

Market Integration and Fairness: Evidence from Ultimatum, Dictator, and Public Goods Experiments in East Africa

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It is now well established that people in developed economies behave very differently in economic experiments than narrow economic self-interest would predict. Specifically, people appear to be more fair-minded and cooperative than predictions based on homo-economicus would lead us to assume (Henrich *et al.*, this volume, Fehr and Schmidt 1999). Intriguingly, the first data from a less developed society, namely the Amazonian Machiguenga study of Joseph Henrich (2000), which was a pilot for this volume, demonstrated far less fair-mindedness. Many of the other less developed societies represented in this volume also have means and modes in the ultimatum game that are below those for developed societies. Indeed, one of the hypotheses that holds across these less developed small-scale societies, is the positive relationship between market integration and offer size in the ultimatum game (see Henrich *et al.*, this volume). While the cross-cultural evidence alone justifies a closer look at this relationship, it is also worth pursuing studies of intra-cultural variation in societies that have significant variation in market involvement. The Orma of East Africa is one such society.

To most people the notion that individuals in market societies might be more fair-minded seems counter-intuitive. My highly anecdotal survey of such opinion demonstrates that this may hold true for economists, anthropologists, and lay people alike. Thus it is with good reason that we may wish to approach any data to the contrary very cautiously. In defense of the counter-intuitive, however, let me note that the argument is not without its sympathizers (Hirschman 1982). Nor, I would argue, is it entirely implausible.

Hirschman (1982) traces the history of thought on the effects of commerce on the citizen and civil society. Hirschman begins with Montesquieu (1749,1971, Vol. 2:8), who

notes that, “wherever there is commerce, manners are gentle.” And again,

adoucit) barbaric ways,” (p. 81). Particularly prominent

in Hirshman’s review of these early scholars is the increasing premium on honesty and reputation attributed to market economies due to the requirements of repeat dealing. In contrast, the early nineteenth century, according to Hirschman, brought the contrary view represented by Marx and others, that markets undermine the moral foundations of society. The new view placed more emphasis upon the corrosive effect of self-interested behavior that was encouraged by the market and which eroded traditional values that were actually essential to the functioning of the market. Hirschman himself concludes (1982:1483) that both forces are likely at work in market societies. Thus, “the constant practice of commercial transactions generates feelings of trust, empathy for others, and similar *doux* feelings, but on the other hand, as Montesquieu already knew, such practice permeates all spheres of life with the element of calculation and of instrumental reason.” While he notes the loss of predictive power associated with accepting the complexity of this duality, Hirschman concludes that it is probably the most accurate perspective. If Hirschman is right, then we might expect to see something of this bimodal distribution (between pure self-interest and pure altruism) in experimental data from market societies, which indeed we do.

Hirschman’s argument for the civilizing effects of the market hinges upon the increasing importance or value of reputation in market societies. One avenue for extension to behavioral predictions in economic experiments is to propose that a powerful way to signal one’s reputation is to engage in fair-minded behavior. This leads to the hypothesis that we would expect more fair-minded offers among those most involved in the market. This is indeed consistent with the findings that will be presented below for the Orma, and also consistent with our cross-cultural results in this volume.

The data reported here are also consistent with a rather different interpretation. To the extent that people operating in the market move increasingly to fifty/fifty splits in their play, it is possible that they have learned a new focal point commonly invoked in repeat dealing among strangers. Young (1993) argues that among heterogeneous populations with some mobility between classes (conditions met among the Orma), the stable convention for division is fifty-fifty. To the extent that both mobility and class heterogeneity increase among the market population (see Ensminger 1992), this prediction is also consistent with the findings presented here.

Both of these theoretical explanations imply that people learn new norms in the course of market exchange. Camerer and Thaler (1995) agree that norms of fairness are learned. Kindergartners are the most selfish in economic experiments, while by the third and sixth grades, more fair behavior towards one's peers emerges.

A remaining dilemma that plagues much experimental work is the question of why such behavior would show up in one-shot anonymous games? Here we must assume that people bring habitual behaviors into the games that are not turned off even in a context engineered to encourage them to do so. This may be the result of cognitive processes or of rout compliance with social norms, for whatever reason.

A number of accounts from behavioral economics and elsewhere can help us understand this phenomenon. Gabaix and Laibson (2000) provide a psychologically plausible model of how people make complicated decisions. In their account it is assumed that cognition is costly and that accurate calculation is impossible. People economize by not considering decision alternatives of low probability. It is conceivable that in the context of many small-scale societies, if not all societies, guaranteed perfect anonymity is a rare event--so much so that people behave in virtually all contexts as if their behavior will be known. Robert Frank's work (1988) is also relevant here. He argues that the conscious

pursuit of narrow self-interest is not always the best means of achieving one's ends in the long term. He notes that there are bargaining advantages associated with having a reputation for irrational "fairness," such that others may be reluctant to invoke such an individual's vengeful side. Further, while it might pay for an opportunist to fake cooperative behavior, there may be physical limitations to our ability to deceive consistently, such that it does not pay to try to do so. These are the kinds of conditions that might lead even self-interested individuals to engage in "fair" behavior in the context of a one-shot anonymous game.

Although I have had a long-standing interest in the effects of market integration on small-scale societies, I did not set out to test hypotheses concerning market integration when I was asked to join the cross-cultural experimental project upon which this volume is based.² Like many of the others, my first venture into experimental economics in the bush was largely theoretically inductive and methodologically exploratory. I was not sanguine that controlled experiments with the Orma would even be logistically possible. In the end, I learned a great deal about feasible methods for conducting experiments in the bush, and returned with a modest sample of ultimatum bargaining games (N=56), dictator games (N=43), and public goods games (N=24), from which to develop hypotheses for future testing.³ These results are presented below, together with some analysis that points to directions for future research and theory testing.

Ethnographic ContextThe Political Economy of the Orma

In this section of the paper I highlight the aspects of Orma life that one might consider relevant to interpreting their behavior in the experiments (for more details see Ensminger 1992). The picture is necessarily broad brush, but the attempt is to at least

touch upon issues in the political economy and social arena that may be salient to the analysis.

The pastoral Orma share Tana River District in northern Kenya with the Pokomo, who farm the narrow flood plain of the Tana River, and lesser numbers of Wardei and Somali pastoralists. The Orma are divided geographically from north to south into three sections and this research took place among the geographically central Galole Orma. No accurate population statistics for the entire Orma ethnic group exist, but I would estimate the total to be between 30,000 and 60,000. The Galole population is roughly 10,000-15,000.

The Orma are a pastoral-nomadic group dependent primarily upon cattle, though many households also keep sheep and goats and an increasing number each year diversify into trade and wage labor. Most sedentary households are now also pursuing opportunistic risk flood plain agriculture, which yields a harvest once every two or three rainy seasons. A local stone quarry also provides income to those who dig stones for builders in the district capital. Regardless of these efforts at diversification, even sedentary households are still heavily tied to the livestock economy.

