Markets, Civic Values, and Rules

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Abstract

Does market exposure shape civic values and rules that constrain opportunistic behavior and foster generalized cooperation? I use a natural experiment from southern Ethiopia, where markets evolved inadvertently from garrisons that Menelik built after defeating the Oromo people. Comparing Oromo individuals who are from the same clan and attend the same market but vary in their distance from that market, I show a strong decline in civic values and rule formation with increase in market distance. These findings are not due to sorting or distance from administration, schools, and religious places. The results arise because asymmetric information and lack of third-party verification in markets engendered different kinds of exchange structures. In groups further away from markets, cooperation was achieved through exchange between known individuals from a dense social network. In groups closer to markets, prospect of exchange with strangers created a demand for civic values and rules, which together with community sanctioning facilitated generalized cooperation in impersonal interactions. Accordingly, individuals in proximity to markets show higher trust and also cooperate more in anonymous interactions. Distance to markets with verifiable product quality and exposure to outside world have no effects.

JEL: C93, D8, N97, Z13

Keywords: Markets, civic values, rules, monitoring, cooperation, Oromo people, Ethiopia

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I. Introduction

Much of the trade among modern day humans occurs via markets, yet our understanding of how market exposure shapes our values and rules is still poor. I investigate a long-standing debate in economics on whether markets engender or deplete civic values and rules that facilitate generalized cooperation among strangers for the provision of public goods.[1].

The link between market exposure and civic values or rules is one of the most debated topics in the social sciences (Hirschman, 1982). Markets are hypothesized to affect civic values and rules in two rival ways: civilizing and destructive. The *deux commerce* hypothesis argues that market interactions foster honest behavior, civility, and cooperation (Montesquieu, 1748; Smith, 1763; Paine, 1792; Condorcet, 1795). For instance, Montesquieu (1748, p81) wrote "Commerce...polishes and softens barbaric ways." Smith (1763) also remarked "whenever commerce is introduced into any country, probity and punctuality always accompany it." In contrast, the destructive hypothesis argues that markets undermine social relations, corrupt virtues, and erodes moral values. Marx (1872) and Veblen (1899) argued that this is because markets foster envy and wants, and lead to coercion, exclusion, and corruption (see also Shleifer, 2004).[2]

Understanding the direction of the effect of market exposure is not straightforward. Universal market access in developed economies means limited variation in market exposure, which makes it difficult to tease out its effect. However, limited market penetration in developing countries offers large variation. While it is plausible that the effect of market exposure differs by the extent of market penetration, the findings from the developing world are nonetheless of general interest, as they are a characteristic of many societies and possibly emulate market penetration in Europe in the past. Using data from 15 diverse small-scale societies, Henrich et al. (2001, 2010) document a positive association between market exposure and fairness in dictator, ultimatum, and third party punishment games.

While these studies make a seminal contribution, two large gaps remain. First, market locations are not randomly assigned, so pre-existing differences across societies with weaker and stronger market exposure could give rise to omitted variables bias and reverse causality from initial cultural differences. Moreover, because markets are invariably located in urban areas, their effect may also be confounded with other services on offer, such as access to administration, schooling, and religious places (Algan, Cahuc and Shleifer, 2013; Oreopoulos and Salvanes, 2011). If these services affect civic values and rules in

[1]Civic values are unwritten norms of conduct that urge individuals to cooperate for the common cause if other do the same, even though free riding would yield a higher monetary payoff, whereas rules are formal written down regulations that specify contribution levels (North, 1991; Guiso, Sapienza and Zingales, 2011; Alesina and Giuliano, 2015)

[2]A parallel literature examines how markets affect morals towards third parties, such as environment, labor, and animals. While Falk and Szech (2013) find that markets erode moral values, Bartling, Fehr and Özdemir (2020) find that this is due to repeated play and not market interaction.

similar ways as markets, this would lead to an upward bias. Second, markets are multi-faceted institutions that may affect civic values and rules through different channels. One possibility is that market exchange allows individuals to interact with outsiders. This could be because markets operate like schools and religious places and bring together individuals from different social groups or it could be through impersonal exchange of goods and services. As individuals interact with outsiders, they get to learn about them and update their beliefs, which then drives changes in civic values and rules. Another possibility arises when markets are prone to asymmetric information. In the absence of impartial third parties – a characteristic of many developing countries – such markets may favour a demand for civic values and rules in the absence of which agreements are unlikely to conclude (Arrow, 1970; North, 1991; Bowles, 1998). Distinguishing between the different channels is warranted not only to understand whether markets operate the same way as other institutions like schools and religious places, but also to unbundle different aspects of markets exchange.

I attempt to fill these gaps using a natural experiment on the emergence and location of markets in the homeland of Arsi Oromo people from Ethiopia. Several characteristics of this setting are conducive to studying the effect of market exposure on civic values and rules. First, during the 16th century, some 300 years before the emergence of markets, the Arsi migrated to the study area. Before settling down, they split into two moieties. Those who descended patrilineally from the ancestor named *Siko* moved to the north of the river Wabe Shebele, whereas those who descended patrilineally from the ancestor named *Mando* settled to the south of the river. During this time, the spiritual and political institutions forming the cornerstone of the Oromo society also split, with each moiety acquiring its own set of institutions. All individuals in the study area descended from the common *Mando* ancestor. This means, prior to the emergence of markets, the inhabitants of the study area were culturally homogeneous and were also exposed to similar institutions (Hassen, 1994). This common origins in the pre-treatment period mitigates the concern over initial differences from driving the emergence of markets or changes in civic values and rules.

The second notable feature of the Arsi homeland is the manner in which the markets were formed and their locations were determined. Markets evolved inadvertently when Menelik II, the emperor of Ethiopia, defeated the Arsi and conquered their homeland in the late 1890s. To consolidate his power, Menelik built garrisons housing his military officials and their families. These garrisons gradually outgrew their military purpose and evolved into market places. Since it was not the intention of Menelik to build markets, this event was unintended. There were no markets before the invasion and this is also confirmed by Italian maps from the corresponding period showing complete absence of towns, roads, and trading routes. The Arsi played no role in the locations of garrisons. These locations were determined by Menelik on the basis of geographical suitability to

defense. The garrisons were built on a plateau enclosed by high mountains on either side and their locations did not intersect any pre-existing routes for trade or regions renowned for slavery or coffee cultivation.

Obviously, the location of garrisons is not random as such, but it does not pose problems for studying the effect of markets. This is in part due to the third characteristic of the setting which concerns the manner in which the Arsi formed settlements long before the markets emerged. The Arsi formed settlements on the basis of their clan. The locations of these settlements were determined by a ritual called "placing a leaf" through which clan leaders declared communal property rights to land on a first come first serve basis. This ritual together with strong regional identity and marriage alliances held the different Arsi clans together by discouraging inter-clan warfare and conquering each others' territories (Gnamo, 2014). These practices ensured the stability of clan-based settlement patterns and made migration or sorting by market location unlikely.

Despite the above features, it could be that market location is incidentally correlated with some pre-existing settlement patterns, most likely with clan characteristics. The fourth feature helps me mitigate this concern. The Arsi settlements are located in the Bale mountains at an altitude of 2600-3500 meters. For this reason, the clan-based settlements were dispersed into several groups. Movement across groups was rare because of the belief that the spirit of one's ancestors continues to live with them. So, individuals preferred to live in the group where their ancestors once lived and died. Importantly, despite belonging to the same clan, some of these groups happen to be closer but others further away from markets. This allows me to absorb unobserved clan specific differences by introducing clan fixed effects. This is crucial given the central role of clans in the organization of the Arsi society as well as their identity. Since households from different groups may attend different markets, I further use market fixed effects to absorb time-invariant unobserved differences across different markets in the study area. This yields a powerful identification strategy, which allows me to compare individuals who are from the same clan and attend the same market, but vary in their distance to that market for reasons unrelated to pre-existing differences.

The variation in market distance affects opportunity cost of market attendance. Individuals from groups closer to markets have lower opportunity costs and therefore attend markets regularly. In contrast, individuals from groups further away from markets rarely attend markets because of high opportunity costs. Since there are no roads in the study area, I capture variation in market exposure using distance of groups to markets. Distance is measured as the number of hours it takes on average to access a market on foot, which ranges from 30 minutes to 5 hours for a one-way market trip (mean 2.85, s.d. 1.11). Data from individual level surveys further confirm that distance affects market attendance.

The markets attract thousands of individuals not known to each other, who congregate on an open ground every week to trade primarily in livestock. According to FAO (2018),

such markets provide livelihood to over 30 percent of Africa's population and account for 35 percent of it's agricultural GDP. Since livestock quality is difficult to verify and trade occurs via informal agreements in the absence of impartial third parties, these markets are prone to asymmetric information and enforcement of agreements. Fafchamps (2003) notes this is a common feature across markets in Africa and covers many goods and services, such as credit, insurance, labor, and land. Therefore the mechanisms that are expected to drive cooperation in such markets and form the basis for civic values and rules are likely to be common throughout Africa, as well as many developing countries. This makes the findings from this study of general interest.

I use three measures of civic values and rules. The first measure uses a public goods game to capture individual propensity to cooperate if others do the same (conditional cooperation). In the game, 720 individuals from 52 groups take two contribution decisions in a one-shot, anonymous interaction, ruling out benefits from repeated interaction and reputation formation (Fischbacher, Gächter and Fehr, 2001; Fischbacher and Gächter, 2010). In the first decision, individuals choose their contribution simultaneously, such that both civic values and beliefs play a role. In the second decision, individuals decide on their contribution conditional on all possible contribution decisions of the other player (strategy method). This design makes beliefs redundant, allowing me to isolate civic values from beliefs.[3] While free riders and altruists are expected to contribute zero and full endowment respectively, conditional cooperators are expected to contribute more the more the other player contributes. Since the share of altruists turns out to be trivial, I use the Spearman rank correlation between self and other players' contribution as a measure of conditional cooperation. The higher the Spearman ρ the higher is the propensity to cooperate conditionally (mean 0.499, s.d. 0.518).

All groups in the study area are engaged in a forest commons management program. Under this program, groups are entitled to use forest resources in return for maintaining the forest quality, for example, by restricting outsiders from accessing the forest. This requires individuals to take turns in monitoring their group managed forest. Since monitoring is individually costly but benefits the group, it provides a second measure of civic values. I use a survey conducted in private with 508 individuals to collect data on time spent monitoring in a month (mean 27.80 hours, s.d. 15.48). The third measure is based on formal written down bylaws restricting livestock grazing inside the group managed forest, which is considered by ecologists as the main contributing factor for natural forest regeneration (Amente, 2006). I ask 511 individuals in a survey to report if their group has grazing bylaws (mean 44.6 percent, s.d. 49.8) and the number of months grazing is restricted inside the forest (mean 1.76 months, s.d. 1.698).[4]

[3]To determine payoffs, the unconditional decision is chose randomly for one of the two players and then matched with the corresponding conditional decision of the other player.

[4]I confirm this using data from the community survey and also records maintained by each group.

I find a strong negative and highly significant effect of market distance on civic values and grazing bylaws. One standard deviation increase in market distance (roughly 1 hour) results in a fall in conditional cooperation by nearly 0.15 points, time spent monitoring the forest by over 6 hours, and likelihood of having grazing bylaws by 25 percentage points. These magnitudes are economically large given the means of these variables reported above. The findings are robust to controlling for geography (altitude, slope, river, precipitation), economic variables (population density, cattle ownership, land holding, Gini of cattle, Gini of land holding, prevalence of polygamy, and bride price), and social variables (settlement fragmentation, female share, education, migration, and program duration). These results are not confounded with other services offered by market places. The results hold when I control for distances from local administration, schools, and religious places, as well as trust in government.

I now turn to mechanisms underlying the relationship between market distance, civic values, and grazing bylaws. Because of asymmetric information and lack of third party verification, livestock traders confront cooperation problems. If buyers do not trust sellers, they won't be willing to pay a high price. Knowing this, sellers would have no incentive to produce high quality livestock, resulting in inefficient outcomes. Vignette studies reveal that depending on market distance groups evolved different kinds of exchange structures to resolve this problem. In groups further away from markets, the opportunity costs of market attendance was high, so individuals entered into exchange with others from their social network. In these exchanges, cooperation was sustained via reputation in social networks, which deterred opportunistic behavior (Polanyi, 1944; Granovetter, 1985).

However, in groups closer to markets, the lower opportunity cost of market attendance offered the possibility of entering into exchange with strangers. Since market exchange involves impersonal interactions that cease to exist after the exchange is over, new mechanisms that went beyond in-group trading were required to sustain cooperation. It is plausible that the prospect of efficiency gains from exchange created a demand for civic values and rules (Arrow, 1970; Bowles, 1998). In a seminal experiment, Kollock (1994) showed that higher trust emerges in situations when product quality is not verifiable than when it is verifiable. In a labor market experiment, Fehr, Gächter and Kirchsteiger (1997) also show the importance of civic values in the enforcement of incomplete contracts.

Vignette studies reveal that civic values and rules did not operate in the dark. They were accompanied by community sanctioning mechanisms through which dishonest traders faced exclusion from future exchange by the victim's community, as long as the scope of moral hazard was low (Greif, 2006). Central to the functioning of this mechanism is information on past transactions which is challenging to acquire in impersonal market environment. The Oromo custom of announcing one's name and clan at the time of greeting made it possible to acquire this information partially. Deb (2020) shows that this can foster cooperation through community responsibility in which the entire community of

the defector is held responsible and faces punishment by victims.

Since there are no roads connecting groups further away from markets, the different kinds of exchange structures have endured for over a century now, resulting is stronger civic values among individuals from groups closer to markets. Because the set of individuals in the group is known, market exposure could have allowed individuals to develop institutional arrangements like grazing bylaws to deter opportunistic behavior in managing their commons. If market exposure engendered civic values then individuals from groups closer to markets should exhibit stronger trust and cooperation in one-shot and anonymous interactions. I test this using data on behavior from the first decision of the public goods game where individuals decided simultaneously on their contribution to the public good. I find that both beliefs over others' contribution (trust) and own contribution level are significantly higher among individuals from groups closer to markets.

It is also plausible that markets affect civic values by exposing individuals to the outside world. As individuals interact with strangers, they get to learn more about them and eventually change their views, resulting in optimistic beliefs and cooperation. I offer three pieces of evidence to rule out this explanation. First, I construct a falsification test that uses distance from other markets that do not trade in livestock. These markets trade in products of verifiable quality and are thus not prone to asymmetric information. Conditional on market fixed effects to account for market specific differences, I show that distance to other markets has no effect on civic values and rules. Moreover, its inclusion as an additional control does not lead to changes in the main results. Second, I show that the main results are robust to controlling for several proxies of exposure to the outside world, such as ratio of age at which women marry relative to men, clan endogamy, and clan preference in marriage. Third, using the program database on names of household heads, I test whether market distance affects name giving pattern (Arabic or Oromo) as another proxy for cultural change from outside exposure (see Algan et al., 2022). I find no difference in naming patterns by market distance.

This paper contributes to the rich and unsettled debate in economics and other social sciences on the role of markets for civic values and rules (see Hirschman, 1982; Fourcade and Healy, 2007). The findings from this paper complement seminal studies by Henrich et al. (2001, 2010); Ensminger et al. (2004) in several ways. First, the paper documents the positive effect of markets on both unwritten civic values as well as formal written down bylaws. This finding is important as it shows that market exposure can shape cultural norms and formal rules, both of which are necessary for the provision of public goods. Second, the paper relies on a plausibly exogenous variation in market exposure, whereby market location was determined by Menelik and not the Arsi themselves. It also uses within country, within clan, and within market context, which alleviates the scope of pre-existing differences from driving the results. Together, these features render a causal interpretation of the results reported in the paper. Third, the paper highlights the

importance of market distance in the evolution of different kinds of exchange structures. In this sense, the paper also connects to seminal works of (Polanyi, 1944; Granovetter, 1985; North, 1991; Greif, 2006) who study conceptually the effect of social organization on culture. The paper compliments this literature by showing empirically the effect of different kinds of exchange structures on civic values and rules. Fourth, the paper also uses a large sample of individuals and a mixture of experimental and survey data, which allows for a robust inference.

