how culture transformed human evolution*. Chicago: The University of Chicago Press, 2005.

[20] F.M Jordan, R. D. Gray, S. J. Greenhill, and R. Mace. Matrilocal residence is ancestral in austronesian societies. *Proceedings of the Royal Society B-Biological Sciences*, 276 (1664):1957–1964, 2009.

[21] M. Goldstein and C.Udry. The profits of power: Land rights and agricultural investment in ghana. *Journal of Political Economy*, 116(6):981–1022, 2008.

[22] G.P Murdock. In *Ethnographic Atlas: A Summary*. Pittsburgh: The University of Pittsburgh Press, 1967.

[23] E. Boserup. *Woman's Role in Economic Development*. London, George Allen and Unwin Ltd, 1970.

[24] M Botticini and A. Siow. Why dowries? *American Economic Review*, 93(4):1385–1398, 2009.

[25] Robert L. Trivers and Dan E. Willard. Natural selection of parental ability to vary the sex ratio of offspring. *Science*, 179(4068):90–92, 1973. doi: 10.1126/science.179.4068.90. URL http://www.sciencemag.org/content/179/4068/90.abstract.

[26] P. Hage and J. Marck. Matrilineality and the melanesian origin of polynesian y chromosomes. *Current Anthropology*, 44:S121–S127, 2003.

[27] R. Blust. Austronesian culture history: The window of language. *Transactions of the American Philosophical Society*, 86:28–35, 1996.

[28] F.M Jordan, R.D Gray, S.J Greenhill, and R.Mace. Matrilocal residence is ancestral in austronesian societies. *Proceedings of the Royal Society B: Biological Sciences*, 276 (1664):1957–1964, 2009.

[29] C. Levi-Strauss. *Anthropology and Myth: Lectures, 1951-1982*. Oxford: Blackwell, 1984.

[30] R. Blust. Language and culture history: Two case studies. *Asian Perspectives*, 27(2): 205–27, 1990.

[31] W.H Goodenough. A problem in malayo-polynesian social organisation. *American Anthropologist*, 57(1):71–83, 1955.

[32] A. Beath, A.BenYishay, G. d'Adda, P. Grosjean, and R. Weber. Decentralization, elite capture and private contributions: Experimental evidence from the solomon islands. Technical report, Mimeo, University of New South Wales, 2014.

[33] UNEP-WCMC, W.C., WRI, and TNC. Global distribution of warm-water coral reefs, 2010.

[34] NOAA. Coral reefs, 2014.

[35] G.S Helfman, B.B Collette, and D.E Facey. In B. Science, editor, *The Diversity of Fishes*. Malden, MA, 1997.

[36] E. Field. Fertility responses to urban land titling programs: The roles of ownership security and the distribution of household assets. Technical report, Mimeo, Duke University, 2003.

[37] FAO. Soil production index: Geo network, 2012.

[38] FAO. Digital soil map of the world: Geo network, 2012.

[39] Emily Oster. Unobservable selection and coefficient stability: Theory and validation. Working Paper 19054, National Bureau of Economic Research, May 2014. URL http://www.nber.org/papers/w19054.

[40] M.D Webb. Reworking wild bootstrap based inference for clustered errors. Technical report, Mimeo, Queens Economics Department, 2013.

[41] M. Roncevic. Ethnologue: Languages of the world. *Library Journal*, 130(14):1957–1964, 2005.

[42] Kenneth L. Sokoloff and Stanley L. Engerman. Institutions, factor endowments, and paths of development in the new world. *Journal of Economic Perspectives*, 14(3):217–232, 2000. doi: 10.1257/jep.14.3.217. URL http://www.aeaweb.org/articles.php?doi=10.1257/jep.14.3.217.

[43] Laurence J. Kotlikoff and Lawrence H. Summers. The role of intergenerational transfers in aggregate capital accumulation. *Journal of Political Economy*, pages 706–732, 1981.

[44] N. Qian. Missing women and the price of tea in china: The effect of sex-specific earnings on sex imbalance. *Quarterly Journal of Economics*, 123(3):1251–1285, 2008.