Historically, the Orma were quite wealthy pastoralists largely due to their military prowess and the lush riverine environment they inhabited along the seasonal rivers and delta of the Tana River. But given substantial losses of territory to game reserves, private ranches, irrigation schemes, and immigrant Wardei and Somali, coupled with a healthy population growth rate, the Orma are not nearly as well off on a per capita basis as they were even 20 years ago. One consequence of these trends has been an increase in sedentarization. While this process began in the 1950's, it accelerated substantially in the 1970s and 1980s, perhaps in large part as a consequence of the devastating droughts during those two decades. The rich are drawn to settled living for an easier life (including

proximity to transport and the dispensary), to pursue economic diversity in the form of trade and wage employment, and to educate their children. Many of the poor settle to pursue opportunistic flood plain agriculture along the banks of the seasonal rivers and because there are no longer sufficient numbers of rich pastoralists to support them in a nomadic lifestyle.

It is widely recognized by the Orma that sedentarization is associated with a more commercially oriented lifestyle. Sedentarization usually involves the removal of livestock far from the overgrazed permanent village to places where grazing conditions are superior. This means that virtually all food must be purchased, and this in turn involves the sale of a great deal of livestock; many have found it difficult to increase their herds under these conditions. Meanwhile, those who persist as nomads are attempting to live a more subsistence lifestyle based upon the products of their herds, which they hope will grow in size as they avoid cattle sales. Since the late 1970s, approximately two-thirds of the Orma have been sedentary.⁴ Given this variation in economic strategy, the Orma afford a broad continuum of market orientation, as there are many households that engage in wage labor and purchase virtually all of their daily foodstuffs, and others that go half the year living exclusively off the milk and by-products of their herds and do so at remote distances from towns and trade of any sort.

Even today, outward signs of development are absent in the Orma interior. There is no running water, no electricity, roads are scarce, and people live in grass houses with few personal possessions beyond clothing and cooking pots. Many sedentary households send their sons to primary school, a few send daughters, but relatively few children attend school for more than three years; almost all of the adult population is illiterate.

Like most East African pastoralists, the Orma are patrilineal and largely patrilocal. Inheritance norms are gradually drifting from primogeniture to equal inheritance for sons,

possibly as a consequence of Islamic influence. While the ideal is for brothers to stay together even after their father's death, this is now the exception rather than the norm. In fact, most sons split off to set up independent households even before the father's death. This and many other social changes are likely related to the increasing bargaining power of young men, who through wage labor and diversification of the economy in the sedentary sector, have independent means such that they are no longer completely dependent upon their father's monopolistic control of household wealth in the form of the family herd.

Politically, the Orma are of course subject to the institutions of Kenya. The highest-ranking local civil servant resident among the population is the government appointed Chief, who resides in one of the sedentary towns where this research took place. The Chief's major functions have to do with the rule of law and the interface between the local population and the government of Kenya. He both adjudicates many disputes locally in consultation with the council of elders and refers other cases, mostly criminal ones, to the national court structure in the district headquarters. The Chief is also responsible for the distribution of government famine relief and the organization of local *harambee* fundraising activities for the schools and other community development efforts (see below under the public goods game for more details on this institution). To a remarkable degree, and contrary to the experience of other parts of Kenya and even other parts of Ormland, the government sponsored initiatives and the adjudication process are run in a disciplined and largely uncorrupt manner in this particular local area. This was also the case under the previous two chiefs going back at least to the 1950s.

The Orma have strong clan affiliations, though these had greater significance in the past than they do today. Beginning about a decade ago, the practice of clan exogamy broke down. I view this more as a consequence rather than a cause of the demise of clans. Clans and lineages are influential in the adjudication of disputes. Minor family and property

matters are resolved between the senior lineage elders of the disputing parties. When they are unable to agree, the case is brought to the Chief's office. He then convenes what he deems to be an appropriate assortment of more senior clan and lineage elders representing both sides and the case is usually resolved. Very few cases make it past this process and move up to the national court system.

In addition to the Chief's office, other signs of government infrastructure in the area include a local dispensary, three primary schools, security forces at the disposal of the Chief, and veterinary agents. The presence of the "state" is increasingly felt in this remote part of Kenya. Nevertheless, it is fair to say that relative to the rest of Kenya, Ormland remains considerably autonomous. One example of this is that despite a mandate in 1978 that all children must attend primary school, only a small percentage of Orma school aged children attend school even to this day, some twenty-two years after the Presidential edict.

Property rights among the Orma are quite clearly specified. Land is held in common by all Orma, while livestock are owned individually by male heads of lineages. Women generally do not own livestock, but may acquire some as gifts from their fathers or close friends, in dowry, in bridewealth payments, and occasionally in trade. Women own all of the milk from their allocated milking stock and are free to market it as ghee when there is a surplus. Women also own the skins of all livestock and regularly market sheep and goat hides, while they retain all cattle skins for personal use. Most individuals control all income from the marketing of any craft they sell or any profits from trade. The exception here is the income of sons still dependent upon their fathers. This is a gray area that leads to frequent disputes and often results in sons taking early separation from their father once their income is sufficient to "go it alone." Generally speaking, cash is viewed as a private good, and that is also true for cash earned in these experiments. This is more especially the case because the amounts were relatively small compared with say a son's monthly salary, for

example, which fathers almost always attempt to tax. Women do have access to cash through the sale of ghee, skins, and handicrafts. Their rights to private control of cash are well protected, and husbands are subject to severe punishment if they encroach upon the “private bag” in which a woman keeps such items. Increasingly, women use a locked truck for this purpose.

Between 1920 and 1940 the Orma made a universal conversion to Islam. This involved some dramatic initial changes in lifestyle that attest to the sincerity with which this mass conversion took place. Most remarkably, the population gave up the drinking of alcohol, which had been central to many indigenous ceremonies, as it is today among most other East African pastoralists. By the 1950s a number of wealthy Orma were making the Hajj. Virtually all Orma today fast during Ramadan. Nevertheless, some Islamic institutions have been more difficult to meld into traditional Orma custom. For example, while the Orma are well aware that Islam mandates inheritance for women, this is not practiced among any households I know. Wealthy fathers often make presents of cows to their daughters, but I know of none who have given daughters the mandated half shares of each of their sons. There is, however, an increasing movement toward indirect dowry (mandated by Islam) and away from bridewealth (see Ensminger and Knight 1997 for more details).

The status of women has certainly not declined since the Orma converted to Islam, and an argument could be made that it has risen substantially. However, many of the recent changes are a consequence of government initiatives. Most particularly, widowed women are increasingly refusing levirate marriage and remaining on their own. The Chief has in recent years heard many cases where the widow has been allowed to keep her deceased husband’s property rather than return it to his brother. Both Islamic law and Kenyan law have been invoked in a number of women’s rights cases in recent years.