The paper is organized as follows. Section II provide a description of the field setting on the emergence of markets. Section III describes data on measures of civic values and market distance. Section IV presents the empirical strategy and Section V the main results. In Section VI, I examine the potential channels of causality. Section VII concludes.

II. Historical Background

This section provides an overview of the natural experiment on the emergence and location of markets in the homeland of the Arsi, who make up the largest sub-branch of the Oromo people. Broadly speaking, the history of the Arsi can be divided into early and late period. The early period was characterised by migration and settlement formation by the Arsi. The late period was characterized by invasion of the Arsi homeland by Menelik and emergence of markets from garrisons built by him. I describe each of these two events below. The section relies mainly on a comprehensive study of the Arsi Oromo by Gnamo (2014), studies on Oromo society by Perham (1948); Haberland (1963); Jalata (2010), and other branches of the Oromo people by Hassen (1994).

II.A. Migration and Settlement Formation

Migration.– The ancestral homeland of all Oromo people including the Arsi is believed to be in a region of southern Ethiopia bounded by river Ganale to the north and river Dawa to the south. In the early 16th century, the Oromo started migrating northwards from their ancestral homeland in response to increasing population pressure. While migrating, they split into two confederations, of which the *Borana* moved to the west and *Barentu* to the east (Figure 1). These confederations split further into many divisions, each settling in a different part of Ethiopia. The Arsi trace their origin to the *Barentu* confederation. To reduce the population pressure further, the Arsi split into two moieties. Of these, those who descended patrilineally from the ancestor named *Siko* settled to the north of the river Wabe Shebele, whereas those who descended patrilineally from the ancestor named *Mando* settled to the south.

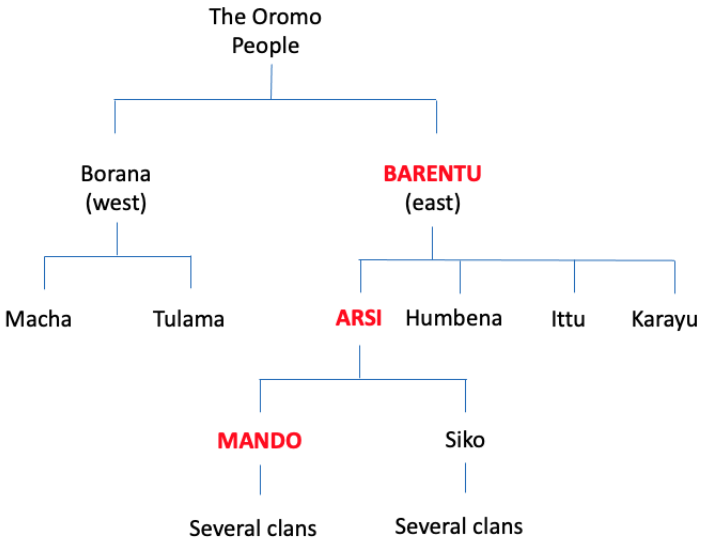


Figure 1: The Oromo Genealogy Tree

Notes. The figure shows genealogy tree of the Mando Arsi. The zones refer to the current administrative divisions of Ethiopia. It is based on Gnamo (2014, p31).

Alongside kinship, the Oromo society was organized along two key institutions: spiritual and religious leadership (*Qallu*) and age-based political leadership (*Gada*). Initially, these institutions were common across the different branches of the Oromo people. However, once the Oromo started moving in diverse directions, large geographical distances between the different branches made it difficult to have common leadership. Consequently, as and when the Oromo segmented into different branches, the leadership also split. Among the Arsi, when *Siko* and *Mando* moved on different side of the river, they also developed their separate religious and political institutions.

The study area lies entirely to the south of the river Wabe Shebele and all individuals residing there descended from the common ancestor named *Mando*. This means, the pre-market population had similar cultural origins from common ancestry and was also exposed to common spiritual and political institutions. As Hassen (1994, p6) writes "In the highlands of Bale and the valley of river Ganale, the various Oromo tribes seem to have shared a common language, a culture, an oral literature, customs and manners..." This feature ensures there were no cultural and institutional differences in the pre-treatment period that could have affected market location and civic values or rules.

Settlement formation.– The Arsi formed settlements on the basis of their clan (*gosa*), which is the lowest level of common lineage that is above the household and plays an important role in the organization of Oromo society. The location of these settlements was determined by a ritual called *Baala Buusa* (leaf laying ceremony) through which clan leaders (*Abba baala*) declared exclusive communal property rights to land on a first come first served basis by placing a leaf. These rights were inherited by the descents of the *Abba*

baala and were not disrupted by conquest of the Arsi by Menelik (Gnamo, 2014, p63).

Baala Buusa played an important role in ensuring the stability of clan-based settlements by preventing land disputes among the numerous Arsi clans (Gnamo, 2014, p33). A sense of strong regional identity (*Arsooma*), friendship (*firooma*), marriage (*soddomaa*) and matrimonial alliances (*dhalooma*) bound the different Arsi clans together and further prevented conflicts and territorial take overs. As Gnamo (2014, p33) writes "*Gosa* [clan], however strong and powerful it might have been, did not have the right to conquer and occupy the land belonging to the descendants of *Abba baala*, who was said to be the founder of the clan."

The patrilocal nature of residence and local beliefs added further to the stability of clan-based settlements. As Gnamo (2014, P63) writes, "the residence rule is patrilocal among the Oromo, where men are expected to be born, grow up, live, bring their wives to their residence, and die." The Arsi rarely moved even within their clan homeland because of the belief that the spirit of their ancestors continues to live with them. So, individuals preferred to reside in the area where their forefathers once lived, died, and were buried. Being in one's clan's homeland also allowed individuals access to common resources like grazing land and fuelwood, as well as social support in day to day life. An in depth survey on the clan of each household in the study area confirms this: migration is rare and each settlement is dominated by individuals from a single clan.

The settlements of Mando Arsi are found on the northward facing slope of the Bale mountains at an altitude of 2600-3500 meters above the sea level. Owing to the rugged terrain, the clan-based settlements were fragmented (Hodson, 1927, p92) into smaller units called 'groups' that are scattered throughout the mountains. This unique feature allows me to exploit variation in market exposure within clans and have control over this important aspect of the Oromo society by introducing clan fixed effects.

II.B. Market Emergence and Interactions

Emergence of markets.– The Arsi society was a paramount (Murdock, 1967) and did not form any princely states or kingdoms (Gnamo, 2014, p68) or centers of trade and towns (Horvath, 1968). This is evident from an early map of the study area that the Italians prepared in 1894 before the emergence of garrisons (see Figure 2). On the map, the study area is labeled as "Monti degli Arussi" and stands out as an empty space. The nearest towns – Arbegoma and Chevena – are over 80 km away from the study area and fall in the homeland of the Sidamo people, who are ethnically distinct from the Oromo people. In the absence of markets, exchange was based on reciprocity and redistribution among individuals from the same or neighboring clans (Jalata, 2010).

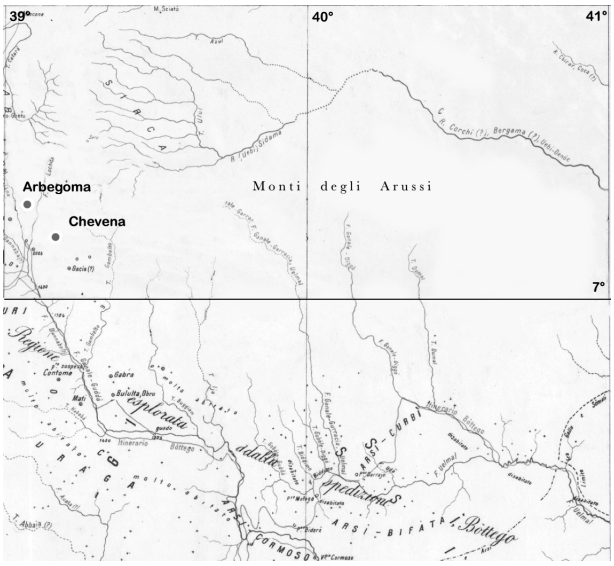


Figure 2: The Study Area Before the Conquest by Menelik

Notes: The map shows the study area "Monti degli Arussi" and its surroundings in 1894 before the invasion by Menelik. Source: Corpo di stato maggiore, Ministero della guerra, Italy, 1894.

In 1880s, Menelik, the king of Shoa (1865-1889) and subsequently the emperor of Ethiopia (1889-1913), began expanding the southern boundaries of his kingdom by waging wars against different branches of the Oromo people. In the late 1890s, he managed to subjugate the Mando Arsi with little resistance (Pankhurst, 1998, p178-179). This was made easy because Menelik had access to superior European firearms, whereas the Mando Arsi fought with spears (Perham, 1948, p293-294). To maintain his hold over the subjugated lands, Menelik built a series of garrisons called *ketemas*, where his imperial officials and soldiers were stationed. The French traveller, M. H. Deherain, noted that between 1887 and 1910 at least 37 garrisons were founded (see Akalou, 1973; Baker, 1990).

These garrisons were placed from a militarily strategic point of view on a plateau to the south of the river Wabe Shebele, between the 4000 meters high Bale Mountains to the south and equally high Mount Kaka and Mount Enkolo to the north (Figure 3). These geographical barriers offered protection to garrisons in the event of an attack. The location of garrisons was neither on pre-existing trade routes (see Zewde, 2002, p23) or on routes used for the Red Sea slave trade (see Shell, 2018, p66) or for coffee trade.[5]

[5]The trade routes were far from the homeland of Mando Arsi. Neither of the two moieties of the Arsi were involved in slave trade. The altitude of the area is over 2500 meters, which is not suitable for coffee cultivation or for coffee growth in the forest. While coffee does grow naturally to the south of the Bale mountains in the Harenna forest, one has to cross a steep escarpment of over 1000 meters to transport coffee through the study area, which is highly unlikely.

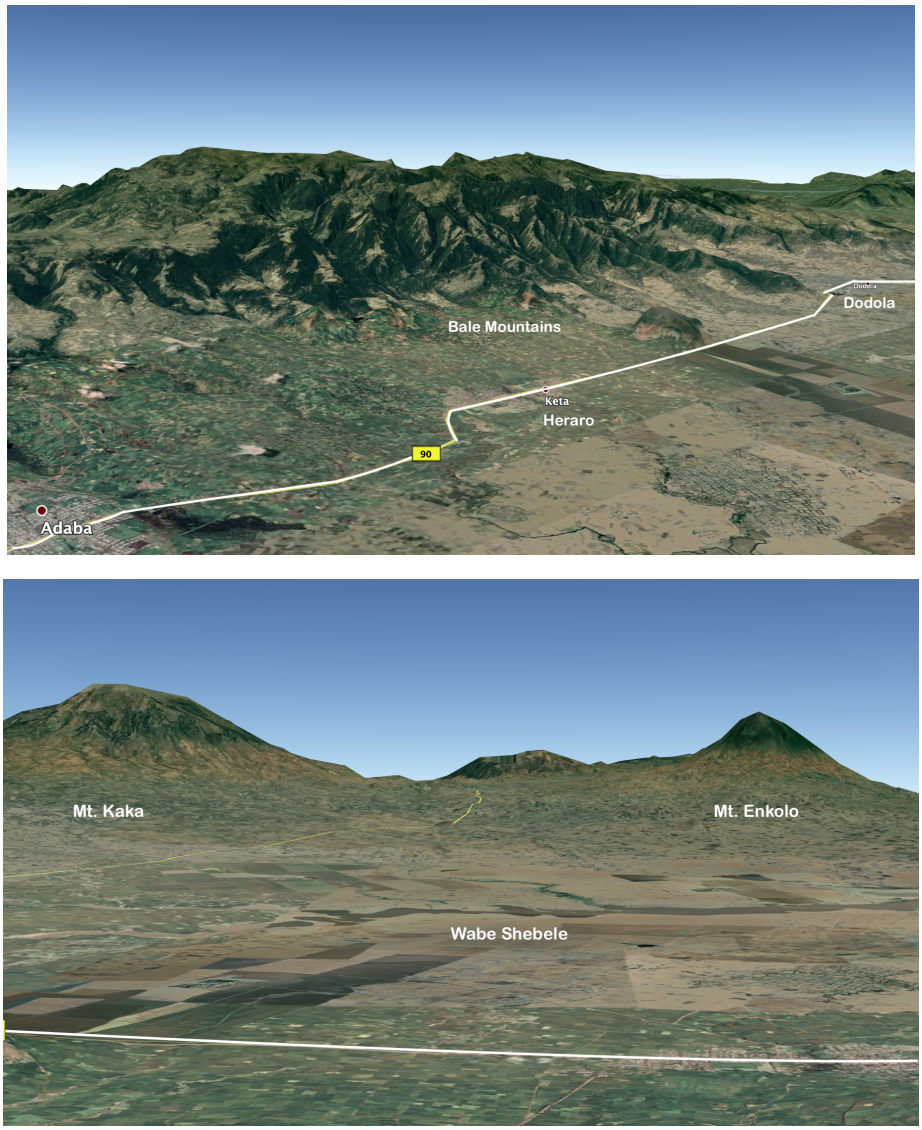


Figure 3: The Location of Garrisons in the Study Area

Notes: The picture in the upper panel shows the Bale Mountains rising to the south of the main towns (along the road - white line). The picture in the lower panel shows the R. Wabe Shebele just to the north of the road. Mt. Kaka (left) and Mt. Enkolo (right) are beyond the river. Source: Google Maps 2022.

Once a garrison was created, military governors and soldiers moved in with their families and built residences and offices. Gradually, the garrisons outgrew their military purpose and evolved into centers of trade and commerce (Akalou, 1973). The Italian tourist guide to East Africa, written during the short Italian control of Ethiopia (1935-1941), described these garrisons as thriving market centers rather than as military establishments (Italiana et al., 1938, 464).

Market interaction.– The garrison towns in the study area (and elsewhere) host periodic markets on two days in a week called "market days". These markets attract thousands of sellers and buyers from the adjoining rural areas, who are not known to each other. This includes both Oromo (Arsi and non-Arsi) and non-Oromo people (Amhara and Tigray

who live in towns). The markets are held on a large ground(s), which is over 12 times the size of a standard football field. On this ground, sellers do not have a fixed location from which they operate. Rather locations are taken on a first come first serve basis. The first day of the market is mainly reserved for livestock trade. The number of individuals attending market on this day is also larger than on the second day. For instance, the market in Dodola attracts as many as 5,000 people on the first day. Livestock is the most important good traded in markets; this includes cattle, horses, donkey, mule, goat, and sheep. Other prominent items of note include local butter, honey, fuel wood, charcoal, bamboo, rubber boots, textiles, candles, and utensils.

