Bad Money?
Witchcraft and Fairness Views in Kenya*

Kjetil Bjorvatn Arne Nasgowitz Mario Schmidt†

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Witchcraft beliefs are prevalent in many societies and seen as an important factor in determining economic outcomes. In this paper, we investigate fairness views related to income inequalities derived from different sources – witchcraft, effort and luck – using a large-scale lab-in-the field experiment in Nairobi, Kenya. We find that while most participants view money derived from witchcraft as undeserved and bad, and choose to redistribute or even destroy it, some see it as a legitimate business investment and prefer not to intervene in the allocation of income. Our findings can shed light on attitudes to inequality and demands for income redistribution in traditional societies.

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†Authors affiliations: Bjorvatn: Department of Economics, NHH Norwegian School of Economics & Centre for Applied Research at NHH (SNF); Nasgowitz: Centre for Applied Research at NHH (SNF); Schmidt: Busara, Nairobi, and Max Planck Insitute for Social Anthropology, Halle.

1. Introduction

Income inequality is widely seen as a cause of social instability and conflict (Alesina and Perotti, 1996). However, the literature emphasizes that inequality is not necessarily perceived as unfair, and in particular that fairness views may be contingent on the *source* of income (Almås et al., 2020, 2021). While the contrast is typically made between income derived from effort or luck, the power of *supernatural forces* in shaping fortunes and misfortunes have largely been ignored by economists. In this study we focus on witchcraft beliefs, which are highly prevalent around the world, and more so in countries with weak formal institutions and low state capacity (Gershman, 2022).

Our study is situated in Kenya and based on a series of lab-in-the field experiments conducted at Busara Lab, Nairobi. Using vignettes and the spectator design to elicit fairness preferences, and complementing the experimental tasks with written comments and focus group discussions, we find that attitudes to income associated with witchcraft are diverse. Some see the money as undeserved and bad, and choose to redistribute it or even destroy it. Others consider the use of witchdoctors as a form of business investment and the returns derived from it as deserved and legitimate and not subject to taxation. The diversity of attitudes to witchcraft found in our study can be important for understanding how inequality maps into pressure for redistribution in societies where beliefs in supernatural forces are prevalent.

The paper closest to ours is a lab-in-the-field experiment by Le Rossignol et al. (2022) in the Democratic Republic of Congo, exploring the link between witchcraft beliefs and trust. They find that trust is systematically lower when matched to a player with high beliefs in witchcraft. This is partially explained by norms that endorse antisocial behavior towards those with traditional beliefs.

In a field experiment in Congo, Butinda et al. (2023) show that providing beer sellers with access to protective rituals increases their investments, revenues, and profits. The main mechanism is a downward correction in the perceived risk of theft, and the effect is concentrated among those who ex-ante believe in the ritual. This is in line with findings from Haiti, where the presence of a religious image increases risk-taking in a lottery task

Auriol et al. (2021).

We add to these papers by exploring fairness views using the well-established spectator design, and contrasting inequality associated with witchcraft with the more conventional sources of inequality in the literature, namely effort and luck. This allows us to benchmark our findings in Kenya with those found in other parts of the world. Moreover, our evidence is based on an innovative sample of both slum dwellers and university students, allowing us to explore whether witchcraft beliefs are primarily a phenomenon tied to those with lowest incomes or whether it is relevant also for the highly educated.

Our paper also relates to a relatively small non-experimental literature in economics on the origins and consequences of witchcraft beliefs. In his seminal paper, Miguel (2005) relates witch hunts and killings in Tanzania to variations in rainfall. More recent contributions include Gershman (2020) who shows that contemporary witchcraft beliefs in Sub-Saharan Africa is stronger in ethnic groups that were more exposed to the trans-Atlantic slave trade. He also finds that the presence of witchcraft belief is correlated with lower levels of trust, cooperation, and entrepreneurial culture (Gershman, 2016, 2022).