Tithing is a fundamental requirement for Muslims, and indeed, the Orma do practice the annual tithe. As in all societies, some follow the letter of the law more precisely than others, and there is some self-serving re-interpretation of the rules at the margins. For example, it has become common practice to give a second cow to one's hired laborers and count this against the annual tithe, when in fact it should be considered salary.

Noblesse oblige is a value system among the Orma that predates conversion to Islam. The notion that the rich have a responsibility to the poor has deep roots in Orma society. In the past, and even today among the nomads, there are reciprocal relationships between herd owners who are cattle rich and labor poor and those who have complementary assets and deficits. Until relatively recently there was also strong sentiment that clan and lineage members had an obligation to help those who suffered heavy losses in droughts by providing animals to facilitate restocking. Such sentiments have fallen in recent years as relatively few people perceive themselves to be well enough off to give so freely. This is also compounded by the early splitting up of large well-stocked households into many smaller units of independent sons. In short, I cannot say that conversion to Islam has led to any major change in values among the Orma regarding relationships between rich and poor and generalized obligations of giving and wealth redistribution.

Sharing norms, especially regarding food, differ considerably from village to village. One relevant variable is whether the household lives a primarily subsistence strategy through nomadism or has converted to commercial cattle production and lives as a sedentary household purchasing most of its food. This distinction derives from the fact that nomads have better access to good grazing and water and live with their herds where they are able to consume the milk. Milk yields are far higher than in sedentary villages and surplus milk has relatively speaking much less value. Thus, the costs of sharing are considerably lower. Grazing conditions around sedentary villages are poor and necessitate

that stock is sent far away to better grazing, thus reducing the milk available for consumption. Families must purchase almost all of their food. Because all food is purchased at considerable expense in sedentary villages (it may easily make up 80% of a household's expenditure), and because such villages tend to be far larger than nomadic camps, there is less food sharing and what there is tends to be among tight networks.

Methods

This cross-cultural project adds a great deal of diversity to our data base of experimental economics by expanding into non-western and less developed societies. Another advantage of these study sites is that it is easier to draw samples more representative of the population at large than is often the case in laboratory studies. While I make no claims whatever that the sample used in this project is representative of all Orma, it almost certainly is more so than American university undergraduates can be said to represent the US. However, this clear advantage of getting out of the university and out of the laboratory is counter balanced by some of the problems associated with working with populations less adept at experiments, and in environments where controls are challenging.

Before turning to some of the more problematic issues facing experimentalists outside the laboratory, it is worth recording a few issues that one might expect to have been problems, but that in fact were not. There was no resistance by the Orma to playing the games; on the contrary, people loved them—by the end they were imploring me to make arrangements to come back as soon as possible and play more games. Of course they enjoyed the remuneration component of the games, but they also for the most part actually enjoyed the play itself and were intellectually amused. I received many jovial comments such as the following, "I will be spending years trying to figure out what this all meant."

While I began the games with concerns about logistics, these were ill-founded. Grass houses are not at all a hindrance to running experiments. In fact they were the perfect size for isolating small groups from one another during the course of play, and one research assistant seated by the door was able to keep groups from talking about the game, exiting, or chatting with visitors. "Crowd control" turned out to be relatively simple. People never had to wait more than three hours to finish their play, but many were willing to do so. When I explained that they could not talk about the game during the play, there was remarkably disciplined compliance.

Prior to beginning the experiments I held a large public meeting to explain the work. This meeting was well attended by elders and young men, though very few women showed up, as is the norm. I explained that this work would be quite different from my previous work, and that it would involve playing "fun games for real money." I purposely said nothing in this open forum about the content of the experiments, so as not to steer behavior in any way. But I explained that these were games being carried out around the world to study economic decision-making, and that they have been played many times in the US and Europe. The discussion that ensued was one of great amusement at the "insanity" of western ways. Most people seemed both at this point and after the games were played to interpret them in this light, that is, westerners "had money to throw away on such foolishness." Some seemed to have a true understanding of the nature of research and that this would somehow teach us something about human behavior. An alternative hypothesis that also floated around, perhaps never taken completely seriously, was that I wanted to provide aid to the community so I dreamt up this complicated scheme to provide an excuse to do so. One thing is certain, there was never any hesitation about accepting the money, whatever the reason assumed to explain the windfall.

I explained that I would be approaching every household in each of five villages with a household economic and demographic survey very similar to those I had administered in 1978 and 1987. No household was required to participate either in this survey or in the games that would follow. From the surveyed households I promised to try to invite at least one adult from each household to play a game.

Six native speaking Orma research assistants with Form 4 education carried out the household economic surveys with 205 households in these five villages. Village size ranged from 13 for the one nomadic village to 36-69 households in the four sedentary villages, with an average of 8.1 individuals per household, totaling 1669 individuals in all. A three-generation genealogy was drawn for each household and individual demographic statistics for all household residents were gathered on relationship to head of household, age, sex, education, work, and income by source. Household level data on migration history, length of residence in the community, and wealth of household were also elicited. Voluntary compliance with this survey was 100%. At least one individual from almost all surveyed households played one of the 144 games (262 players).⁵ Of those who made offers in the games reported here, the mean age was 37.7 and mean education was 1.4 years. Mean household wealth measured in cattle equivalents was 19.8 and individual income averaged 665 Kenyan shillings per month.

All games were run jointly by a bi-lingual, native-speaking research assistant (the games master) and myself. The school teacher I choose for this purpose was amazingly patient with "slow learners," has a reputation in the village for trustworthiness, and is known to be devoutly religious. Numerous native speakers were also used as monitors, but they were not in the room with individuals at the time offers were made. Given that the games master is known to many of the individuals playing the games, I had him turn around at the time offers were made to ensure that only I had access to that information, thus enhancing

anonymity. Some people gestured for him not to bother to turn or blurted out their offers before he could turn, and seemed quite unconcerned that he knew how they played.

Many conditions of the experimental design for my study were set by the group project in order to standardize across the research sites. The stakes were set at approximately one day's casual labor wage, with a show-up fee of one-third of a day's wage for all sites.⁶ In the Orma case, this translated into games played for 100 shillings or roughly the equivalent of \$2; this was the local daily casual wage rate at the time. Each player received a show-up fee of 20 shillings at the very beginning of the game instructions. This drove home the fact that they were playing for real money, and served as partial compensation to those who might not earn much in the games. Each of the game texts was back translated; that is, one native speaker translated it from English to the local language and another one, unfamiliar with the English text and the game, translated it back into English to ensure precision and clarity of meaning. All games were one-shot with no repeat play. I was careful to do exactly what I promised in each game to ensure that people did not distrust my intentions, and to facilitate understanding of the game; there were no sham offers. Feedback from trustful participants indicates that neither distrust of the experimenters, nor fear of losing anonymity was a problem.