Since livestock exchange form the cornerstone of markets, several features are worth noting. First, market exchange occurs among strangers and takes the form of cash and carry. Livestock (or another good) is inspected on the spot and exchange takes place against instant payment in cash. There are no orders in advance and sellers do not offer any credit. Second, livestock exchange is prone to asymmetric information, as the seller has more information about livestock quality than the buyer. This problem is further aggravated by primitive patterns of production that produce highly uneven quality of livestock and absence of quality guidelines as well as veterinarian checks before purchase. One implication of this problem is that sick livestock with communicable diseases could infect the entire herd of the buyer resulting in major losses. While there are some cues that the buyers may use to adjudge livestock quality, these are far from perfect and the problem nonetheless remains. Third, Livestock exchange is riddled with informal agreements that cannot be verified and enforced by impartial third parties, resulting in commitment problems. As such, there are no impartial third parties in the form of courts or police. This is a characteristic of many countries in sub-Saharan Africa, where state capacity diminishes outside of the capital cities (Michalopoulos and Papaioannou, 2014). Even if such third parties did exist, the small size of the transactions does not merit court action and would rather make exchange costly and inefficient. Other form of enforcement agencies like mafias or private armies are absent. Fourth, markets attract a large fluctuating population of buyers and sellers who engage in impersonal interactions that cease to exist once the exchange is over. These features imply that buyers and sellers are locked in a cooperation problem. If the buyer does not trust the seller, they will not be willing to pay a high price. Knowing this, the seller has no incentive to produce high quality livestock.

Under these circumstances, markets may end up trading only poor quality livestock or may even fail to exist altogether. However, thriving markets mean individuals have clearly managed to avoid this fate. This is not because of personalized relationships based on long-term exchange, which the community surveys and vignettes reveal to be rare. As I discuss in detail in section V, this is due to changes in civic values reinforced by multilateral reputation from community punishment.

III. Data

There are 56 groups in the study area, all of which lie in the West Arsi administrative zone. Of these, 52 are in the sample. Four groups were excluded because a pilot study was conducted in three groups and data were not available for the fourth group. I start with a description of groups, followed by measures of civic values, rules, and market distance, and conclude with descriptive statistics.

III.A. Groups

Of the 52 groups in the sample, 35 are in Dodola district and 17 in Adaba district (Figure 5). All groups are located inside the Adaba-Dodola Forest Protection Area and their boundaries are deep inside the forest, following geographical features such as mountain tops or rivers. The groups range in size from 16 to 30 households and are similar with respect to language, religion, and occupation. In all groups, households speak the Arsi dialect of Oromo language, follow Sunni Islam mixed with Oromo beliefs, and practice small-scale herding together with subsistence agriculture and forest gathering. The level of socio-economic development is poor: except for primary schools and mosques, other infrastructure including roads, electricity, tap water, dispensary, irrigation, and veterinary care are completely lacking. The topography together with absence of roads makes these groups remote and difficult to reach. One has to organize an expedition and carrying weekly supplies of food, water, and other basic necessities.

The groups are inhabited mainly by individuals from 10 different clans that account for over 80 percent of the households: *Doda* (30%), *Adaba* (13.35%), and *Shedama* (9.36%), *Holbatana* (7.2%), *Abena* (5.74%), *Bidika* (3.46%), *Angiso* (2.99%), *Magda* (2.88%), *Doyo* (2.86%), and *Weqe* (2.35%). Of these, the first three clans alone account for over 50 percent of the households.

All groups are engaged in a participatory forest commons management program which was launched by the German Agency for International Cooperation together with the Oromia State Government in 2000. Under the program, each group was given property rights to manage the forest in its vicinity as a common property resource. The group inhabitants are allowed to use their forest commons to graze livestock, harvest timber and non-timber forest products, and maintain existing homesteads and farms inside the forest. In return for these benefits, the groups are required to maintain existing forest cover, restrict further expansion of agriculture and settlement inside the forest, and prevent outsiders from accessing the forest.

Each each group is governed by an elected five-member executive committee headed by a leader. This organizational structure is similar across all groups and is used to administer forest related decisions. All other administrative decisions are taken in consultation with the village to which the groups belong. There are five villages into which the groups are

organized and each village has an administrative center which is some distance away from the groups (see Figure 5).

Migration across groups is rare. There is no in-migration other than due to marriage. Out-migration is rare in part due to patrilocal nature of residence and the custom of living in area where one's forefathers lived. In addition, households are now also required to maintain residence inside their group to benefit from the commons management program. Out-migration for three or more months could result in the expulsion of the household from the program. Data from a community survey also shows that in the past 55 years only 1.5 percent of the households have left.

III.B. Civic Values and Bylaws

I consider the following measures of civic values and rules: individual propensity to cooperate conditionally, time spent monitoring the group managed forest, and formation of rules regulating the use of group managed forest.

Propensity for Conditional Cooperation

Propensity for conditional cooperation measures the individual willingness to cooperate provided others have done the same even when the payoff maximizing strategy is to defect on others' cooperation. This reflects civic values as it allows groups to achieve collective action. Laboratory and field evidence highlight the importance of conditional cooperation for the provision of public goods (Fehr and Gächter, 2000), Donation (Frey and Meier, 2004), and common property resources (Rustagi, Engel and Kosfeld, 2010; Kosfeld and Rustagi, 2015).

However, measuring conditional cooperation in the field is a challenging task due to confounding motivations operating at the same time. Individuals who appear cooperative might do so not because they have civic values but because of benefits from repeated interaction and reputation formation. Another concern is confounding of conditional cooperation with beliefs. Individuals can have the same propensity for conditional cooperation yet their behavior might differ because of differences in beliefs about others' cooperation. For instance, conditional cooperators with optimistic beliefs would cooperate, but those with pessimistic beliefs would defect. These concerns imply that observed cooperative behavior is a poor proxy for conditional cooperation. This poses a major concern while comparing groups especially if they differ systematically in their beliefs.

The Experiment.– I measure conditional cooperation using a one-shot anonymous linear public goods game in the strategy method (Fischbacher, Gächter and Fehr, 2001; Fischbacher and Gächter, 2010). This allows me to rule out repeated interaction and reputation-based benefits, as well as beliefs from playing a role. The instructions and procedures for the game are presented in Appendix B.

During the game, two players were randomly assigned to an experimental group. Each player received an endowment of six bills of one Ethiopian Birr and had to decide on his contribution to the public good. Any amount in the public good was multiplied by 1.5 and then distributed equally between the two players, regardless of their contribution. Because the marginal per capita return from contributing one Birr to the public good was 0.75 (1.5/2), it was in the self-interest of players to contribute nothing. Yet, if both players contributed their entire endowment, each player's earnings increased from 6 to 9 Birr; this created a cooperation dilemma.

Each player took two decisions: unconditional and conditional. In the unconditional decision, players contributed simultaneously and stated their beliefs about the contribution of the other player in the group. In the conditional decision, the strategy method was used, wherein players were asked to state their own contribution for each of the other players' contribution. This procedure made beliefs redundant. To ensure incentive compatibility, both decisions were made payoff relevant. A die was rolled to determine for which player the unconditional decision is taken; this was matched with the other players' conditional decision to calculate payoffs. The payoff function of player i, where $i = (1, 2)$ is given by:

$$\pi_i = 6 - C_i + 0.75(C_i + C_i) \tag{1}$$

where C_i denotes the contribution of player i to the public good and $(C_1 + C_2)$ is the total value of the public good. The experiments were conducted from March-May in 2008. Each session lasted about three hours including instructions. This was the first time ever that individuals took part in an experiment. On average, each player earned 7.5 Birr, which was slightly over one day's wage in Dodola, the largest town.

Measuring conditional cooperation.– Following Fischbacher, Gächter and Fehr (2001) and Fischbacher and Gächter (2010), I use the conditional decision to capture an individuals' propensity for conditional cooperation. Since individuals can condition their contribution on the contribution of the other player in this decision, it provides a revealed measure of an individuals' civic value: (i) *free riders* are expected to contribute zero in all seven decisions regardless of the other players' contribution; (ii) *altruists* are expected to contribute their full endowment in all seven decisions regardless of the contribution of the other player; and (iii) *conditional cooperators* are expected to increase their contribution in the increasing contribution of the other player. I find that a large fraction of individuals behave either as free riders or as conditional cooperators, but only a handful behave as altruists. Accordingly, I use the Spearman correlation (*rho*) between self and other players' contribution in the conditional decision as a measure of an individuals' propensity for conditional cooperation. The higher the Spearman *rho* the higher is the propensity

to cooperate conditionally, whereas zero correlation implies a tendency for free riding.[6]

Of the 1368 households residing in 52 groups, 720 individual households took part in the experiment, representing 53 percent of the household population. Given the importance of clan in the organization of the Oromo society, I test for the representativeness of the sample by comparing clan proportions in the sample with those in the population. Figure A.1) of Appendix I plots the proportion of ten major clans in the study area and shows these to be similar across the experimental sample and population (p-value 0.45).

The average propensity to cooperate conditionally turns out to be 0.499 (s.d. 0.518). While conducting robustness checks, I also use a binary measure, which equals 1 if an individual is a conditional cooperator, otherwise zero. To do so, I classify individuals for whom the Spearman *rho* is positive and statistically significant at p-value <0.05 as conditional cooperators. I find that 47 percent of the individuals behave as conditional cooperators and 11 percent as free riders. The rest includes altruists, hump-shaped, flat contributors, and other types.

Time Spent Monitoring

While managing their forest commons, groups engage in decentralized monitoring. Household go in small patrol teams to ensure that outsiders are not using their forest and to ensure that rules (if any) regulating resource use are being followed by group members. However, monitoring is prone to second order free rider problem: it is individually costly but generates group level benefits. Households are better off if other households engage in monitoring while they themselves can do other things in the meantime. If every household thinks like that, there will be no monitoring in the equilibrium, which could result in poor provision of public goods, in this case, the forest. Thus, time spent monitoring provides a relevant measure of civic values.

I measure time spent monitoring using data from a household survey conducted after the experiment. In this survey, 508 individuals were interviewed privately on the average time they spent monitoring the group managed forest in a month. As before, the frequency of different clans in the sample is similar to that in the population, underscoring the representativeness of the sample (p-value = 0.38, see also Figure A.2). The average time spent monitoring the forest is 28 hours per month (s.d. 15.48). I verify this using a community survey in which the executive committee in each group was interviewed to find out the average time households spend monitoring group managed forest.

Bylaws on Resource Use

Rules regulating resource use are considered critical for the management of public goods

[6]The Spearman *rho* is also zero for altruists but only 1.8 percent of the individuals behave as altruists. It is also zero for flat contributors, individuals who contribute the same amount that is different from zero and full endowment, but their share is just 2.3 percent.

and commons. In the context of the field setting, the single biggest cause of deforestation was the disappearance of young trees from the forest due to browsing by livestock. To mitigate this kind of deforestation, bylaws regulating livestock grazing inside the forest are considered critical (Amente, 2006).

I use individuals responses in household surveys conducted privately on whether the group has bylaws restricting grazing inside the forest and on the same spot, as well as the duration of these restrictions. 511 households who took part in this survey were also representative of the population. The proportion of different clans in the sample is the same as in the population (p-value = 0.44, see also Figure A.3). 44.6 percent (s.d. 49.8) of the respondents reported their group having grazing bylaws. Grazing was restricted, on average, for 1.76 months in a year (s.d. 1.698). I confirm this further using community surveys and books maintained by groups.

III.C. Distance to Markets

There are three markets in the study area that trade mainly in livestock: Dodola, Heraro, and Adaba (Figure 5). These markets are on average 12 km apart from each other. Households from each group tend to attend only one of these markets. There are no roads connecting groups to markets and the groups are small, so I measure market distance at the group level as the number of hours households take on average to cover a one-way market trip on foot. The data on market distance was collected using a community survey. The market distance ranges from less than 1 hour to 5 hours, the mean being 2.85 hours (s.d. 1.11).

The variation in market distance is expected to affect the opportunity cost of market attendance. Households from groups that are closer to markets have lower opportunity costs of market attendance than households from groups that are further away. For these reasons, some households are expected to attend markets every week and the others only rarely. Data from a household level survey on the number of market trips in a week confirms this. In a regression of market trips (mean = 1.42, s.d. 0.65, n=504) on market distance, the coefficient on market distance turns out to be negative and highly significant (-0.27, s.e. 0.04). This means market trips drop down to zero when the one-way distance reaches around 3.5 hours.

III.D. Descriptive Statistics

Table 3 shows summary statistics on civic values, market distance, bylaws, and covariates. Figure 4 shows bin scatter plots of market distance with civic values and bylaws. It is evident from the figure that conditional cooperation, monitoring, and the likelihood of forming grazing bylaws decline steeply and significantly with the increase in market distance (p-value < 0.001).

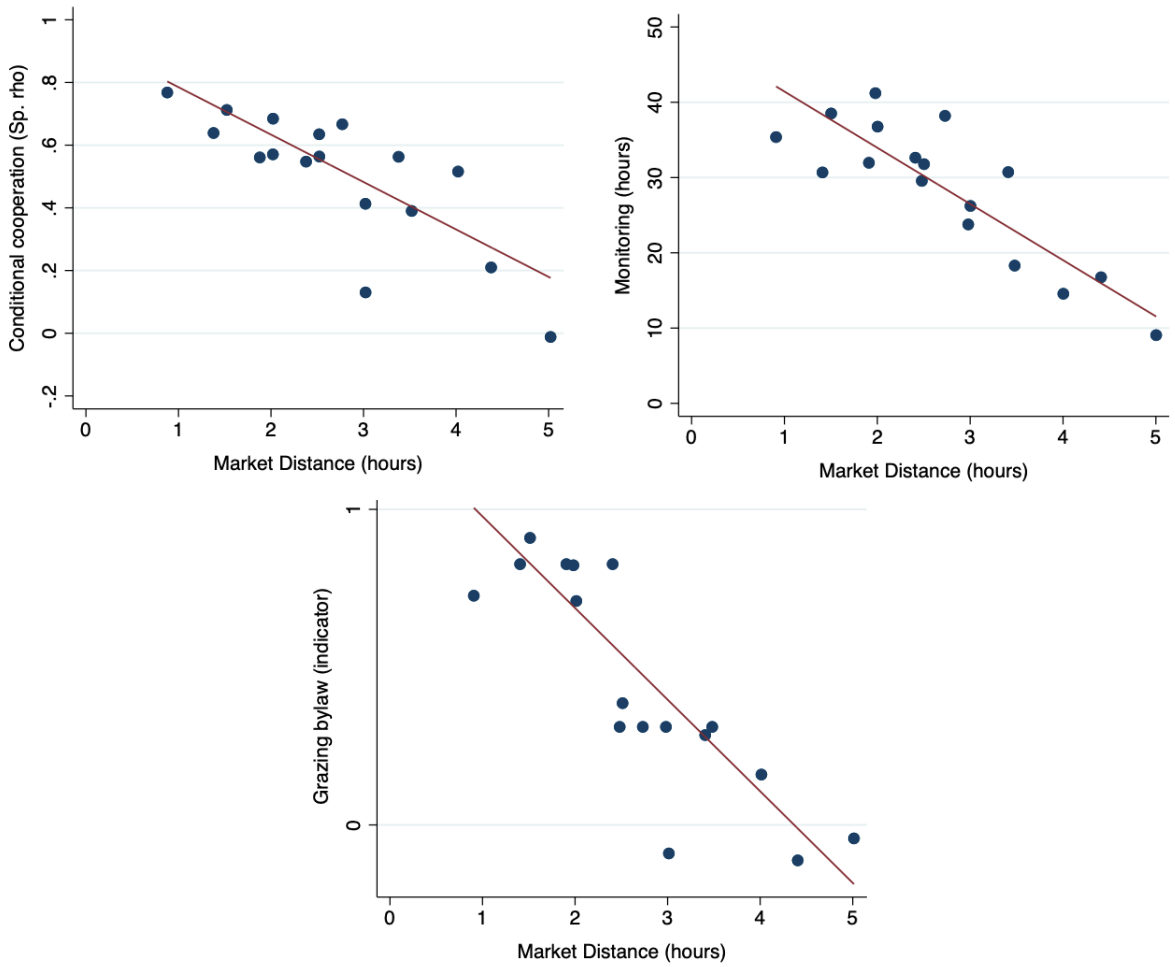


Figure 4: Binscatter of Civic Values and Grazing Bylaws with Market Distance

Notes: The figure shows bin scatter plot of conditional cooperation (Spearman rho), time spent monitoring (hours per month), grazing bylaws (indicator) with market distance (hours on foot) after accounting for market fixed effects.