[45] Q. Ashraf and O. Galor. The "out of africa" hypothesis, human genetic diversity, and comparative economic development. *American Economic Review*, 103(1):1–46, 2013.

[46] Q. Ashraf and O. Galor. Dynamics and stagnation in the malthusian epoch. *American Economic Review*, 101(5):2003–2041, 2011.

[47] E. Spolaore and R. Wacziarg. The diffusion of development. *Quarterly Journal of Economics*, 124(2):469–529, 2009.

[48] Q. Ashraf and O. Galor. How deep are the roots of economic development? *Journal of Economic Literature*, 51(2):325–369, 2013.

[49] J. Lott and L. Kenny. Did women's suffrage change the size and scope of government? *Journal of Political Economy*, 107(6):1163 – 1198, 1999.

[50] L. Edlund and R. Pande. Why have women become left-wing? The political gender gap and the decline of marriage. *Quarterly Journal of Economics*, 117(3):917 – 961, 2001.

[51] R. Pande and D. Ford. Gender quotas and female leadership. Technical report, World Development Report: Gender Equality and Development, 2012.

[52] M. Bertrand. Ceos. *Annual Review of Economics*, 1(1):1 – 29, 2009.

[53] Donna Ginther and Shulamit Kahn. Women's careers in academic social science: Progress, pitfalls and plateaus. In Alessandro Lanteri and Jack Vromen, editors, *The Economics of Economists*. Cambridge University Press., 2014.

[54] W. Güth, V. Levati, M. Sutter, and E. van der Heijden. Leading by example with and without exclusion power in voluntary contribution experiments. *Journal of Public Economics*, 91(5-6):1023 – 1042, 2007.

[55] David Levy, Kail Padgitt, Sandy Peart, Daniel Houser, and Erte Xiao. Leadership, cheap talk, real cheap talk. *Journal of Economic Behavior and Organization*, 77:40 – 52, 2011.

[56] C. Meidinger and M.-C. Villeval. Leadership in teams: Signaling or reciprocating? Technical report, Working Paper 02-13, GATE, University of Lyon, 2002.

[57] B. Jack and M. Recalde. Leadership and the voluntary provision of public goods: Field evidence from Bolivia. *Journal of Public Economics*, forthcoming, 2014.

[58] P. Grossman, M. Komai, and J. Jensen. Leadership and gender in groups: An experiment. *Canadian Journal of Economics*, Forthcoming, 2015.

[59] Erin L. Krupka and Roberto A. Weber. Identifying social norms using coordination games: Why does dictator game sharing vary? *Journal of the European Economic Association*, 11(3):495 – 524, 2013.

[60] L. Gangadharan, T. Jain, P. Maitra, and J. Vecci. The fairer sex? women leaders and deceptive behaviour. Technical report, Monash University and Indian School of Business, 2015.

[61] R. Chattopadhyay and E. Duflo. Women as policy makers: Evidence from a randomized policy experiment in India. *Econometrica*, 72(5):1409 – 1443, 2004.

[62] I. Clots-Figueras. Are female leaders good for education? Evidence from India. *American Economic Journal: Applied Economics*, 4(1):212 – 244, 2012.

[63] L. Beaman, E. Duflo, R. Pande, and P. Topalova. Female leadership raises aspirations and educational attainment for girls: A policy experiment in India. *Science*, 335(6068):582 – 586, 2012.

[64] L. Iyer, A. Mani, P. Mishra, and P. Topalova. The power of political voice: Women's political representation and crime in India. *American Economic Journal: Applied Economics*, 4(4):165–193, 2012.

[65] L. Beaman, R. Chattopadhyay, E. Duflo, R. Pande, and P. Topalova. Powerful women: Does exposure reduce bias? *Quarterly Journal of Economics*, 124(4):1497–1540, 2009.

[66] S. Bhalotra, I. Clots-Figueras, and L. Iyer. Path-breakers: How does women's political participation respond to electoral success? Technical report, University of Essex, 2013.

[67] R. Ban and V. Rao. Tokenism or agency? The impact of women's reservations on village democracies in South India. *Economic Development and Cultural Change*, 56(3):501 – 530, 2008.