Efforts were made to be as systematic as possible in sampling, but because the games had to be played en mass there were biases toward availability. Given the enthusiasm that most people had for participating, however, this was less than one might expect. Young men who herd were definitely underrepresented, but those working on their farms chose to take time out from their field preparations rather than miss the game. Undoubtedly, those who travel more and happened to be away are slightly underrepresented, though if they missed one opportunity to play they were often called a second

time. A major effort was made to include at least one adult from each household and often both a man and woman were included.

People were notified the night before a morning game that they could show up at a certain location to play. For the ultimatum and dictator game I usually called 20 people for this purpose. In the largest two villages where school buildings were available I ran through the game instructions with the entire group together. No one knew at this point whether they would be player one or player two. The game master read the instructions twice and I then demonstrated the play with a set of ten, ten shilling coins. I ran through a randomly generated series of hypothetical possibilities of play, including rejections in the ultimatum game. Each person in the room was then quizzed with a hypothetical example to test for comprehension. The group was then left with two or three research assistants monitoring them with instructions that they could not discuss the game. Individual players were then brought in one by one to a separate room where only the game master and I were located. The order of play was determined publicly by drawing slips of paper from a hat with each player's name on it. This served to emphasize both the randomness in the order of play (which affected waiting time) and in the assignment of roles. Once alone, we ran through the rules of the game again until the individual understood the play. At this point they were told whether they were player one or player two. They made their offer by pushing whatever coins they wished to offer to one side of the table while the games master had his back turned. Once they had made their offer or declared their response to an offer, they were allowed to return home, but could not talk to any of those who had not already played the game. In the case of the ultimatum game, a second appointment time was set for first players to return and learn whether their offer had been accepted.

Four individuals had to be eliminated from play because they did not understand the game. One was blind, one was deaf, and two were rather slow. Once we were in private I

paid them as if they had played and no one knew that they had actually not played the game.

One of the main differences between the studies represented in this project and those most often carried out in US laboratories, is that we are running them in small communities where most people know one another or at least have a high probability of having future repeat dealings. There is also a high level of inter-relatedness. This characteristic may affect play in a number of different ways. People who live in small communities may habitually share more in every day life (as I discussed above), they may have different conceptions of privacy and anonymity, and there are more serious problems associated with contagion of the population if games are played over time.

Even though one may guarantee anonymity, in a society in which little can be kept private, people may act habitually on the assumption that little can be kept private. However, it may also be the case that in societies with little privacy there is less concern about anonymity.

I have a bit of anecdotal evidence that bears on the anonymity question. About a week after the play was finished in one large village I made inquiries about what people knew about how other people had played. I was told that while some had told their close friends how they had played, others had not. They discussed the games in a general sense, but did not reveal their actual offers. A very close friend also approached me approximately a week after his wife had played the dictator game. The friend was curious how his wife had played because, "She won't tell me." Finally, three women who played the dictator game and kept the entire pot for themselves were so proud of the fact that they immediately ran into the village and told their neighbors. I also have little doubt that some Orma would not hesitate to lie about how they played, knowing full-well that there was no way anyone could challenge their assertion. Several people reported to me that the steps

taken to ensure anonymity were obvious and that no one in the village was concerned about being found out.

I was especially concerned with the problem of contagion from the games once anyone in the village had played. People in small communities share information rapidly and freely within the community. These games raised a great deal of interest and it stands to reason that people talked about them. If one assumes that people talk, then those coming to play a game after the first round in a given village might have heard how the game was played and might also have heard discussion about the “proper way to play the game.” I tried to get around these problems by calling large groups of people for a game and holding them all until the group was finished. I also moved from village to village as rapidly as possible to try to beat any news that might travel. Finally, I changed games and never announced which game people were being called for on any given day.

Another characteristic of this population that bears emphasis is that they are largely illiterate and unfamiliar with experiments. While extensive efforts were made to ensure that all participants understood the games clearly, and relatively simple games were chosen, the possibility remains that there is more "noise" in these results stemming from misunderstanding the task than one often finds in experiments run in developed societies.

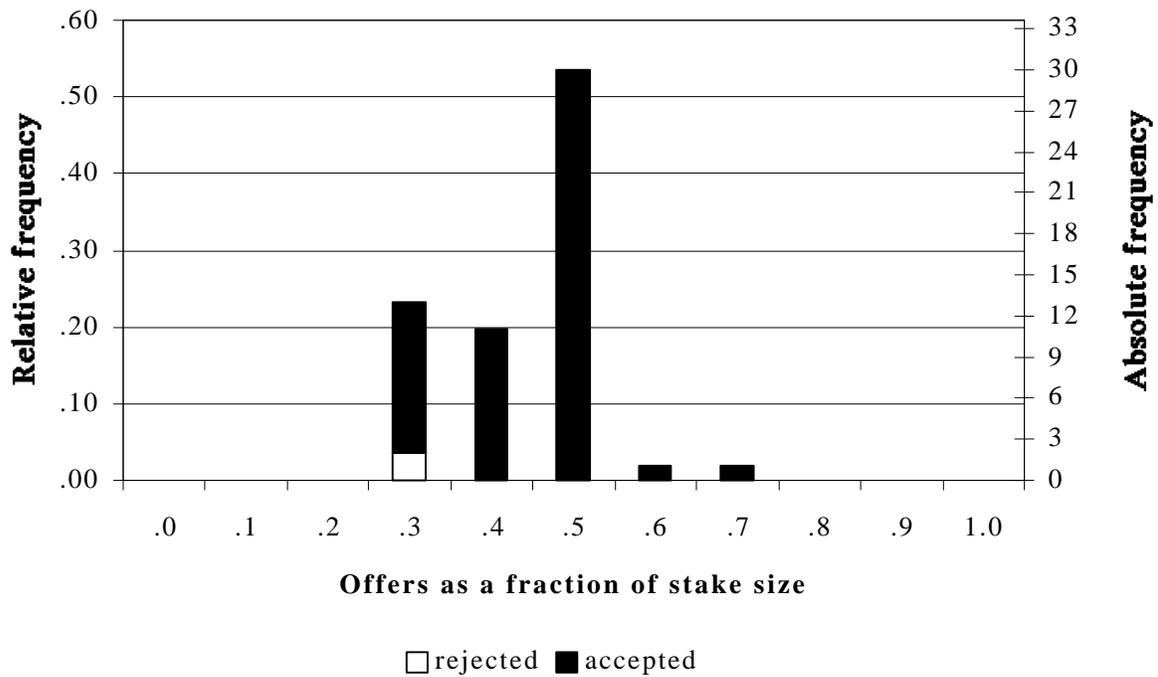
I turn now to a discussion of each game in turn.