Table 1: Summary Statistics

	Measurement unit	Obs.	Mean	Standard deviation
	A: Civic Values			
Main measures				
Conditional cooperation (Spearman *rho*)	individual	720	0.499	0.518
Monitoring (hours per month)	individual	508	27.804	15.480
Grazing bylaws (indicator)	individual	511	0.446	0.498
Alternative measures				
Conditional cooperator (indicator)	individual	720	0.468	0.499
Grazing ban (months)	individual	509	1.463	1.761
	B: Market Distance			
Market distance (hours)	group	52	2.851	1.111
	C: Main Covariates			
Altitude	group	52	0.891	0.227
Population density	group	52	3.752	0.523
Settlement fragmentation	group	52	0.489	0.246
Female share	group	52	0.202	0.113
Program duration	group	52	0.500	0.505
Cattle ownership	individual	720	11.208	10.191
Land ownership	individual	720	1.494	1.113
Education (years)	individual	720	3.369	3.063
	D: Additional Covariates			
Slope	group	52	13.942	3.498
River	group	52	0.154	0.364
Precipitation variability	group	52	54.892	6.291
Family size	individual	671	8.548	4.176
Polygamy prevalence	group	52		
Bride Price	group	52		
Gini Cattle ownership	group	52	0.334	0.083
Gini Land ownership	group	52	0.298	0.077
Village distance	group	52	1.644	1.094
School distance	group	52	0.827	0.384
Mosque distance	group	52	0.709	0.456

Notes: Main Measures: Conditional cooperation is the Spearman *rho* between own and other players' contribution in the conditional decision of the public goods game. Monitoring is time spent monitoring the group managed forest in a month. Grazing bylaws is an indicator which equals 1 if a group has grazing bylaws. All three measures are at the individual level. *Alternative Measures*: conditional cooperator is an indicator for an individual who behaved as a conditional cooperator in the conditional decision of the public goods game. It is measured at the individual level. Monitoring and grazing bylaws are defined the same way as above but are measured at the group level. *Market distance* is measured at the group level as one-way distance to market. *Main Covariates*: Altitude is measured as hardwood forest, which is the proportion of group managed forest that is above 3100 meters. Population density is group population divided by group area. Settlement fragmentation is the Herfindahl index which measures the probability that two persons selected randomly from a group will not be from the same settlement. Female share is the share of female household heads in a group. Program duration is an indicator variable, where 1 means early phase and 0 late phase. Cattle ownership is the number of cattle owned by an individual. Land ownership is the land holding of an individual. Education is in years of schooling. *Additional Covariates*: Slope is measured in degrees. River is an indicator for a group having a river. Precipitation seasonality is the yearly fluctuation in rainfall. Family size is the number of individuals in a family. Polygamy prevalence is the proportion of men with more than one wife. Bride price is the average price paid to the bride's family at the time of marriage/1000. Gini of cattle and land are the Gini indexes. Administrative, school and mosque distance are local distances measured in hours. Measurement unit indicates the level at which the data was collected.

IV. Empirical Specification and Strategy

I study the effect of market distance on civic values and bylaws using the following OLS specification:

$$y_{igcm} = \alpha_0 + \beta MD_{gcm} + \mathbf{H}_{igcm}\delta + \mathbf{X}_{gcm}\gamma + \theta_c + \eta_m + \epsilon_{igcm} \quad (2)$$

where y_{igcm} is the civic value (conditional cooperation, monitoring) or grazing bylaw reported by individual i from group g, clan c, attending market m. MD is market distance from a group, measured as the number of hours on foot households take to access a market. θ_c is a fixed effect for the clan of the individual, η_m is the fixed effect for the market that the individual attends, and ϵ_{igcm} is an idiosyncratic error term. $\mathbf{H}$ and $\mathbf{X}$ are a vector of household and group specific characteristics that are considered important determinants of civic values. I start by including several different proxies of geography like altitude, slope, river, and precipitation. Since economic prosperity is difficult to capture in small-scale societies, I include several proxies like population density, livestock ownership, land holding, Gini of cattle, and Gini of land. In the study area, wealthier individuals are much more likely to have more than one wife, so I also include prevalence of polygamy and bride price. To proxy for socio-demographic variables, I consider female share, settlement fragmentation, years of education, and the duration for which a group has been under the forest management program. The coefficient of interest is β, which captures the effect of market distance on civic values and rules.

There are three main concerns in the estimation of equation 2. First, if there are pre-treatment differences across groups closer to and further away from markets then this could result in reverse causality and omitted variables bias. Second, omitted variables bias could also arise if market distance ends up capturing the effect of additional opportunities that market places may offer, such as access to administration, schooling, and religious places. Third, if civic minded individuals sort by market distance then it would result in self-selection. The natural experiment on market emergence and location, which is discussed in detail in section II, allows me to mitigate these concerns. I summarize the main features of this experiment below.

First, the common cultural origins and exposure to common spiritual and political institutions in the pre-treatment period mitigates the concern over omitted variables bias and reverse causality from pre-treatment differences.

Second, markets evolved accidentally from garrisons. It was not the intention of Menelik to build centers of trade. Rather, his aim was to build garrisons to maintain control over the subjugated area. It is highly unlikely that Menelik envisioned the transition of these garrisons eventually to market places, as there was no such precedent in Ethiopian history. This would explain the location of garrisons in places that are neither rich in natural resources nor lie close to pre-existing trade routes. The Arsi played no role in the

location of garrisons. The locations were determined by Menelik and were largely based on geographic suitability to defense. Also, garrison building was not specific to the Arsi homeland but also occurred at other places in southern Ethiopia.

Third, the stability of clan-based settlement patterns alleviates the concern over sorting by market distance. Selective migration to groups near markets would have made these groups larger. However, I see no association of market distance either with group size or population size. Columns 1-2 of Table A.1 show the coefficient on market distance is rather positive, but it is very small in magnitude and is also statistically insignificant. Data from a community survey shows little migration in the past and as column 3 shows it is uncorrelated with market distance.

Fourth, owing to the rugged terrain of the Bale mountains, clan-based settlements are fragmented into several groups. This feature allows me to control for time invariant clan-specific differences by introducing clan-fixed effects. In the main specification, I control for three clans that account for over 50 percent of the households: *Doda*, *Shedama*, and *Adaba*. While conducting robustness check, I also introduce fixed effects for seven other clans that together account for an additional 30 percent of the households. To account for unobserved market specific differences, I control for market fixed effects. This strategy allows me to compare individuals who attend the same market and are of the same clan but vary in their distance from that market. Figure 5 displays this identification strategy using the example of groups wherein households belonging to the same clan (Doda) and attending the same market (Heraro) but differ widely in their distance to this market. In the figure, groups labeled 1, 2, and 3 are located at a distance of 1.5, 3, and 5 hours. As Figure 6 shows, these groups differ significantly in their conditional cooperation, time spent monitoring, and formation of grazing bylaws.

If some groups happen to be closer to markets while others further away for reasons unrelated to pre-existing characteristics, then market distance should be uncorrelated with such group level variables. I carry out a balance check in Table A.2. I find that a wide variety of geographical, economic, and social variables do not differ by market distance. The differences are small in magnitude and are also statistically insignificant.

Fifth, the field setting offers an opportunity to separate the effect of markets from confounding opportunities. To begin with, administrative offices that are of relevance to households are located in the main settlement of the village and not the market place (see Figure 5). Second, households rarely have more than 3 years of education, so access to primary school is most important. The primary schools are located either in groups where the households reside or in neighboring groups or in the main settlement of the village. Similarly, there are around 15 local mosques that the households attend. These are dispersed throughout the study area. While conducting robustness checks, I control for walking distance to the village administration, local primary school, local mosques, and trust is district government.

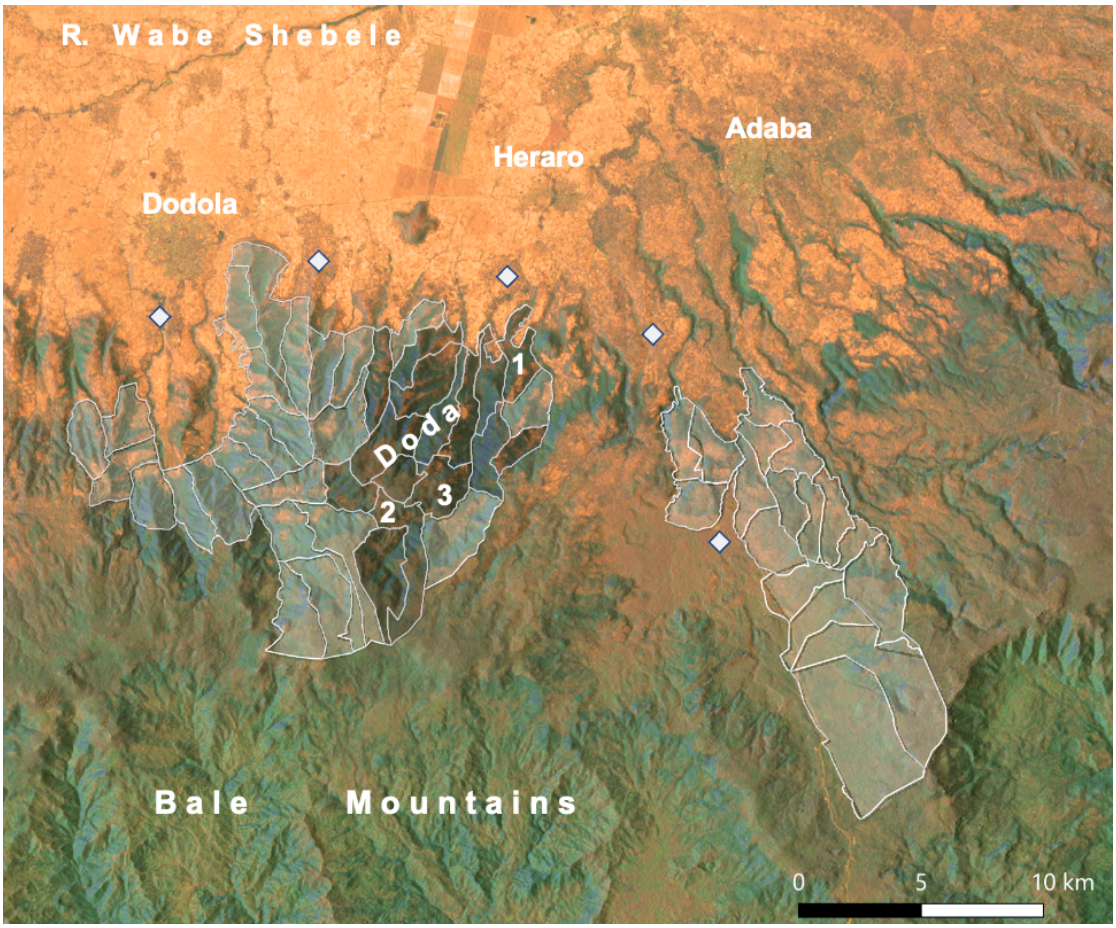


Figure 5: Location of Groups, Markets, Villages, and Clan Homeland

Notes: The figure shows the location of groups (white boundaries) and markets. The groups are found in two clusters, of which the Dodola cluster is to the left and the Adaba cluster is to the right. The Figure also shows the homeland of the Doda clan which is spread over 15 groups. Households from these groups mostly attend Hererao market but vary is their distance to that market. For example, groups labeled 1, 2, and 3 are located at a distance of 1.5, 3, and 5 hours from Heraro. The solid white diamonds indicate the location of village administration office.

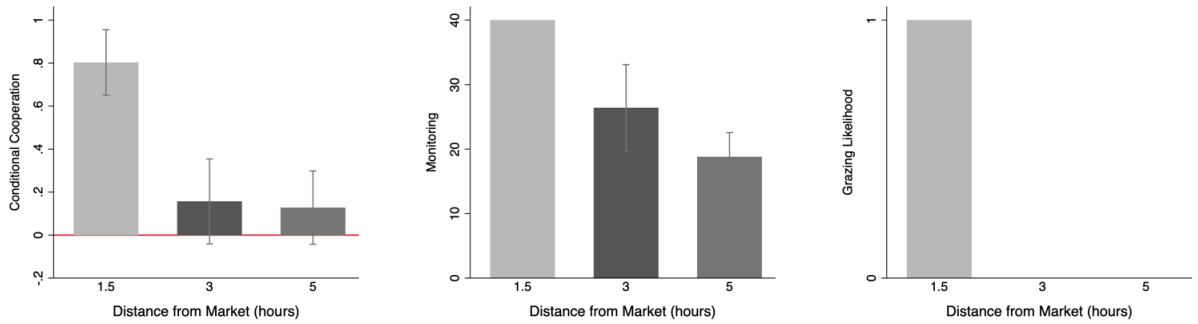


Figure 6: Identification Strategy: Market Distance, Civic Values, and Grazing Bylaws

Notes: The figure shows differences and civic values and rules by market distance across groups that belong to the same clan (Doda) and attend the same market (Heraro). Capped lines indicate 95 percent confidence bands. Bars without confidence bands indicate lack of variation. Absence of bars in grazing likelihood means absence of rule formation.

V. Results

V.A. Main Results

Table 2 present results on the association of market distance with civic values and rules, proxied by conditional cooperation in Panel A, time spent monitoring in panel B, and grazing bylaws in Panel C. The table reports only the coefficient on market distance. For the coefficients on covariates, see Table A.3 in Appendix I.

Column 1 is without any controls and shows that market distance has a consistently negative effect in all the three panels. A one standard deviation increase in market distance (1.11 hours) is associated with a decline in conditional cooperation by 0.16 points, time spent on monitoring by over 8.5 hours, and the likelihood of having grazing bylaws by 30 percentage points. These effects are large in magnitude relative to the mean of these variables and are also statistically significant at the 1 percent level. Also, market distance explains 12-51 percent of the variation in civic values and grazing bylaws.

The above results could be capturing clan and market specific differences, so I control for clan and market fixed effects in column 2. The coefficient on market distance changes little and remains statistically significant throughout. The fixed effects are jointly statistically significant in panel B (joint-p-value$<$0.001) and panel C (joint-p-value=0.046), where their inclusion leads to a jump in the R-squared by 6-7 percentage points.

In columns 3-5, I introduce one at a time controls for geography, economic prosperity, and socio-demographic variables. I start by controlling for altitude in column 3. In groups where the forest lies below 3100 meters the vegetation comprises mainly of hardwood trees, whereas in groups where the forest lies above 3100 meters the vegetation comprises mostly of Erica heather. I use the share of hardwood forest in a group as a proxy for altitude. The coefficients on market distance decline slightly in magnitude but are still statistically significant at the 1 percent level.

Tabellini (2010) shows that civic values like trust are positively associated with economic prosperity. I proxy for prosperity using a variety of economic variables in column 4. One such variable is population density, which I use to proxy for group level prosperity. I complement this with individual level measures of livestock ownership and land holding, acknowledging that they are endogenous. The inclusion of these variables does not lead to any major changes in the coefficients on market distance and they retain their statistical significance in all the three panels.