[68] P. Bardhan, D. Mookherjee, and M. Parra Torrado. Impact of political reservations in West Bengal: Local governments on anti-poverty targeting. *Journal of Globalization and Development*, 1(1):501 – 530, 2010.

[69] P. Bardhan and D. Mookherjee. Political clientilism and capture: Theory and evidence from West Bengal, India. 2012.

[70] F. Afridi, V. Iversen, and M. Sharan. Women political leaders, corruption and learning: Evidence from a large public program in India. IZA Discussion Paper No. 7212, 2013.

[71] Pablo Casas-Arce and Albert Saiz. Women and power: Unpopular, unwilling, or held back? *Journal of Political Economy*, 123(3):641 – 669, 2015.

[72] Rainbow Murray. The power of sex and incumbency: A longitudinal study of electoral performance in france. *Party Politics*, 14(5):539 – 554, 2008.

[73] D. Matsa and A. Miller. A female style in corporate leadership? Evidence from quotas. *American Economic Journal: Applied Economics*, 5(3):136 – 169, 2013.

[74] Economist. *A Nordic Mystery*. November 15, 2014.

[75] A. Ramesh and Bharti Ali. *33 1/3: Reservation towards Political Empowerment*. Books for Change, Bangalore, 2001.

[76] D. Benjamin, J. Choi, and A. Strickland. Social identity and preferences. *American Economic Review*, 100(4):1913–1928, 2010.

[77] J. Burns. Race, diversity and pro-social behavior in a segmented society. *Journal of Economic Behavior and Organization*, 81:366–378, 2012.

[78] Y. Chen, S. Li, T. Liu, and M. Shih. Which hat to wear? Impact of natural identities on coordination and cooperation. *Games and Economic Behavior*, 84:58–86, 2014.

[79] T Besley, R. Pande, and V. Rao. Just rewards? local politics and public resource allocation in south india. *World Bank Economic Review*, 26(2):191 – 216, 2012.

[80] U. Gneezy and J. Potters. An experiment on risk taking and evaluation periods. *Quarterly Journal of Economics*, 112(2):631 – 645, 1997.

[81] M. Schaffner. Programming for experimental economics: Introducing coral - a lightweight framework for experimental economic experiments. Technical report, Mimeo, QUT, 2013.

[82] L. Gangadharan, T. Jain, P. Maitra, and J. Vecci. Social norms, gender and beliefs: Evidence from experiments in the lab and in the field. Technical report, Monash University and Indian School of Business, 2015.

[83] H. Tajfel. *Human groups and social categories*. Cambridge University Press, 1973.

[84] Alberto Bisin and Thierry Verdier. The economics of cultural transmission and socialization. In Jess Benhabib, Alberto Bisin, and Matthew O. Jackson, editors, *Handbook of Social Economics*, volume 1A, pages 339 – 416. The Netherlands: North-Holland, 2011.

[85] R. Ingelhart and P. Norris. *Rising Tide: Gender Equality and Cultural Change around the World*. Cambridge MA, 2003.

[86] WDR. *World Development Report: Gender Equality and Development*. World Bank, 2012.

[87] G. Akerlof and R. Kranton. Economics and identity. *Quarterly Journal of Economics*, 115:715 – 753, 2000.

[88] J. List and D. Reiley. The effects of seed money and refunds on charitable giving. *Journal of Political Economy*, 110:215–233, 2002.

[89] C. Eckel, E. Fatas, and R. Wilson. Cooperation and status in organisations. *Journal of Public Economic Theory*, 12(4):737–762, 2010.

[90] C. Kumru and L. Vesterlund. The effects of status on charitable giving. *Journal of Public Economic Theory*, 12(4):709–735, 2010.

[91] L. Vesterlund. Informational value of sequential fundraising. *Journal of Public Economics*, 87:627–657, 2003.

[92] C. Eckel and R. Wilson. Social learning in coordination games: does status matter? *Experimental Economics*, 10:317–329, 2007.

[93] S.B Ball, C. Eckel, P. Grossman, and W. Zame. Status in markets. *The Quarterly Journal of Economics*, 116(1):161–188, 2001.