The Ultimatum Bargaining Game

It was Henrich's (2000) study of the ultimatum bargaining game among Machiguenga Indians that served as a pilot for this project. The Machiguenga made low offers and these were not refused. I also expected the Orma to make very low offers and for there to be almost no refusals. I was half right (see Figure 1). Orma mean offers were a high 44% (exactly in line with the US range), far higher than the 26% mean offer observed

in the Amazon. Orma behavior departed from the US pattern, however, in the distribution. In the US it is common to have low offers (below 25%), though there is a significant rejection rate in this range (Camerer n.d.). For the Orma the lowest offer out of 56 games was 30%, and there were only 2 refusals among the 13 who received 30% offers. It may be significant that the only two rejecters were both educated men from rather wealthy families. It is difficult to make much of this, but the role of such individuals as the “defenders” of social norms in society is so important that it bears further investigation. Notably, there is anecdotal evidence from a variety of the research sites reported in this study that rejecters in some of them also bear these characteristics (personal communication from Joseph Henrich).

Figure 1: Distribution of offers in the ultimatum game (N=56, stake size=100 Kenyan shillings)



Henrich's Amazonian study was arguably not comparable to the vast battery of US studies because the experimental conditions varied so much from those pertaining in the US. Notably, he played the games for very high stakes (2.3 day's wage in local currency), and his sample was all from a small-scale community. To address these potential criticisms, he ran a study among UCLA graduate students of anthropology in an effort to replicate these conditions in the US (Henrich and Smith, this volume). He calculated the average wage rate of the students and set the stakes at \$160 to make them comparable to the level of the Amazonian studies. Similarly, the size of the "community" of graduate students was roughly comparable to that of the Amazonian population, and thus the potential confounding of small community and reputation effects was matched. The UCLA students played slightly more fairly than is the norm for US populations: their mean offer was 48%, they did not make low offers, and there were no rejections.

It is interesting to note that the Orma play closely parallels that of UCLA anthropology graduate students. The conditions that Henrich so carefully controlled for in the US—higher stakes and small-scale community—are also represented in the Orma context, which could explain why one finds a closer parallel between the UCLA play and the Orma than between other US populations and the Orma. What is more, the qualitative feedback from both studies indicates that the reasons for playing that way are similar for both the Orma and the UCLA anthropologists.

In my post-play interviews with players, almost every player who offered 40 or 50 percent indicated that they did so because of fairness. In the formal interview immediately after the play, no one owned up to being strategic or fearing that a lesser offer would be rejected. Furthermore, virtually every responder indicated that he or she would have accepted an offer of even 10%, the lowest possible short of 0. While the fairness explanation was consistent with the willingness to accept low offers, I was still suspicious of

proposers' motivations for giving high offers. I sought out a few reliable informants I knew I could trust to fill me in on "the talk in the village." The "talk" revealed that people were obsessed with the possibility that their offer might be refused, in spite of the fact that they thought (correctly) that it was unlikely that people would refuse even a small offer. But very few wanted to take such a chance. Henrich and Smith (this volume) report similar strategic thinking among the UCLA graduate students who feared there might be some people (albeit very few) out there who would reject any offer below 50%, and they didn't want to miss their \$80 (half of the \$160 stake).

Table 1 presents the findings from the linear regression analysis. Both education and income are represented as dummy variables because the distributions are highly skewed toward 0 in both cases (78% for education and 67% for income), and in the case of income there is a large lump in the middle of the positive distribution that represents the income shared by all in a common form of employment. Wealth is measured in cattle equivalents (with 5 sheep or goats equal to one steer). Virtually all wealth in the society is held in livestock. It is worth noting that the correlation between income and wealth is extremely low, as the income measure used here reflects income other than that acquired by the sale of one's own stock. Those who are wealthy in livestock often do not pursue employment in the wage market and/or trade, and thus do not have incomes. The examination of individual level effects in a regression analysis demonstrates that the income dummy is the only variable that predicts size of offer at the .05 probability level or above. While education is not technically statistically significant, it is close, and furthermore, the sign is negative. One explanation for this could be that more educated individuals are cuing on the "strategic" nature of the game (i.e. what is the lowest offer I can get away with) and making lower offers as a consequence. Following the discussion of all

of the games I shall return to the implications of the wage market effect demonstrated in these results.

Table 1: Linear regression of ultimatum game offer
(N=56; Adjusted R-squared=0.0737)

| Variables | Coefficient | Std Error | Beta | P value |
|--------------------|-------------|-----------|-------|---------|
| Age | -.064 | .102 | -.096 | .533 |
| Sex | .569 | 2.990 | .030 | .850 |
| Education Dummy | -5.886 | 3.037 | -.289 | .058 |
| Wealth | -.033 | .0459 | -.102 | .474 |
| Income Dummy | 6.216 | 2.933 | .335 | .039 |
| Constant | 45.953 | 4.966 | | .000 |

While we cannot differentiate fairness from strategic risk-aversion in the ultimatum bargaining game, the dictator game does facilitate this dis-aggregation.

The Dictator Game

The Orma mean offer for the dictator game was 31% (see Figure 2). While this is high for comparable experiments from the developed world, which range from 20-30%, it is not far out of bounds and is significantly lower than their offers of 44% in the ultimatum game. What is most striking in the Orma case is the distribution of offers. While it is common to find 30-40% of players taking all of the pot in the US and Canada, one finds a much smaller percentage of purely self-interested players among the Orma (9%). The aversion to giving nothing, or taking all, is also evident among the Hadza (see Marlowe, this volume), though at 16% they fall between the Orma and the developed world populations. The number playing for fairness, at 40-50%, is about the same for the Orma and US

samples. Thus, while there are two modal strategies in the developed world—pure fairness less consensus among the Orma. In other words, behavior is not driven by a dominant or by two competing norms. The bulk of the distribution for the Orma falls between pure self-interest and pure fairness.

As was the case in the ultimatum game, the only variable that is a statistically significant predictor of offer size is a dummy variable for presence or absence of wage/trade income. Age, sex, education, and wealth of household are all insignificant as predictors of offer size. I discuss the wage/trade income effect below following the discussion of the public goods game.