Social heterogeneity is expected to have a negative effect on civic values and rule formation as it makes coordination difficult. In contrast, education is expected to have a positive effect (see Tabellini, 2010). Civic values might also be lower in places where settlements are fragmented because of limited opportunities to meet and communicate. Furthermore, it is possible that longer duration of being under the program makes individuals realize the value of cooperation and this makes them more civic-minded and have

rules. I introduce a proxy of each of these variables in column 5. This includes share of female headed households, years of education, settlement fragmentation, and program duration. The inclusion of these variables does not lead to any major changes in the coefficients on market distance, which remain remarkably robust in magnitude and statistical significance.

These results suggest of a negative and significant effect of market distance on civic values and grazing bylaws. The effects are also economically large in magnitude. According to the final specification (column 5), one standard deviation increase in market distance leads to a decline in conditional cooperation by 0.16 points, monitoring by over 6 hours per month, and likelihood of forming grazing bylaws by 25 percentage points. The results are also robust to a number of important control variables that are jointly statistically significant in all the three panels.

Table 2: Market Distance, Civic Values, and Grazing Bylaws

	No controls	Fixed Effects	Altitude (forest type)	Economic variables	Social variables
	(1)	(2)	(3)	(4)	(5)
	Panel A: Conditional Cooperation (Spearman rho)				
Market distance	-0.158	-0.159	-0.138	-0.149	-0.162
	(0.022)	(0.024)	(0.029)	(0.031)	(0.027)
R^2	0.12	0.12	0.13	0.14	0.16
Obs.	720	720	720	720	720
	Panel B: Time Spent Monitoring (hours)				
Market distance	-8.527	-7.437	-5.946	-6.222	-6.497
	(1.091)	(1.026)	(1.423)	(1.422)	(1.356)
R^2	0.39	0.46	0.48	0.49	0.50
Obs.	508	508	508	508	508
	Panel C: Grazing Bylaws (indicator)				
Market distance	-0.317	-0.280	-0.268	-0.255	-0.250
	(0.029)	(0.031)	(0.036)	(0.041)	(0.043)
R^2	0.51	0.57	0.58	0.59	0.60
Obs.	511	511	511	511	511
Controls	No	No	Yes	Yes	Yes
Fixed Effects	No	Yes	Yes	Yes	Yes

Notes: OLS estimates with robust standard errors in parentheses. Control variables include Altitude (share of hardwood forest), Economic variables (population density, livestock ownership, land holding), Social variables (share of female members, settlement fragmentation, education, and program experience). Fixed effects are for clan and market.

V.B. Robustness Checks

I conduct robustness check using alternative measures of civic values and rules, controlling for additional geographical and economic variables as well as fixed effects, and accounting for distances from administration, school, and mosque.

Alternative measures of civic values and rules.– Table 3 presents the results. I use three alternative measures: an indicator for individuals who behave as free riders (column 1), an indicator for individuals who behave as a conditional cooperator (column 2), and number of months in a year grazing is forbidden inside the group managed forest (column 3). The coefficient on market distance turns out to be statistically significant in all the three columns. A one standard deviation increase in market distance leads to a rise in the share of free riders by nearly 5 percentage points, but a decline in the share of conditional cooperators by 11 percentage points and a reduction in grazing ban by 0.86 months. These results indicate that both civic values and the intensity of grazing bylaws decline steeply with market distance.

Table 3: Market Distance, Civic Values, and Grazing Bylaws: Alternative Dependent Variables

	Share of free riders	Share of conditional cooperators	Grazing ban (months)
	(1)	(2)	(3)
Market distance	0.046	−0.114	−0.863
	(0.021)	(0.030)	(0.148)
R^2	0.07	0.10	0.58
Controls	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes
Obs.	720	720	509

Notes: OLS estimates with robust standard errors. The dependent variable in column 1 is an indicator for free rider, in column 2 an indicator for conditional cooperator, and in column 3 it is number of months grazing is banned inside the group managed forest. Control variables include Altitude (share of hardwood forest), Economic variables (population density, livestock ownership, land holding), and Social variables (share of female members, settlement fragmentation, education, and program experience). Fixed effects are for clan and market.

Additional controls and fixed effects.– I introduce one-by-one three additional proxies of geography in Table 4. These include slope (degrees), river (presence or absence), precipitation seasonality (coefficient of variation). These variables may affect civic values and rules by affecting forest type and thus the benefits of monitoring or forming grazing bylaws. This does not change the coefficient on market distance, which remains robust in magnitude and significance throughout the three panels. The additional geographical variables have mostly statistically insignificant coefficients.

Next, I introduce one-by-one four additional proxies of economic prosperity: prevalence of polygamy (proportion of men having more than one wife), bride price, Gini of livestock ownership, and Gini of land holding in columns 1-4 of Table 5. In column 5, I introduce these variables jointly. The coefficients on market distance remain robust in magnitude and retain their statistical significance. The additional economic variables themselves have mostly small and statistically insignificant coefficients.

Finally, I introduce additional fixed effects for the seven remaining clans. Table 6

shows this does not lead to any changes in the coefficients on market distance across the three panels. The additional clan fixed effects have a jointly statistically significant effect on monitoring and grazing bylaws but not on conditional cooperation.

Table 4: Market Distance, Civic Values, and Grazing Bylaws: Additional Covariates - Geography

	Slope (degrees) (1)	River (indicator) (2)	Precipitation (CV) (3)	All of them (4)
	Panel A: Conditional Cooperation			
Market distance	-0.160	-0.165	-0.160	-0.161
	(0.028)	(0.027)	(0.026)	(0.028)
Slope	0.009			0.009
	(0.008)			(0.008)
River		-0.053		-0.062
		(0.079)		(0.081)
Precipitation			-0.005	-0.006
			(0.009)	(0.010)
	Panel B: Monitoring			
Market distance	-6.515	-6.333	-6.442	-6.332
	(1.327)	(1.376)	(1.285)	(1.294)
Slope	-0.094			-0.102
	(0.445)			(0.418)
River		3.778		3.016
		(3.929)		(4.068)
Precipitation			-0.663	-0.632
			(0.274)	(0.276)
	Panel C: Grazing Bylaws			
Market distance	-0.244	-0.255	-0.249	-0.250
	(0.042)	(0.045)	(0.043)	(0.044)
Slope	0.026			0.027
	(0.017)			(0.018)
River		-0.125		-0.140
		(0.176)		(0.182)
Precipitation			-0.005	-0.007
			(0.012)	(0.012)
Controls	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes

Notes: OLS estimates with robust standard errors clustered on the group in parentheses. Control variables include Altitude (share of hardwood forest), Economic variables (population density, livestock ownership, land holding), Social variables (share of female members, settlement fragmentation, education, and program experience). Fixed effects are for clan and market. CV in column 3 stands for coefficient of variation.

Table 5: Market Distance, Civic Values, and Grazing Bylaws: Additional Covariates - Economy

	Polygamy	Bride Price	G-Cattle	G-Land	All Economy
	(1)	(2)	(3)	(4)	(5)
	Panel A: Conditional Cooperation				
Market distance	-0.162	-0.159	-0.163	-0.168	-0.166
	(0.027)	(0.027)	(0.027)	(0.026)	(0.026)
Polygamy	0.010				0.108
	(0.142)				(0.149)
Bride price		0.010			0.009
		(0.010)			(0.009)
Gini Cattle			0.547		0.540
			(0.309)		(0.352)
Gini Land				0.750	0.592
				(0.341)	(0.345)
	Panel B: Monitoring				
Market distance	-6.493	-6.436	-6.500	-6.584	-6.489
	(1.315)	(1.360)	(1.366)	(1.377)	(1.337)
Polygamy	-8.870				-10.781
	(5.343)				(5.822)
Bride price		0.193			0.220
		(0.251)			(0.242)
Gini Cattle			0.964		-8.332
			(12.486)		(12.061)
Gini Land				12.416	12.719
				(15.677)	(14.645)
	Panel C: Grazing Bylaws				
Market distance	-0.250	-0.242	-0.248	-0.252	-0.245
	(0.043)	(0.039)	(0.041)	(0.042)	(0.038)
Polygamy	0.047				-0.166
	(0.214)				(0.202)
Bride price		0.023			0.020
		(0.009)			(0.008)
Gini Cattle			-0.786		-0.875
			(0.619)		(0.589)
Gini Land				0.407	0.552
				(0.423)	(0.411)
Controls	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes	Yes

Notes: OLS estimates with robust standard errors in parentheses. G-Cattle and G-Land are the Gini Coefficients for cattle and land ownership respectively. Control variables include Altitude (share of hardwood forest), Economic variables (population density, livestock ownership, land holding), Social variables (share of female members, settlement fragmentation, education, and program experience). Fixed effects are for clan and market. Polygamy prevalence is the proportion of men with more than one wife. Bride price is the average price paid to the bride's family at the time of marriage/1000. Gini of cattle and land are the Gini indexes.

Table 6: Market Distance, Civic Values, and Grazing Bylaws: Additional Covariates - Clans

	Dependent variable:		
	Conditional Cooperation	Monitoring Monitoring	Grazing Bylaws
	(1)	(2)	(3)
Market distance	-0.165	-6.710	-0.239
	(0.028)	(1.318)	(0.048)
Additional clans	Yes	Yes	Yes
R^2	0.18	0.53	0.61
Controls	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes
Observations	720	508	511

Notes: OLS estimates with robust standard errors clustered on the group in parentheses. Control variables include Altitude (share of hardwood forest), Economic variables (population density, livestock ownership, land holding), and Social variables (share of female members, settlement fragmentation, education, and program experience). Fixed effects are for clan and market. Additional clans are fixed effects that include indicators for seven other clans that account for 30 percent of the population.

Distance from administration, school, and mosque.– Even though individuals do not seek out other services associated with urban areas at market places, the estimates could get biased if market distance is correlated with distance from other services. So, I examine in Table 7 whether the effect of market distance on civic values and rules is robust to accounting for distance to local administration in column 1, primary school in column 2, local mosque in column 3, and all distances simultaneously in column 4. I find that other distances having a jointly statistically significant effect on civic values and grazing rules (p-value <0.001). Despite this, the coefficient on market distance largely retains it's magnitude and statistical significance. It also has the largest quantitative effect of all distances, which is significantly different from the effect of other distances. These results confirm that market distance is not capturing the effect of other distances. Among other distances, mosque distance has a consistently negative and highly statistically significant effect on all the three panels. The effect of distance from administration is ambiguous. It has a positive effect on monitoring, but a negative effect on grazing bylaws; both are significantly different from zero. The distance from school has a positive and statistically significant effect on monitoring and grazing bylaws.

In column 5, I directly control for trust in district government. In the survey, individuals were asked to rate the district government on 5 point scale: very cooperative, cooperative, neutral, dominating, very dominating. Since most responses rated the government as either cooperative or dominating, I use a binary variable which takes the value of 1 if the government is cooperative and 0 otherwise. The coefficient on market distance remains robust in magnitude and significance, suggesting that market distance is not confounded with trust in district government, which enters with a negative coefficient in panel A, but positive and statistically significant coefficient in panel B and C.

Table 7: Market Distance, Civic Values, and Grazing Bylaws: Other Distances and Trust in Government

	Village administration	Primary school	Local mosque	All distances	Trust in Government
	(1)	(2)	(3)	(4)	(5)
	Panel A: Conditional Cooperation (Spearman)				
Market distance	−0.193	−0.161	−0.143	−0.150	−0.160
	(0.029)	(0.021)	(0.020)	(0.031)	(0.026)
Village distance	0.052			0.022	
	(0.032)			(0.032)	
School distance		−0.004		−0.059	
		(0.058)		(0.058)	
Mosque distance			−0.297	−0.299	
			(0.049)	(0.052)	
Trust in government					−0.077
					(0.049)
R^2	0.16	0.16	0.18	0.20	0.14
Obs.	720	720	720	720	482
	Panel B: Monitoring (hours)				
Market distance	−9.216	−7.339	−6.336	−10.083	−6.054
	(0.779)	(0.575)	(0.590)	(0.736)	(0.592)
Village distance	4.433			4.504	
	(0.821)			(0.804)	
School distance		7.725		7.859	
		(1.434)		(1.478)	
Mosque distance			−2.579	−0.509	
			(1.449)	(1.395)	
Trust in government					5.178
					(1.044)
R^2	0.53	0.53	0.51	0.56	0.52
Obs.	508	508	508	508	500
	Panel C: Grazing Bylaw (indicator)				
Market distance	−0.179	−0.297	−0.240	−0.214	−0.236
	(0.020)	(0.015)	(0.016)	(0.019)	(0.016)
Village distance	−0.115			−0.119	
	(0.020)			(0.019)	
School distance		0.437		0.412	
		(0.041)		(0.041)	
Mosque distance			−0.152	−0.123	
			(0.043)	(0.032)	
Trust in government					0.174
					(0.032)
R^2	0.62	0.68	0.61	0.70	0.62
Obs.	511	511	511	511	503
Controls	Yes	Yes	Yes	Yes	Yes

Notes: OLS estimates with robust standard errors in parentheses. Trust in government is an indicator variable, where 1 means high trust and 0 means low trust. Some observations are missing in column 5 because data on trust was not available from all participants. Control variables include Altitude (share of hardwood forest), Economic variables (population density, livestock ownership, land holding), Social variables (share of female members, settlement fragmentation, education, and program experience). Fixed effects are for clan and market.

V.C. Plausible channels

I argue and provide evidence that market distance induced changes in the structure of exchange, which ultimately affected civic values and rules. I then assess the importance of exposure to outside world as an alternative channel.

Exchange structures and demand for civic values and rules.– As mentioned in section II, asymmetric information and lack of third party verification in livestock markets gives rise to a cooperation problem. The solution to this problem depends on mechanisms that foster cooperation while keeping the transaction cost of enforcement low. In the pre-market period, livestock exchange was restricted to individuals from a dense social network of clans. This allowed individuals to acquire information on identity and transaction history of traders at low cost. As a result, reputation made it costly for traders to behave opportunistically (Polanyi, 1944; Granovetter, 1985; North, 1991).

However, after markets emerged from garrisons established by Menelik, there were possibilities to trade with strangers who were not part of the social network. Since this required impersonal interactions with a fluctuating population of traders, a new set of solutions were required to enforce cooperation. One possibility, as witnessed in Europe, was the evolution of impartial courts (North, 1991) and guilds (Greif, Milgrom and Weingast, 1994). However, such institutional forms are missing from rural sub-Saharan Africa. Another possibility is that the prospect of efficiency gains from trade created a demand for civic values, in the absence of which trading parties would have to forego cooperation gains. Arrow (1970) writes, "Norms of social behavior, including ethical and moral codes [may be].....reactions of society to compensate for market failure." Similarly, Bowles (1998) notes that "when contracts are incompletely specified and costly to enforce, the ex-post terms of exchange may depend on normative commitments of the parties to exchange." In a seminal study, Kollock (1994) tested this hypothesis by conducting a laboratory experiment in which individuals were randomly assigned to trade in products of certain or uncertain quality without any third party involvement. He found trust in strangers to be higher among groups exposed to unverifiable product quality. In another laboratory experiment, Fehr, Gächter and Kirchsteiger (1997) used a gift exchange game to show that civic values play an important role in the enforcement of contracts in labor markets with asymmetric information and absence of third party enforcement.

Theory and empirical evidence suggest that best cooperation outcomes are achieved when civic values are backed by some kind of punishment-based mechanism (Fehr and Schmidt, 1999; Fehr and Gächter, 2000). A vignette study (Appendix C) imitating livestock exchange in local markets shows the presence of a punishment mechanism based on multilateral reputation. Under this mechanism, community members are willing to punish opportunistic traders through exclusion from future exchange. Greif (2006) notes that Maghribi traders used such a mechanism to solve commitment problems. He writes

"A credible threat of collective, multilateral punishment supported the beliefs that the short-run gain from cheating today was less than the long-run benefit of being honest." Since this situation was common knowledge, individuals believed that traders would be reluctant to cheat and will be better off from being honest.