[94] J. Berg, J. Dickhaut, and K. McCabe. Trust, reciprocity, and social history. *Games and Economic Behavior*, 10(1):122–142, 1995.

[95] A. Alesina and E. La-Ferrara. Who trusts others? *Journal of Public Economics*, 85(2):207–234, 2002.

[96] S. Gächter, B. Herrmann, and C. Thöni. Trust, voluntary cooperation, and socio-economic background: survey and experimental evidence. *Journal of Economic Behavior and Organization*, 55(4):505–531, 2004.

[97] P. Whiteley. The origins of social capital. In J. van Deth, M. Maraffi, K. Newton, and P. Whiteley, editors, *Social capital and Europeans democracy*. London: Routledge, 1999.

[98] S.A. Haslam, S.D. Reicher, and M.J. Platow. *The new psychology of leadership: Identity, influence and power*. Psychology Press, London and New York, 2011.

[99] K. Abbink and D. Harris. In-group favouritism and out-group discrimination in naturally occurring groups. Technical report, Mimeo, Monash University, 2012.

[100] M.B Brewer. Ingroup bias in the minimal intergroup situation: A cognitive-motivational analysis. *Psychological Bulletin*, 86:307–334, 1979.

[101] L. Goette, D Huffman, and S. Meier. The impact of group membership on cooperation and norm enforcement: Evidence from random assignments to real social groups. *American Economic Review, Papers and Proceedings*, 96:212 – 216, 2006.

[102] G. Gupta, M. Mahmud, P. Maitra, S. Mitra, and A. Neelim. Religion, minority status and trust: Evidence from a field experiment. Technical report, Mimeo, Monash University, 2014.

[103] B. Mullen, R. Brown, and C. Smith. Ingroup bias as a function of salience, relevance, and status: An integration. *European Journal of Social Psychology*, 22:103–122, 1992.

[104] W. G. Stephan and C. W. Stephan. An integrated threat theory of prejudice. In S. Oskamp, editor, *Reducing Prejudice and Discrimination*. Mahwah, N. J., Erlbaum., 2000.

[105] H. Tajfel, M. Billig, R. Bundy, and C. Flament. Social categorization in intergroup behaviour. *European Journal of Social Psychology*, 1:149–178, 1971.

[106] Iris Bohnet, Benedikt Herrmann, and Richard Zeckhauser. Trust and the reference points for trustworthiness in gulf and western countries. *Quarterly Journal of Economics*, 125 (2):811 – 828, 2010.

[107] M Naef and J. Schupp. Measuring Trust: Experiments and Surveys in Contrast and Combination. IZA Discussion Paper No. 4087, 2009.

[108] U. Fishchbacher. Z-tree: Zurich toolbox for ready-made economic experiments. *Experimental Economics*, 10:171–178, 2007.

[109] B. Greiner. The online recruitment system orsee 2.0 - a guide for the organization of experiments in economics. Technical report, Mimeo, University of Cologne, 2004.

[110] D.L Bahry and R. Wilson. Confusion or fairness in the field? rejections in the ultimatum game under the strategy method. *Journal of Economic Behavior and Organization*, 60: 37–54, 2006.

[111] J. Brandts and G. Charness. The strategy versus the direct-response method: A first survey of experimental comparisons. *Experimental Economics*, 14:375–398, 2011.

[112] C. Camerer. *Behavioral Game Theory: Experiments on Strategic Interaction*. Princeton University Press, 2003.

[113] J. S. Adams and S. Freedman. Equity theory revisited: Comments and annotated bibliography. In L. Berkowitz and E. Walster, editors, *Advances in experimental social psychology*, pages 43 – 90. New York: Academic Press, 1976.

[114] M. Isaac, J. Walker, and S. Thomas. Divergent evidence on free riding: An experimental examination of some possible explanations. *Public Choice*, 43:113–149, 1984.

[115] J. Potters, M. Sefton, and L. Vesterlund. After you - endogenous sequencing in voluntary contribution games. *Journal of Public Economics*, 89:1399–1419, 2005.

[116] T. Schelling. *The Strategy of Conflict*. Harvard University Press, 1960.