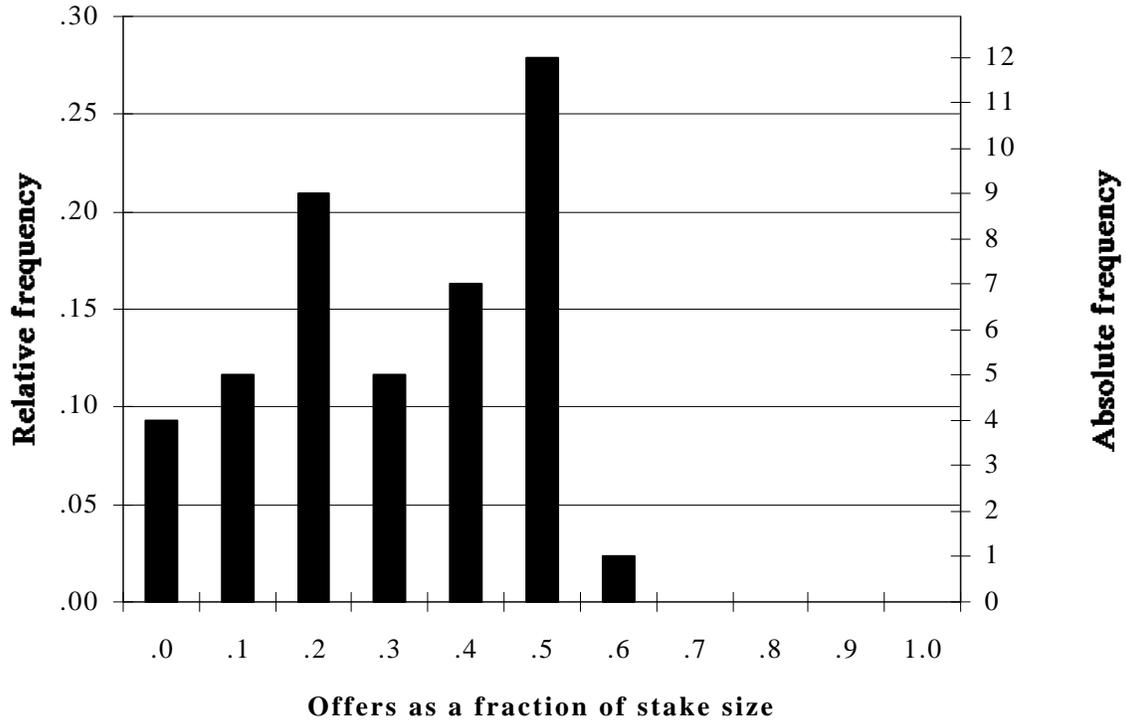
It is worth commenting that in the dictator game the effect of education that was noted in the ultimatum game is considerably less strong here. Again, this would be consistent with the fact that among the educated the ultimatum game may cue strategy, while the dictator game may cue fairness for both educated and uneducated.

Table 2: Linear regression of dictator game offer

(N=43; Adjusted R-squared=0.0884)

| Variables | Coefficient | Std Error | Beta | P value |
|--------------------|-------------|-----------|--------|---------|
| Age | -.277 | .204 | -.2109 | 0.179 |
| Sex | .518 | 7.204 | .015 | 0.943 |
| Education Dummy | -9.413 | 9.608 | -.158 | 0.334 |
| Wealth | .113 | .110 | .161 | 0.308 |
| Income Dummy | 16.786 | 7.304 | .478 | 0.027 |
| Constant | 33.073 | 10.858 | | 0.004 |

Figure 2: Distribution of offers in the dictator game (N=43, stake size=100 Kenyan shillings)

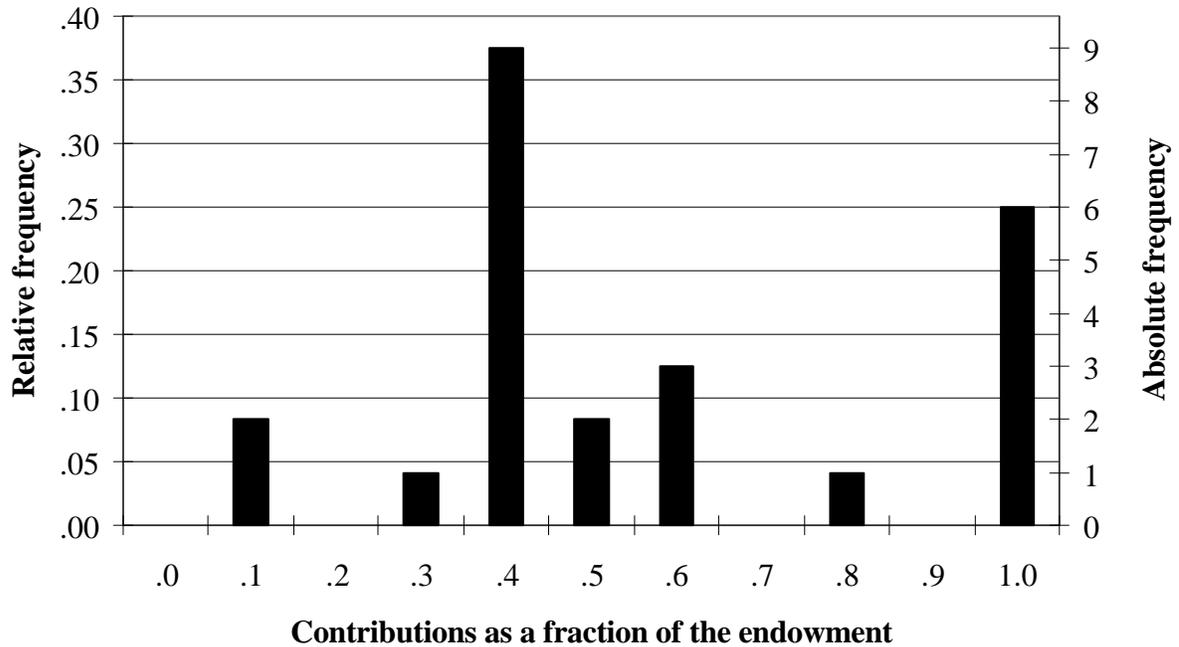


The Public Goods Game

I ran a version of the public goods game with four players. For this game I purposely chose a sample of younger men (mean age of 30) with and without formal education. I was concerned that this game would be difficult for uneducated people to understand and I wished to stratify the sample to test whether or not competence in math might make a difference in their play; it did not. As there are very few educated women, I did not use women in this game. Four to twelve individuals were called at a time from each village. Once people had played they were not allowed to have any contact with those who had not played. No instructions were given to the group as a whole and each group of four was

called in to a separate room to play the game. The instructions were read twice, numerous examples were demonstrated, and players were allowed to ask questions related to the rules and mechanics of the game. No discussion of the play itself was allowed. Each individual was endowed with 50 shillings and given the opportunity to contribute any or all of it to a "group project." All contributions were made privately in an envelope so that no one but the experimenter knew the amount of each contribution. The envelopes were shuffled before they were opened to be sure that no one could tell who had contributed what. I had previously numbered the inside of each envelope and recorded the contributions by individual. The sum of all their contributions was counted by a member of the group, doubled by me, and divided equally among all four players.

Figure 3: Distribution of offers in the 4-person public goods game (N=24, endowment=50 Kenyan shillings with doubling of contributions by experimenter)



Orma contributions to the public goods game were on the high end of the spectrum relative to US populations, coming in at 58% (see Figure 3). US contributions range from 40-60% (Ledyard 1995). The ethnographic context is enlightening here. When this game was first described to my research assistants, they immediately identified it as the "*harambee*" game, a Swahili word for the institution of village level contributions for public goods projects such as building a school. The government of Kenya has for many years encouraged the formal use of *harambee* fundraising as a means of community development. This institution did not become adopted by the Orma until relatively recently. As the Orma become increasingly sedentary and value schooling at a time when the

government can no longer afford to build schools, they have increasingly employed this institution. *Harambee* is much encouraged by the government, which provides receipt books and some oversight of accounts.⁷ There was in fact a major *harambee* collection ongoing at the time of these games. After these games it was clearly evident from the comments of participants that many made the association between this game and the institution of *harambee*.