A central feature for this mechanism to function is information sharing among individuals. Even though clan networks enabled fast flow of information, impersonal nature of market exchange made it difficult to acquire information on the identity and past transactions of traders. This hurdle was overcome through the Arsi Oromo custom of announcing one's name and clan affiliation at the time of greeting. Deb (2020) notes this can play an important role in fostering cooperation through a credible threat in which the entire community of the defector is held responsible and faces punishment by victims.

Greif (2006) notes that monitoring of defectors is imperfect and there could be mistakes in declaring a trader dishonest. To mitigate these shortcomings and also to rule out malicious intentions, the communities intervened only when the scope of moral hazard on the part of the victim was unlikely. For instance, if a seller cheated a buyer by selling a poor quality cow that died soon after purchase, community members were willing to exclude the seller from future exchange. These mechanisms could have generated further incentives for individuals to internalize the importance of civic values.

In summary, the scope of transition from limited morality (trust in kin) to generalized morality (trust in strangers) depended on the structure of market exchange, which in turn was affected by market distance. In groups further away from markets, the opportunity cost of attending markets was high, so livestock exchange occurs mostly within the local network. As Granovetter (1985) writes, in these situations, individuals did not have to "rely on either generalized morality or institutional arrangements to guard against trouble". In contrast, in groups closer to markets, the opportunity cost of attending markets was low, so livestock exchange occurred mostly between strangers. Because there are still no roads connecting groups further away to markets, these different kinds of exchange structures have survived for over a hundred years. This explains why individuals from groups closer to markets exhibit stronger civic values than individuals from groups further away. Civic values acquired through interaction with strangers in markets could have become a generalized reason for behavior through a process called dissonance reduction (Festinger, 1957). This could be the reason that individuals display stronger conditional cooperation in a public goods game and also spend more time monitoring their common property forest. Because the set of individuals in a group is known, it could have allowed for the emergence of formal institutional arrangements in the form of rules regulating livestock grazing to deter free riding.

Empirical evidence.– The proposed mechanism predicts that individuals from groups that are closer to markets are expected to display stronger trust and cooperation in interactions

with strangers than individuals from groups that are further away.

One way to test this hypothesis is to conduct a field experiment in which individuals are invited to interact with strangers in a one-shot market exchange that involves products prone to asymmetric information and is without any third party enforcement. This approach, while appealing, allows researchers to study civic values in the same domain that engendered these values - market exchange. To the extent civic values acquired through market exchange become a generalized reason for behavior, a stronger test lies in studying these values using a different domain than markets. Following Camerer and Fehr (2004), I use a public goods game, which is considered a workhorse to study cooperation dilemmas. Specifically, I use data from the first decision of the public goods game, where the players decide simultaneously on their contribution to the public good in a one-shot, anonymous interaction. One concern could be that experiments induce demand effects. This is likely to arise in situations where experiments are used to assign treatments and participants are aware of this. There is no treatment manipulation in the public goods game used in this paper. All participants confronted the same decision situation regardless of their distance from market. Also, previous studies from the same field context show that behavior elicited through public goods games is positively associated with real world cooperation outcomes like the management of forest commons (see Rustagi, Engel and Kosfeld, 2010; Kosfeld and Rustagi, 2015).

Table 8 reports the results without and with controls. Columns 1-2 show that beliefs about other players' contribution decline with market distance. According to the estimate with the full set of controls and fixed effects (column 2), a one standard deviation increase in market distance leads to a decline in beliefs about others' contribution by about 0.45 Birr. This is a large effect given the sample mean is 2.67 Birr (s.d. 1.71). Columns 3-4 show that consistent with the decline in beliefs, own contribution to the public good also declines with market distance. According to the estimates in column 4, a one standard deviation increase in market distance leads to a decline in contributions by 0.4 Birr. This is also a large effect in relation to the mean contribution in the sample, which is 2.05 Birr (s.d. 1.51). These results confirm that groups closer to markets display stronger trust in strangers and also contribute more for the provision of public goods.

Table 8: Market Distance, Beliefs about Others' Contribution, and Own Contribution

	Beliefs about others' contribution		Own contribution	
	No Controls	Controls and fixed effects	No Controls	Controls and fixed effects
	(1)	(2)	(3)	(4)
Market distance	-0.419	-0.446	-0.451	-0.412
	(0.074)	(0.094)	(0.100)	(0.088)
R^2	0.07	0.18	0.10	0.18
Controls	No	Yes	No	Yes
Fixed Effects	No	Yes	No	Yes
N	704	704	704	704

Notes: OLS estimates with robust standard errors in parentheses. Control variables include Altitude (share of hardwood forest), Economic variables (population density, livestock ownership, land holding), Social variables (share of female members, settlement fragmentation, education, and program experience). Fixed effects are for clan and market. Beliefs and own contribution are from the first decision of the public goods game. This data is missing for 16 observations from one group, hence the number of observations is 704.

Exposure to the outside world.– The above findings could be due to market distance affecting civic values and rules by exposing individuals to outsiders. As individuals interact with strangers in markets, they get to learn more about them, update their beliefs accordingly, resulting in cooperation.

To test the scope of this channel, I adopt a two-fold approach. First, I test whether market distance has a bearing on proxies of outside exposure that are commonly studied by anthropologists. This includes the ratio of age at which women marry relative to men, practice of clan endogamy in marriage, and clan preference in marriage. Other values that could have been shaped by exposure to the outside world and were considered before include prevalence of polygamy and bride price. Table 9 reports results from a regression of each of these variables separately on market distance after controlling for covariates and fixed effects. The coefficient on market distance turns out to be small in magnitude and is also statistically insignificant. The only exception is clan endogamy, which declines significantly as one moves further away from markets. It could be that these variables when considered alone fail to capture exposure to outsiders. So, I also consider their first principal component. Column 6 reports the result and shows that the coefficient on market distance remains economically and statistically insignificant.

Table 9: Market Distance and Outside Exposure

	Marriage ratio	Clan endogamy	Clan preference	Polygamy share	Bride price	Principal comp.
	(1)	(2)	(3)	(4)	(5)	(6)
Market distance	0.018	-0.119	0.003	0.035	-0.096	-0.141
	(0.012)	(0.048)	(0.024)	(0.062)	(0.624)	(0.111)
R^2	0.344	0.475	0.537	0.469	0.238	0.685
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	52	52	52	52	52	52
Mean	0.87	0.17	0.42	0.45	11.03	0.00

Notes: OLS estimates with robust standard errors in parentheses. Marriage ratio is the age at which females marry relative to the age at which men marry on average in the group. Clan endogamy is a binary variable which equals 1 if a group allows marriage within the clan. Clan preference is a binary variable which equals 1 if group members prefer certain clans in marriage over the other clans. Polygamy share is the share of men in the group that practice polygamy. Bride price is the monetary value of cows and other materials that a man has to pay for marriage / 1000. Principal component is the first principal component of dependent variables in columns 1-5. Control variables include Altitude (share of hardwood forest), Economic variables (population density, livestock ownership, land holding), Social variables (share of female members, settlement fragmentation, education, and program experience). Fixed effects are for clan and market.

Table 10 shows the effect of market distance on civic values and rules is robust to the inclusion of these different proxies of outside exposure as additional controls. Regardless of whether I introduce one proxy at a time in columns 1-5 or all of these together in column 6, or their first principal component in column 7, the effect of market distance remains robust both in magnitude and significance in all three panels. In contrast, the effect of proxies of outside exposure is largely statistically insignificant.

Another way of studying exposure to outsiders is to study naming patterns of individuals. In the study area, individuals can take either Oromo or Arabic names. I test if the proportion of individuals with Arabic sounding names differs by market distance. Using a unique database on the name of each household (available for 27 groups), I show that there is no difference in the frequency of Arabic names by market distance. Table A.4 in Appendix A reports the results and shows that the coefficient on market distance is very small and is also statistically insignificant (coef. 0.015, s.e. 0.002).

Together, these results suggest that market distance is unlikely to affect civic capital and rules through exposing individuals to outsiders.

Table 10: Market Distance, Civic Values, and Grazing Bylaws: Role of Outside Exposure

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Panel A: Conditional cooperation (Spearman *rho*)						
Market distance	-0.152	-0.174	-0.160	-0.162	-0.159	-0.164	-0.165
	(0.020)	(0.021)	(0.020)	(0.020)	(0.020)	(0.021)	(0.020)
Marriage ratio	-0.562					-0.639	
	(0.256)					(0.269)	
Clan endogamy		-0.108				-0.184	
		(0.062)				(0.068)	
Clan preference			-0.058			-0.111	
			(0.040)			(0.044)	
Polygamy				0.010		-0.221	
				(0.118)		(0.138)	
Bride Price					0.010	0.009	
					(0.006)	(0.006)	
Principal comp.							-0.025
							(0.019)
	Panel B: Monitoring (hours)						
Market distance	-6.333	-5.934	-6.493	-6.476	-6.436	-5.812	-6.409
	(0.622)	(0.610)	(0.583)	(0.608)	(0.590)	(0.634)	(0.576)
Marriage ratio	-8.961					-10.254	
	(7.919)					(8.410)	
Clan endogamy		5.149				3.252	
		(1.637)				(1.700)	
Polygamy			-8.870			-9.586	
			(2.877)			(3.415)	
Clan preference				-0.367		-1.246	
				(1.149)		(1.241)	
Bride Price					0.193	0.208	
					(0.136)	(0.141)	
Principal comp.							1.042
							(0.432)
	Panel C: Grazing bylaws (indicator)						
Market distance	-0.232	-0.233	-0.250	-0.252	-0.242	-0.216	-0.245
	(0.017)	(0.017)	(0.016)	(0.016)	(0.015)	(0.017)	(0.016)
Marriage ratio	-0.945					-0.729	
	(0.176)					(0.202)	
Clan endogamy		0.147				0.150	
		(0.044)				(0.048)	
Polygamy			0.047			0.072	
			(0.082)			(0.098)	
Clan preference				0.038		0.052	
				(0.037)		(0.042)	
Bride Price					0.023	0.019	
					(0.004)	(0.004)	
Principal comp.							0.045
							(0.014)

Notes: OLS estimates with robust standard errors in parentheses. All columns include control variables and FE (see Table 9 footnotes). The number of observations is 720 in panel A, 508 in panel B, and 511 in panel C.

Falsification test.– If asymmetric information is the main reason behind the effect of markets on civic values and not exposure to outsiders, then there should be no effect of distance from markets that trade in products of verifiable quality. I test this using distance from two other markets in the study area that are also periodical but trade mostly in products of verifiable quality and hence are not prone to asymmetric information. I control for fixed effects for all markets to account for unobserved market specific differences. Table 11 reports the results. Column 1 is without any controls and includes only distance from two other markets. It enters with a very small coefficient in all the three panels and is never statistically significant.

Table 11: Market Distance, Civic Values, and Grazing Bylaws: Other Market Distance

	No controls	Controls and FE	Market distance	All distances
	(1)	(2)	(3)	4
	Panel A: Conditional Cooperation (Spearman *rho*)			
Distance to other markets	0.020	0.016	0.061	0.060
	(0.015)	(0.017)	(0.021)	(0.021)
Market distance			−0.183	−0.182
			(0.022)	(0.034)
R^2	0.00	0.08	0.17	0.21
Obs.	720	720	720	720
	Panel B: Monitoring (hours)			
Distance to other markets	1.584	0.847	2.669	2.842
	(0.483)	(0.462)	(0.553)	(0.548)
Market distance			−7.555	−11.845
			(0.589)	(0.783)
R^2	0.01	0.33	0.53	0.58
Obs.	508	508	508	508
	Panel C: Grazing Bylaw (indicator)			
Distance to other markets	0.009	0.014	0.073	0.019
	(0.020)	(0.019)	(0.014)	(0.013)
Market distance			−0.273	−0.257
			(0.015)	(0.021)
R^2	0.00	0.30	0.61	0.72
Obs.	511	511	511	511
Controls	No	Yes	Yes	Yes
Other market FE	No	Yes	Yes	Yes
Clan FE	No	Yes	Yes	Yes
Market FE	No	No	Yes	Yes

Notes: OLS estimates with robust standard errors in parentheses. Other market distance is the distance to markets that do not trade in livestock and are therefore not prone to asymmetric information. Control variables include Altitude (share of hardwood forest), Economic variables (population density, livestock ownership, land holding), Social variables (share of female members, settlement fragmentation, education, and program experience). Other market FE includes fixed effects for non-livestock markets, clan FE includes fixed effects for clans, and market FE includes fixed effects for livestock markets prone to asymmetric information.

When I include control variables and fixed effects for other markets and clan in column 2, the results remain unchanged. The coefficient on distance from other markets remains small and is statistically insignificant. These results clearly suggest that exposure to outsiders is not the channel through which markets affect civic values and rules. They bolster the finding that asymmetric information is the channel through which market distance affects civic values and rules.

I further test in columns 3-4 whether the coefficient on market distance is robust to the inclusion of distance to other markets. Column 3 presents the results and shows that the coefficient on market distance remains robust in magnitude and significance. In contrast, the coefficient on distance to other markets has the opposite sign and is statistically insignificant throughout. These results remain robust when I additionally control for distance to village administration, school, and mosque in column 4. Together, these results confirm that only distance to markets that are prone to asymmetric information matter for civic values and rules.

VI. Conclusions

I study a long standing question in economics on whether markets foster or erode civic values and rules. Major challenges in conducting this study lies in establishing causality and identifying mechanisms through which the effect unfolds.

I exploit a natural experiment on the emergence and location of markets in the homeland of the Arsi Oromo people. The experiment relies on four features. First, there were no pre-treatment cultural and institutional differences, as all inhabitants had common cultural origins and were also exposed to similar institutions in the past. Second, markets emerged from garrisons that Menelik build after defeating the Arsi in the late 19th century. There were no exchange centers or markets before the invasion by Menelik. The location of these garrisons was determined by Menelik and the Arsi played no role in their location. Third, the Arsi formed clan-based settlements some 300 years before the markets emerged. Several institutions ensured stable composition in these settlements ruling out concerns over sorting and migration. Fourth, the clan-based settlements got split into several groups because of their location in the mountains. Some of these groups happen to be further away from markets and the others happen to be close by. This allows me to compare individuals who are from the same clan and attend the same market but vary in their exposure to that market, as proxied by distance.

I show a strong negative effect of market distance on experimental and survey measures of civic values and rules. The further the individuals are from markets, the lower is their propensity to cooperate conditionally in a public goods game, spend time monitoring their forest, and form rules regulating grazing inside the group managed common property forest. These results are robust to controlling for a variety of geographical, economic, and

social controls, as well as distance from local administration, schools, and religious places.

The results arise because livestock exchange is prone to asymmetric information and lack of third party verification - a characteristic that is common across markets in sub-Saharan Africa and other developing economies. The resolution to this problem depends on the distance of groups from markets. In groups located further away from markets, individuals trade in livestock within their social network, whereby reputation makes exchange efficient. However, in groups located closer to markets, individuals trade with strangers in impersonal interactions. In these situations, efficiency of exchange demands civic values which make it possible for individuals to extend cooperation beyond the members of their group to outsiders. These values are further bolstered by community punishment mechanisms. Consistent with this mechanism, I show that individuals from groups located close to markets display higher trust and also contribute more in a one-shot anonymous public goods game. A placebo test shows that distance from markets that are not prone to asymmetric information have no effect on civic values and rules.