I suggest that the Orma were more willing to trust their fellow villagers not to free ride in the public goods game because they associated it with a learned and predictable institution. While the game had no punishment for free riding associated with it, the analogous institution with which they are familiar does. A social norm has been established over the years with strict enforcement that mandates what to do in an exactly analogous situation.

In a recent paper, Ockenfels and Weimann (1999) present data from common goods and solidarity games played in East and West Germany. They find West Germans to be considerably more cooperative than East Germans, and make the case for culture-specific norms resulting from differing economic and social histories in the two parts of Germany. It is a fascinating cross-cultural case because so many often-confounding variables are controlled for, namely, language, currency, and the experimenters. The work is relevant to this discussion because it is also conceivable that the West Germans are more cooperative as a direct result of their experiences with formal institutional structures in much the same way that I am speculating about the Orma case.

Bearing in mind that the sample used for this game was less systematically representative than that used for the other two games, and the sample size was quite small (N=24), the overall regression analysis turns up some interesting results that speak to the rule of this institution in the context of Orma society. While market involvement (as

measured in the income dummy) was significant in both the ultimatum and the dictator games, it is not significant here. Furthermore, wealth of household is significant, while it was not in either of the other games. Again, this might have to do with the particulars of the *harambee* institution that this game so closely mimics. As practiced today, *harambee* fundraisings, while modeled on the pattern of “voluntary” contributions to public goods, are actually more akin to progressive taxation. Households are assessed specific amounts which they are required to pay toward the community development project. This process is quite open, and there is a graduated scale involved, going from the poorest members of society, who pay nothing, to those who are required to pay 5,000 Kenyan Shillings (US \$83). The fact that wealthier members of the community voluntarily contributed more in the public goods game is actually consistent with real behavior in the society.

Table 3: Linear regression of public goods game offer
(N=23; Males only; Adjusted R-squared=0.0559)

| Variables | Coefficient | Std Error | Beta | P value |
|--------------------|-------------|-----------|-------|---------|
| Age | .297 | .480 | .139 | 0.544 |
| Education Dummy | -.137 | 6.623 | -.005 | 0.984 |
| Wealth | .637 | .303 | .500 | 0.050 |
| Income Dummy | 10.281 | 7.124 | .350 | 0.166 |
| Constant | 2.634 | 17.840 | | 0.884 |

The Effects of Wage/Trade Income in the Ultimatum and Dictator Games

The most significant and potentially interesting finding to come out of this set of games has to do with differences between those who earn income other than from the sale of their own livestock and those who do not. Wage/trade income in this context includes: casual wage labor, civil service employment, profits from trade in livestock or other products that are not one's own, digging stones at a local quarry for sale to builders, or production of handicrafts for sale. The argument for excluding income from household stock sales is to better highlight the difference between those who engage directly in market exchange beyond the marketing of surplus production from their subsistence herds, and those who do not. This distinction also allows for the dis-aggregation of wealth and income effects. Income from livestock sales is far more closely correlated with wealth (measured in livestock) than is the income measure used here. Income, absent own stock sales, is not at all correlated with wealth, as many of those who are driven to market their labor do so because they cannot support themselves from subsistence livestock production or sufficient sales from their herds.

In the ultimatum and dictator games, the presence or absence of wage/trade income is a highly significant predictor of offer size. In the figures below for each game we see that those with wage/trade income clearly favor 50-50 splits in both games. While 50 percent offer half in the dictator game, nearly 80 percent do so in the ultimatum game. These norms are in dramatic contrast to the absence of any such spike among those without such income. Indeed, what is striking about those less integrated in the market is that there is clearly no normative tendency whatever, nor do we find the bi-modal pattern so typical in developed societies where both pure selfishness and pure altruism compete to form two modes. Epps-Singleton tests were run on each of these games individually and on the sum of both games together. In the ultimatum game (N=56; no income=32, positive income=24),

the Epps-Singleton is significant at the 0.017 level. In the dictator game (N=43; no income=25, positive income=18), the Epps-Singleton is significant at the 0.050 level. If one lumps the offers in both games (N=99; no income=57, positive income=42), the Epps-Singleton is significant at the 0.001 level.

Figure 4: Distribution of offers in the ultimatum game by no wage/trade income (n=32) and positive wage income (n=24), stake size=100 Kenyan shillings

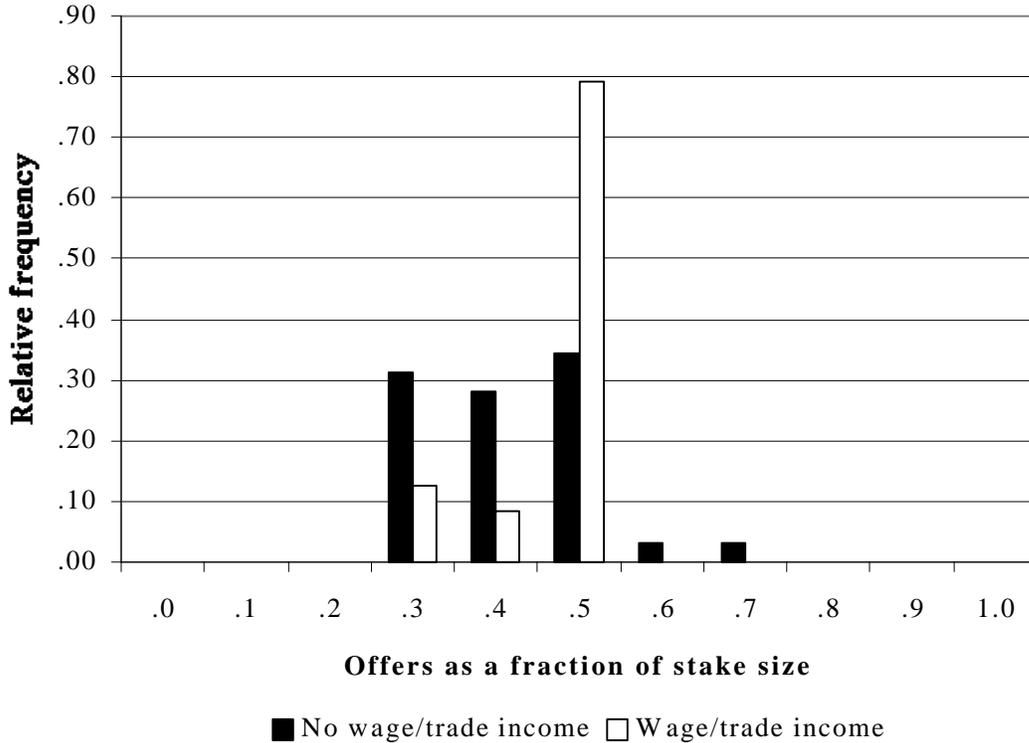
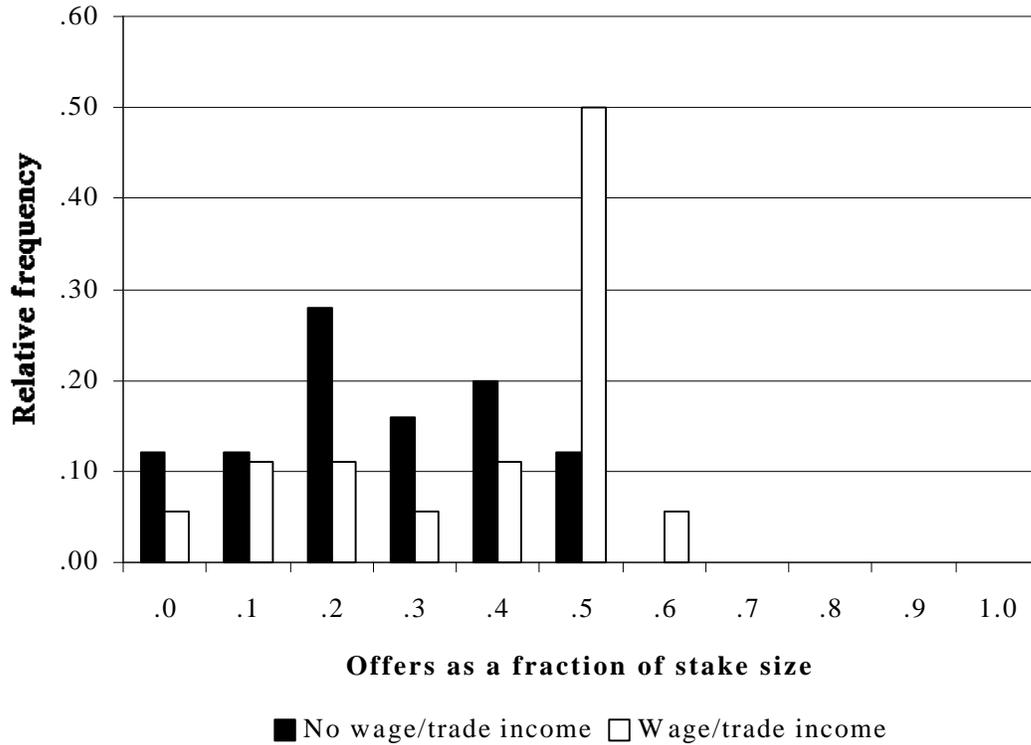


Figure 5: Distribution of offers in the dictator game by no wage/trade income (n=25) and positive wage income (n=18), stake size=100 Kenyan shillings



The tendency for more and less market oriented individuals to play differently does not hold in the public goods game. However, it is worth noting that the sample size is small (N=24), it represents younger men (average age of 30 versus 39 and 40 respectively for the dictator and ultimatum games), and there are considerably fewer of them with income (n=9) than in the other games.

Discussions with the Orma clearly indicate that the public goods game was cueing associations to the real life *harambee*. That being the case, the appropriate response was for the wealthy to contribute more, as indeed they did. There would have been no reason for those with wage/trade incomes to feel compelled to offer more, as these are often poor

individuals. The dictator and ultimatum games were certainly cueing “fairness” based upon my one-on-one interviews post-play. Obviously, the ultimatum game was also cueing strategic behavior, as the offers were substantially higher than were those in the dictator game when the rejection possibility was relaxed. What remains to be explained is why those engaged in wage labor and trade were more prone to engage in fair behavior than those more engaged in subsistence production.

This result is certainly consistent with the notion that people are learning in the market that fair-mindedness is rewarded. I suggested at the beginning of the paper that among those selling either their labor or their goods, there may be a higher premium placed upon reputation and that one way of signaling a good reputation is to behave fair-mindedly. An alternative explanation also consistent with the findings is that people in markets are more used to coordinating with anonymous individuals and fifty-fifty is a useful convention that they have learned (Young 1993).

This finding is also consistent with the regression analysis of all societies represented in this volume that demonstrates that market integration is positively correlated with offers. One of the advantages of testing the market hypothesis within the same societies as well as cross-culturally is that most other potentially cross-cutting effects can be controlled. While this group made great efforts to control experimental method across societies, there were unanticipated issues that each of us resolved in our own way, and there were circumstances in different societies that absolutely required different methods. Other cultural factors may also cross-cut society comparisons. For example, one of the cases that weakens the cross-cultural support for the market hypothesis in our multi-case study is the inclusion of the New Guinea case, where competitive gift giving appears to encourage even hyper-fair offers. As people leave dependence upon subsistence production and turn to the market, we might well expect in this case a decline in hyper-fair

offers and a movement toward more even splits. While such a trend in this unusual case diminishes the statistical correlation between market integration and offers, it is not in fact inconsistent with the hypothesis.

While the data presented here on the relationship between market exchange and fairness are statistically strong and intriguing, they should not in any respect be accepted as definitive. Further examination of the relationship in this and other societies is warranted, and especially studies which incorporate large variation in market integration, such as that found among the Orma. We also need multiple measures of market involvement to flesh out the robustness of this phenomenon. Similarly, the evidence for what may be institutionally learned cooperation in the public goods game is worthy of closer investigation. Should these relationships be substantiated, their implications are potentially profound in a number of ways. They speak to the nature of “inherent” as opposed to “learned” morality, and raise questions about the strategic nature of altruism.

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Notes

1 The author is particularly grateful for the constructive comments of Sam Bowles and Herb Gintis and for seminar participants at Washington University and the University of Cologne, where this paper has been presented. The author also wishes to thank the MacArthur Foundation for generous support of this research. While conducting research in Kenya the author was affiliated with the Institute for Development Studies at the University of Nairobi. Members of the Institute provided much encouragement and valued critiques of this work in an informal seminar. Finally, the author also would like to thank the Government of Kenya for granting research clearance for this project.

2 I began research with the Orma in 1978 and have returned on numerous occasions (1978-1981, 1987, 1994, 1996, 1998, 1999, and 2000) to study changes in the political economy that have accompanied the steady increase of market participation (see especially Ensminger 1992).

3 I also ran some investment (also known as trust) games on this trip, but those results will not be discussed here.

4 In recent years there has actually been a movement back toward nomadism by rich and poor. I believe this can be explained by the general decline in the Kenyan economy such that the benefits of market exchange have diminished in comparison to the gains from a nomadic lifestyle.

5 This includes the trust games that are not discussed in this chapter.

6 I had no choice but to lower the show-up fee from one-third to one-fifth of a day's wage due to the shortage of currency in the necessary denominations.

7 It should be noted that these highly localized harambee collections in which the Orma participate are largely (though not entirely) free of the corruption that usually accompanies these efforts when they are conducted at the national level or cross-regionally.