These results fill an important gap in the literature by showing how market distance can influence exchange structures which can have a lasting effect on civic values and rules.

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ONLINE APPENDIX

Markets, Civic Values, and Rules

Devesh Rustagi

Appendix A

I. Data

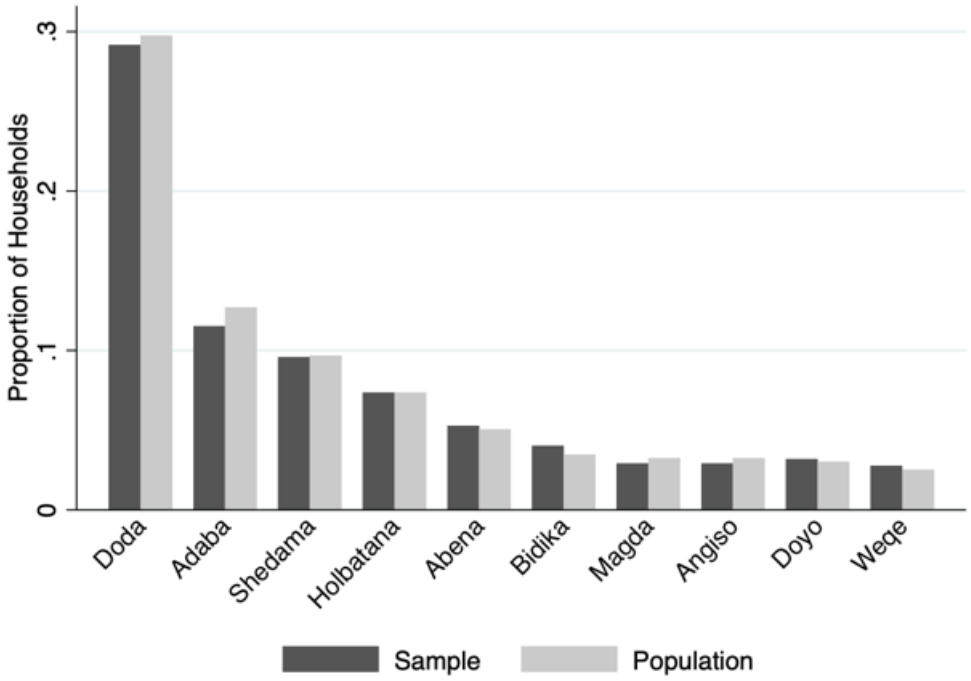


Figure A.1: Proportion of Households from Main Clans in Experimental Sample and Population

Notes: The bar graph shows the proportion of households from ten main clans in the experimental sample used to measure conditional cooperation and the population of interest.

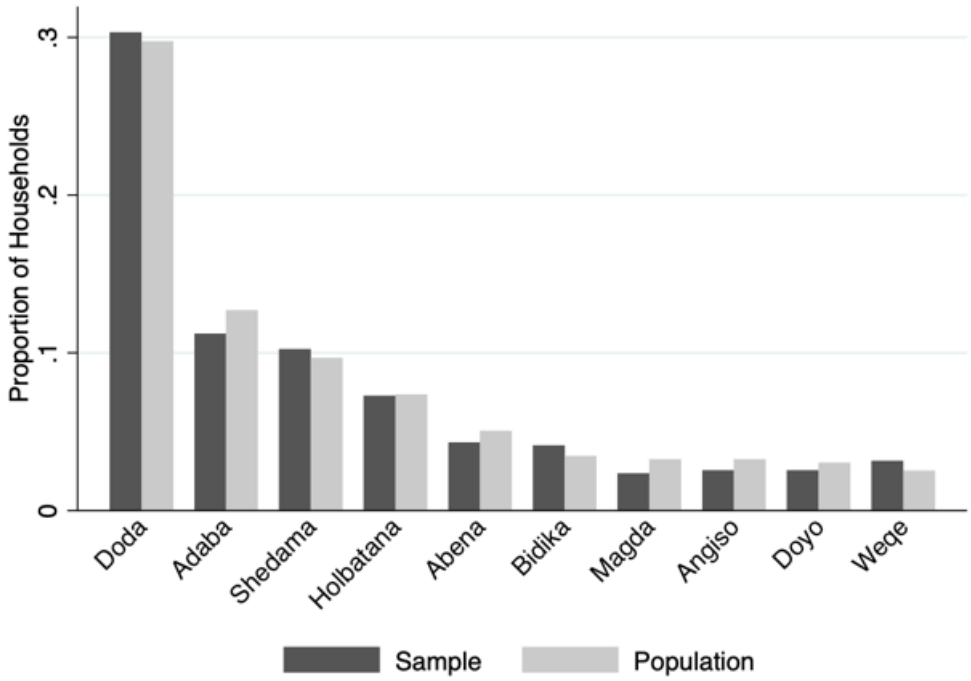


Figure A.2: Proportion of Households from Main Clans in Monitoring Survey Sample and Population

Notes: The bar graph shows the proportion of households from ten main clans in the survey sample used to measure time spent monitoring and the population of interest.

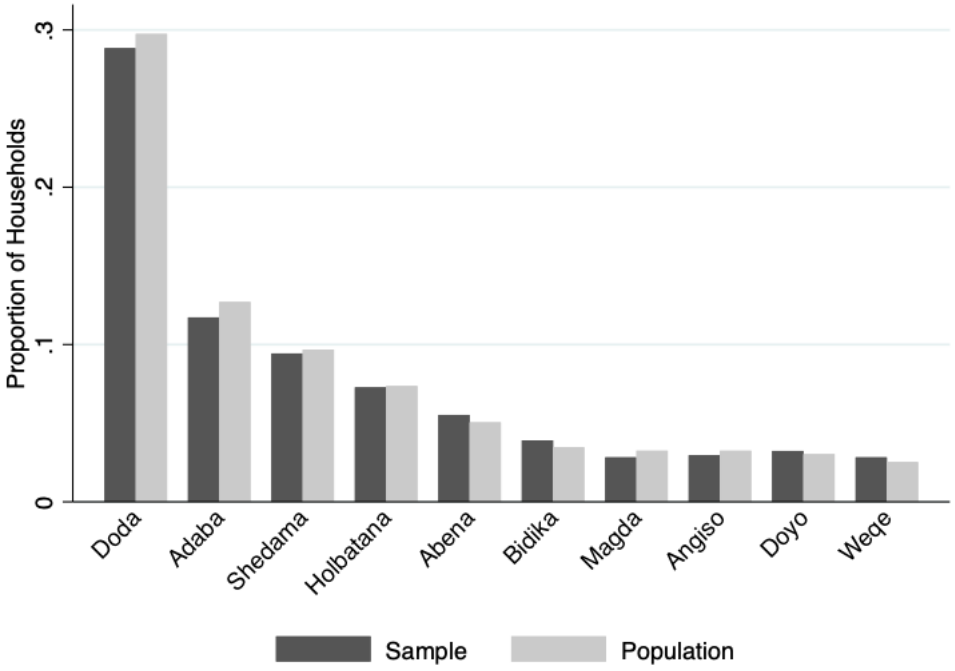


Figure A.3: Proportion of Households from Main Clans in Grazing Bylaw Survey Sample and Population

Notes: The bar graph shows the proportion of households from ten main clans in the survey sample used to measure the presence of grazing bylaws and the population of interest.

II. Empirical Strategy

Table A.1: Sorting and Migration by Market Distance

	Group size	Population size	Migrant share
	(1)	(2)	(3)
Market distance	0.514	2.724	-0.004
	(0.722)	(5.364)	(0.004)
R^2	0.28	0.69	0.18
Controls variables	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes
Obs.	52	52	52

Notes: OLS estimates with robust standard errors in parentheses. Control variables include Altitude (share of hardwood forest), Economic variables (population density, livestock ownership, land holding), Social variables (share of female members, settlement fragmentation, education, and program experience). Fixed effects are for clan and market. Group size is the number of households in a group. Population size is the number of individuals residing in a group. Migrant share is the proportion of households that have left the group in the past 55 years.

Table A.2: Balance Check

	Coefficient on Market Distance
Geographical variables	
Hardwood forest	-0.019
	(0.015)
Slope	-0.187
	(0.410)
River	0.005
	(0.056)
Precipitation variability	1.031
	(0.767)
Economic heterogeneity	
Population density	-0.027
	(0.034)
Cattle ownership	0.027
	(0.444)
Land ownership	-0.093
	(0.057)
Education	-0.002
	(0.027)
Social heterogeneity	
Settlement fragmentation	0.045
	(0.035)
Female share	0.007
	(0.026)
Program duration	-0.026
	(0.057)

Notes: OLS estimates with robust standard errors in parentheses. The estimates are obtained from a regression of each covariate on market distance and controlling for the other remaining covariates. The regressions are run at the group level. The number of observations is 52.

III. Main Results

Table A.3: Market Distance, Civic Values, and Bylaws: Coefficients on Control Variables

	Dependent variable:		
	Conditional cooperation	Monitoring	Market distance
	(1)	(2)	(3)
Market distance	-0.162	-6.497	-0.250
	(0.027)	(1.356)	(0.043)
Altitude	0.396	16.818	-0.080
	(0.176)	(6.674)	(0.257)
Population density	-0.568	-6.745	0.418
	(0.182)	(7.280)	(0.371)
Cattle ownership	0.001	-0.030	-0.001
	(0.002)	(0.067)	(0.002)
Land holding	-0.003	-0.215	0.041
	(0.019)	(0.585)	(0.019)
Female share	-0.167	6.318	-0.155
	(0.198)	(9.358)	(0.285)
Years in education	-0.005	0.314	0.008
	(0.007)	(0.163)	(0.005)
Settlement heterogeneity	0.269	3.930	-0.084
	(0.118)	(4.072)	(0.145)
Program duration	-0.105	3.074	0.166
	(0.120)	(3.538)	(0.252)
R^2	0.16	0.50	0.60
MK fixed effects	Yes	Yes	Yes
Clan fixed effects	Yes	Yes	Yes
Observations	720	508	511

Notes: OLS estimates with robust standard errors clustered on the group in parentheses.

IV. Plausible Channels

Table A.4: Market Distance and Exposure to the Outside World: Frequency of Arabic Names

	Dependent variable: Indicator for Arabic Name	
	(1)	(2)
Market distance	0.017	0.016
	(0.018)	(0.017)
R^2	0.001	0.004
Market FE	No	Yes
Obs.	735	735

Notes: OLS estimates with robust standard errors clustered on the group in parentheses. FE stands for fixed effects. this data is available for individuals from 28 groups only. Source: Adada-Dodola Forest Management Office.

Appendix B Experimental Procedures and Instructions

I. Experimental Procedures

I conducted three experiments, of which the paper uses data from the experiment that was conducted first. The household and community surveys were carried out after the experiments were conducted. I adopted several procedures to ensure that experimental measures are comparable across different groups and were not affected by contagion and contamination. Wherever possible, I followed the approach pioneered by Henrich et al. (see 2001, 2010) to conducting experiments in the field. This involved the following steps:

First, I used fixed written instructions, set of examples, and control test questions to conduct the experiments. This ensured uniformity in procedures and verbal explanations across groups. The written instructions were tested in a pilot study in the Yayu-Metu region of Ethiopia, which is linguistically similar but 400 km away from the study area. Based on the feedback, the instructions were fine-tuned and tested again in three groups that were excluded from the sample.

Second, the participants in experiments are familiar with money, especially small currency bills. I used actual bills of one Ethiopian Birr while delivering instructions, examples, testing, and for playing the actual game. This also made it easier for the participants to make simple calculations.

Third, the scope of contagion and contamination is larger if there is a wide gap separating the dates on which experiments are held in neighboring groups, as this leaves more time to discuss with future participants. To mitigate these concerns, whenever possible, I invited individuals from neighboring groups either at the same time or just the day after. The experiments were conducted right after the invitations were sent and were run each day, without a break, till all groups from a village had taken part. Once this was achieved, I moved to the next village and followed similar procedures there. Because the experiments lasted an entire day, individuals were left with less time to communicate with those yet to take part. Absence of electricity and mobile reception were of further help in achieving this. I find no difference in behavior when two groups were invited to take part in the experiment the same day or when one group was invited. The share of conditional cooperators or free riders is similar across these two situations.

Fourth, all experiments were run by me together with the main assistant. When two groups were invited at the same time, one group was guided through the experiment by me and the other group by the main assistant.I do not find any evidence of an experimenter effect on either the share of conditional cooperators (P-value > 0.7) or free riders (P-value > 0.6).

Fifth, participants were ensured that their decisions will be anonymous to each other as well as to the research assistants. Moreover, even though the main assistant is a native speaker, he is not from the study area and hence was not personally known to any of the participants.

Sixth, we employed community mobilizers, one from each village, to organize appointments with groups on our behalf. The community mobilizers knew nothing about the experiments or the surveys. They were informed: (a) to invite group members to arrive at an appointed date to play some games in which they could earn some money, (b) participation in the games was entirely voluntary, (c) the games could last an entire day. The mobilizers were given strict instructions to invite 15-25 households from each group. In addition, group leader, vice leader, and group committee members were highly encouraged to take part in the experiments. In some cases, household heads could not show up and sent a representative from their household. Representatives above 18 years old were allowed to take part in the experiments. Most experiments took place at administrative offices and camps. This did not affect any behavior in the experiment.

Seventh, once enough participants had arrived, we invited them to a room and requested them to sit according to their group affiliation. Participants were not allowed to enter the room if they were late by 15 or more minutes. Two local field assistants made sure that latecomers were sent back with a show up fee. After this, we requested the leaders or vice leader to check if: (i) all participants were from the invited group/s, (ii) did not belong to the same household, and (iii) were at least 18 years old. Participants who did not meet these criteria were sent back. In addition, nursing mothers with babies, sick participants, very old, and those with other health problems were also sent back with a show up fee.

Eight, before the experiments began, the main author and the main assistant introduced themselves in the local language, Afaan Oromo. After this, the main assistant took over the task of reading out the written instructions to the entire group. Because most of our subjects had limited literacy, we designed instructions didactically. During the instructions, the participants were given lots of opportunities to ask questions. Any unexpected question, for which we did not have a script, was answered first by the main author and then translated by the main assistant. This was followed by a fixed set of examples, which were illustrated by me. This had many advantages: (a) participants got used to me speaking in Afaan Oromo. I consider this important because when two groups were invited, I took over the responsibility of testing and engaging members from one of the two invited groups in the game; (ii) it gave some respite to the main assistant; and (iii) I gained participants' trust. The main assistant made sure that participants understood my accent; none of the participants complained about this. Moreover, the participants were very happy that I could speak their language.

ninth, before the actual game, the participants were tested one by one for their game

comprehension using a fixed set of control questions. These questions focused on testing a participant's basic understanding of the game, such as addition, multiplication, division, and other skills. While the main assistant tested this for households from one group, I did so simultaneously for households from another group. All participants rejected by me were tested again by the main assistant. Those who could not answer the questions correctly were given a show up fee and sent back. Further, two local assistants made sure that the rejected participants and uninvited persons had left the experimental venue.

tenth, depending on their group, the selected participants were given plastic identity cards bearing names of Swiss Cantons and German States. Before the actual game began, the selected participants were given another opportunity to ask further questions. During the actual game, participants were called one by one to a room / secluded area. Inside the room, subjects were given six bills of one Birr and then asked to make an unconditional decision to contribute to the public good. Once all participants had taken part in this decision, they were called one by one again to take the conditional decisions. In the meanwhile, the local assistants made sure that no one discussed the game. As in the experiments, anonymity was also ensured during the interviews. We were able to match a participant's behavior in the game with the interview through his/ her experimental identity (Swiss Cantons or German States).

II. Experimental Instructions

Introduction

Greetings and welcome to all of you. My name is Devesh Rustagi and I am a student from a university in Switzerland. I am here for a research concerning livelihood improvement through forest conservation. For my research, I would like to play a few games with you. Depending on the decisions made by you and other players in these games, you can win some money. The payment that you receive from these games is not from my own pocket, but sponsored by the German government. Before we proceed with the games, I would like to tell you some important things.

General instructions

1. In all games, your identity will be kept anonymous. This means that except for me and my assistant, no one will come to know of your identity. I am interested only in the decisions made by you in these games and not your identity. This is the reason that we will not ask your name in any of the games. We will identify your decision in the game with an identity card like this (show plastic cards). Please do not lose this card.

2. All games will be played for one round only. This means that after you have played the first game, we will begin with the second game. Likewise, after the second game is

over, we will begin with the third game. This means that after a game is over, there is no subsequent interaction.

3. We will play three games with you, but you will receive your money only in the end. We will keep a record of your earnings in all the games on a sheet like this (show payoff sheets for clarity) to make sure that you receive the correct amount.

4. We will give you separate instructions and examples on how to play each of these games. The instructions for each game will be given before we play the game. For instance, before we play the first game, we will give you the instructions on how to play the first game. Likewise, when we play the second game, we will give you the instructions for the second game, and so on. It is very important that you listen to these instructions carefully. In case you do not understand the game, please stop us and ask us. We will be happy to help you.

5. Before we play the actual game, we will check if you have understood the game or not. In case you do not understand the game, we will give the instructions again. However, if you are still not able to understand the game, we will have no choice but to request you to leave the venue. In this case, you will receive five Birr from us. Therefore, it is important that you listen to the instructions carefully.

6. We would like to keep the game anonymous, therefore, please do not discuss the game with each other. But you may discuss about politics, rainfall, market, cattle, WAJIBS, and other such things. In case we find that you are discussing the game with other players, we will exclude you immediately from the game. In this case, you will not receive any money.

7. We also request you to not to discuss the game with other WAJIB members as this will spoil my study.

8. (Read this only when two societies are invited) You will play the games only with the members of your own society.

9. I repeat again, please do not hesitate to ask any questions. We encourage you to ask as many questions concerning the games as possible. In case you have any questions at this stage, you may ask them now. Otherwise, we will begin with the instructions for the first game.

Experimental instructions

We will now give you instructions and examples for the first game. There are two parts in this game. We will now give you instructions for the first part. This is followed by a test in which we will check if you have understood the game or not. Once we are

sure that you have understood the game, we will begin playing the game.

In this game, we will divide you into groups of two players. You will not come to know to which group you belong. Likewise, you will not come to know the identity of the other (partner) player in your group. Similarly, the other player will not come to know your identity.

At the beginning of the game, each player will receive six Birr from us. Now you have to decide how many from the six Birr to put into your pocket and how many into a project. You may put any amount between 0 and 6 Birr into the project.

Now we will show you how this is done. Please note that since this is an example, we will tell the player how many Birr to put into the project. But when we play the actual game, you will have to decide this on your own, without any help from us. (Randomly select a player and give him six bills of one Birr each. Please make sure that each time YOU tell the person on how much he should put into the project. Do not allow the player to take a decision because this may influence the decision of other potential players). Suppose you are a player in this game. As mentioned before, you receive an endowment of six Birr from us. Now let us assume that out of six Birr, you put zero Birr into the project. Please put zero birr into the project. Ask the group: Can you tell me how many Birr there are in the project? How many Birr does the player have in his pocket? Have you understood this?

Now, let us assume that out of six, you put one Birr into the project. Please put one Birr. How many Birr are in the project? How many Birr does the player have in his pocket? (Carry on this procedure till 6 Ethiopian Birr). Have you understood this part? Do you need additional examples? (If yes, select another person and repeat the examples in the same order).

Any amount in the project will be increased by the same number of Shillingis as the number of Birr in the project. For example, if you put 0 Birr into the project, the project amount will be increased by 0 Shillingis. Now, the final amount of money in the project is 0 Birr. If you put 1 Birr into the project, the project amount will be increased by 1 Shillingi. Now, the final amount of money in the project is 1.5 Birr (Carry on till 6 Birr). I repeat, the project amount will be increased by the same number of Shillingis as the number of Birr in the project. Have you understood this? Do you need additional examples? (If yes, select another person and repeat the examples in the same order).

After the project money has increased, it will be divided equally between you and your partner player, irrespective of how much you have put into the project (Please repeat this again). For example, if the project contains 0 Birr, it will be increased by 0 Birr and then divided equally between you and your partner player. However, since zero does not

increase, both you and your partner will get zero Birr from the project. For example, if the project contains 1 Birr, it will be increased by 1 Shillingi. Now the total value of the project is 1.5 Birr, and both you and your partner player get 0.75 Birr each from the project (carry on till 6 Birr). Have you understood this part? Do you need additional examples? (If yes, select another person and repeat the examples in the same order).

Please remember that any money that you put into the project is first increased and then divided equally among the players in your group. Any amount that you put in your pocket remains the same. If you put 1 Birr in your pocket, it remains 1 Birr. It neither increases nor is it divided.

Your final earning from the game is the sum of the amount you have in your pocket and the amount you receive from the project.

We will now give you three examples. Please note that since now we are learning how to play this game, you can see the identity of each player as well as the decisions made by them. When we play the actual game, you will not come to know of this. Do you understand this? We will now select two people and tell them to take the following decisions in the game. You are player I and you are player II (look for participants with weak comprehension and always give them a chance to act as player I and II). We give you 6 Birr each at the start of the game.

Example 1: Now we will see what happens if both players put zero Birr into the project. Player I and II: Please put zero Birr into the project. Now, can you tell me how many Birr did player I put into the project? How many Birr does he have in his pocket? How many Birr did player II put into the project? How many Birr does he have in his pocket? How many Birr are in the project? We have zero Birr in the project. Since zero Birr does not increase and cannot be divided, each player gets zero Birr back from the project.

Player I has put zero Birr into the project, so he has six Birr in his pocket. He gets zero Birr from the project. Can you tell me, what is his income? Since player I has six Birr in his pocket and he gets zero Birr from the project, his final income is six Birr. (Please repeat the procedure to calculate the income of the second player.)

Example 2: Now we will show you the second example. You are player I and you are player II. You get six Birr from us at the beginning of the game. Now we will see what happens if both players put six Birr into the project. Player I and II please put six Birr into the project. Now, can you tell me how many Birr did player I put into the project? How many Birr does he have in his pocket? How many Birr did player II put into the project? How many Birr does he have in his pocket? How many Birr are in the project?

We have 12 Birr in the project. The project amount will now be increased by 12

Shillings. The final amount in the project is 12 Birr + 12 Shillings = 18 Birr. Now 18 Birr is divided equally among both the players. So, each player gets 9 Birr.

Now, can you tell me, how many Birr does player I have in his pocket? How many Birr does he get from the project? What is his final income? We repeat, since player I has zero Birr in his pocket and he gets nine Birr from the project, his final income is nine Birr. (Please repeat the procedure to calculate the income of the second player.)

Example 3: Now we will show you the third example. You are player I and you are player II. We will see what happens if player I puts zero Birr into the project and Player II puts six Birr into the project. Player I, please put zero Birr into the project and Player II, please put six Birr into the project. Now can you tell me how many Birr did player I put into the project? How many Birr does he have in his pocket? How many Birr did player II put into the project? How many Birr does he have in his pocket? How many Birr are in the project? We have six Birr in the project. The project amount will be increased by 6 Shillings. So the final amount in the project is 6 Birr + 6 Shillings = 9 Birr. Now 9 Birr is divided equally among both the players. So, each player gets 4.5 Birr. Now, how many Birr does player I have in his pocket? How many Birr does he get from the project? So, what is his final income? We repeat, since player I has 6 Birr in his pocket and he gets 4.5 Birr from the project, his final income is 10.5 Birr. How many Birr did player II put into the project? How many Birr does he get from the project? So, what is his final income? I repeat, since player II has zero Birr in his pocket and he gets 4.5 Birr from the project, his final income is 4.5 Birr.

We will now summarize the key results from these examples:

a) If both players put zero Birr into the project, they both earn 6 Birr.

b) If both players put 6 Birr into the project, they both earn 9 Birr.

c) If one player puts zero and the other player puts six Birr into the project, the player who puts zero Birr earns 10.5 Birr, while the player who puts 6 Birr, earns 4.5 Birr.

d) If you and your partner player put the same amount into the project, you both earn the same income.

e) If you put less than what your partner puts into the project, you earn a higher income.

f) If you put more into the project than your partner, you earn a lower income.

If you have any questions, you may ask them now. Otherwise, we will call you one by one and ask six questions to check if you have understood the game or not. Please note that if you answer these questions wrong, we will give you 5 Birr and request you to leave

the game venue. Therefore, please tell us if we need to repeat the examples or not (If yes, repeat the examples in the same order).

Control questions

1. How much money do you get at the start of the game? / What decision do you have to take in the game?

2. Suppose, you decide to put X Birr into the project, how much is left in your pocket?

3. What happens to the money in the project?

4. If you put X Birr into the project, by how much will this increase? What happens after the money is increased?

5. If you put X Birr into the project and your partner also puts X Birr into the project, who earns more?

6. If you put Y Birr into the project and your partner puts Z Birr into the project, who earns more?

(For those who answer 5-6 questions correctly, ask them to sit back in the room. Pay the remaining players 5 Birr and request them to leave. After this, repeat the control questions and let the selected players answer in a chorus. Ask again, if everyone understands. If yes, give them the identity cards).

Actual Game

We will now call you one by one to enter this room and play the game. Please remember that you will not come to know the identity of your partner player or the amount they put in the project.

We will also ask you a question: How many Birr do you believe your partner player will put into the project? This is an important question, so please think before you answer this question.

While you wait for your turn, two assistants will conduct interviews with some of you. They will also check if you discuss the game with each other or not. If they find you discussing the game, we will have to expel you from the game.

When entering the room, please keep your identity card ready.

Unconditional decision

Hello! Have a seat please. I hope you have understood the game. Your identity card, please? Here are your six Birr. Now you have to decide out of six Birr how much you

would like to put into the project. Please put the amount here on the table. How many Birr do you believe your partner player will put into the project? Thank you. Please do not discuss this with the other players.

Additional experimental instructions for the conditional decision

We will now give you instructions to play a slightly different version of the decision that you just played. In the first decision, you did not know the amount your partner player puts into the project. But in this game, we will tell you how many Birr your partner player puts into the project. After you have seen this, you can decide on how many Birr you would like to put into the project. There are seven decisions to be made in this game. Each decision is independent of the other. Please note that you will get a fresh endowment of six Birr at the start of each decision. We will now give you illustrations on how this game is played. Please listen carefully. While we give examples, no one is allowed to speak.

Decision 1: Your partner player in the game puts out of six - zero Birr into the project (put no money on the table). Now, out of six Birr, how much would you like to put into the project? After you have made your decision, the decision is over.

Decision 2: Your partner player in the game puts out of six - one Birr into the project (put one Birr on the table). Now, out of six Birr, how much would you like to put into the project? After you have made your decision, the decision is over. (Carry on till 6 Birr.)

Do you have any questions?

There are seven decisions to be taken in this game. Please watch our fingers for why there are seven decisions. Your partner player puts 0, how much would you like to put; Your partner player puts 1, how much would you like to put; Your partner player puts 2, how much would you like to put; Your partner player puts 3; how much would you like to put; Your partner player puts 4, how much would you like to put; Your partner player puts 5, how much would you like to put; Your partner player puts 6, how much would you like to put. Can you count our fingers now? How many decisions do you have to take in this game? At the beginning of each decision, you will get 6 Birr, just like in the examples you saw. Each decision is independent of the other. A very important point is that we will pick only one of these seven decisions to decide your earnings. So please take all the decisions seriously. Do you have any questions?

We will now call you one by one to play this game. As usual, please keep your identity

card ready.

Conditional decision

Hello! Please take a seat. I hope you have understood the game. Your identity card, please? Here are your six Birr. Now we will show you one by one how much your partner player puts into the project. After you have seen this, you can decide how many Birr you would like to put into the project. Please put the amount here on the table.

Decision 1: Your partner player in the game puts out of six - zero Birr into the project (put no money on the table). Now, out of six Birr, how much would you like into put in the project? Now this decision is over. Please return all the money you have in your hand to me.

Decision 2: Here are your six Birr. How many Birr do you have in your hand? Your partner player in the game puts out of six - one Birr into the project (put one Birr on the table). Now, out of six Birr, how much would you like to put into the project? Now this decision is over. Please return all the money you have in your hand to me.

(And so on till 6 Birr.)

Appendix C Vignette Study

Vignette A: Market Exchange 1

One day an Oromo man called Ibsaa decided to sell his cows to earn money. He went to a market where he met Barentu, another Oromo man. Barentu wanted to buy Ibsaa's cows. The cows looked healthy from outside, but they were actually sick. No one except for Ibsaa knew that. Ibsaa decided not to tell this to anyone. Barentu bought the cows. Some months later, the cows died. This was a big loss to Barentu.

1) In your opinion, what Ibsaa did to Barentu was right or wrong?

Right Wrong Don't know

2) Are you pleased or displeased with Ibsaa?

Pleased Displeased Cannot say

3) Will you say anything to Ibsaa if you met him? What will you say?

4) What should Barentu do?

a) find Ibsaa and get his money back
b) go to the police

c) stop buying from Ibsaa in the future
d) tell everyone that Ibsaa cheated so that everybody is aware
e) contact the leader of the group to which Ibsaa belongs
f) contact the leader of the group to which Barentu belongs
g) Other

5) What will happen to Ibsaa? Will Ibsaa be punished?

Yes No

6) What happens if Ibsaa says he did not know that his cows were sick? After all, there is no proof of this. Will you agree with him?

Yes No Cannot say

7) If you go to a market, will you buy cows from Ibsaa? Why / Why not?

Yes No

8) Do you think other people will buy cows from Ibsaa?

Yes No

9) Will you buy other products from Ibsaa?

Yes No

10) If Barentu told everyone that Ibsaa cheated, will Ibsaa take revenge?

Most likely Somewhat likely Not at all

2B: Market Exchange 2

One day an Oromo man called Ibsaa decided to sell his cows to earn money. He went to a market where he met Barentu, another Oromo man. Barentu wanted to buy Ibsaa's cows. Barentu bought the cows. Some months later, the cows died of sickness. This was a big loss to Barentu. Barentu thinks that Ibsaa cheated him by selling him sick cows.

1) Do you think Ibsaa cheated Barentu or was Barentu just unlucky?

Cheated Yes No

Unlucky Yes No

2) Whom are you going to support? Why?

Ibsaa Barentu

3) Do you think Ibsaa knew his cows were sick and did not tell this to Barentu? After all, it is difficult to prove that Ibsaa knew it.

Yes No

4) Does Barentu have any option to get justice? What should Barentu do?

Yes No

5) After this incident, will other people buy cows from Ibsaa?

Yes No

6) Will people buy other products from Ibsaa?

Yes No

7) Would it have been possible to avoid this situation? How?

Yes No

8) How easy is it for people to sell sick cows in the market?

Yes No

9) Do you have a mechanism to detect people who cheat in the market? How does it work?

Yes No

10) Do you think that people who buy livestock mostly buy from the same seller/s? Why?

Yes No

11) Does market exchange (buying-selling) teaches you not to cheat? How?

Yes No

12) Do you implement the social norm of not to cheat in others areas of your life, outside the market exchange. For example, in dealing with people from your group or people from other group? How?

Yes No