Finally, our paper relates to the anthropological literature, aiming to understand the roots and concepts of witchcraft beliefs. Functionalist perspectives on the topic from the first half of the twentieth century emphasized the epistemological role of witchcraft in explaining the ultimate cause of negative occurrences, such as accidents or death (Evans-Pritchard, 1937) as well as the role of witchcraft in communicating social expectations, functions that were, in so-called *modern* societies, taken over by science and education. Most social scientists therefore assumed that witchcraft beliefs would vanish with the increasing modernization of allegedly *backward* societies through economic integration and urbanization. Yet, since the 1990s anthropologists have observed that it is predominantly in urban centers or other centers of capital accumulation, such as factories or mines, that witchcraft rumors circulate (Moore and Sanders, 2001; Smith, 2019). Accordingly, witchcraft beliefs are still prevalent and used to explain unexpected and unfair economic outcomes (Geschiere, 1997).

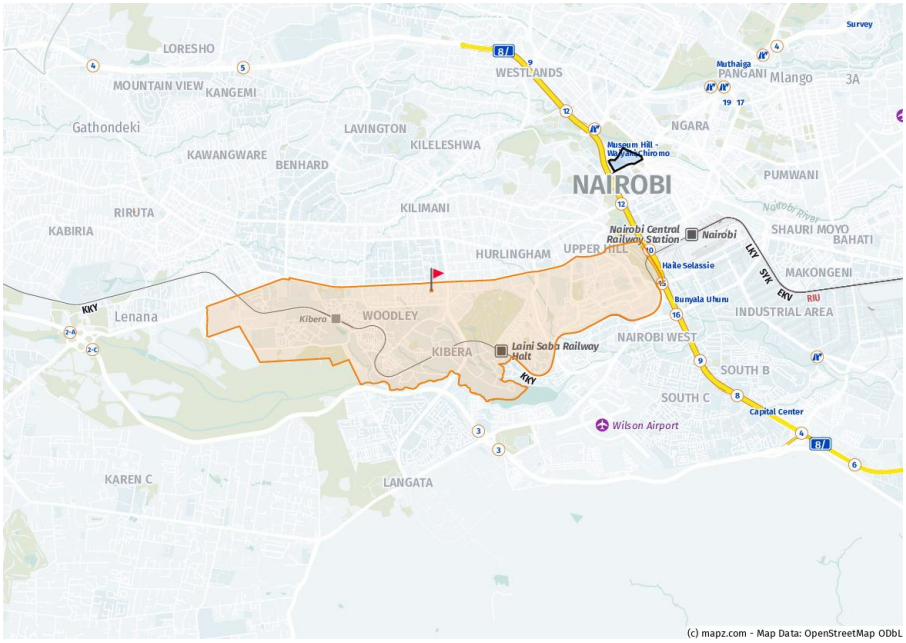
The remainder of the paper is organized as follows. In section 2 we describe the sample, while Section 3 contains a discussion of witchcraft beliefs based on focus group discussions,

to give the reader a better idea of how the participants perceive these supernatural forces, in particular in the economic domain. Section 4 presents the empirical approach and the results from the experiments on redistribution, destruction, and trust. Section 5 concludes.

2. Sample

In collaboration with the Busara Lab, Nairobi, we recruited 202 participants from two distinct groups: the University of Nairobi (99) and the informal settlements of Kibera (102). See 1 for a map of the sites as well as the location of the lab venue. We conducted 10 group-specific sessions during 15 days in late April and early May 2024.[1]

Figure 1: Study sites



Note: The map shows the 2 study sites where participants were recruited from, Kibera (orange) and the University of Nairobi (blue). The red flag shows the location of the Lab.

The sample is balanced on gender and with an average age of around 24, with the university students being somewhat younger than the participants from Kibera (Table 1). Most participants are Christian, and around 7 percent are Muslim. Witchcraft beliefs are also

[1]Participants received a payment of 900 Ksh (USD 7) as compensation for taking part in the experiment, corresponding to around 7.7 percent of their monthly average household income.

prevalent, with 25 percent responding that they themselves somewhat or strongly believe in witchcraft, and that they think that 37 percent of people living in their neighborhood do so (the difference in first-order and second-order beliefs may indicate some stigma associated with such beliefs). First-order witchcraft beliefs are, perhaps surprisingly, significantly higher among university students (39 percent) than among participants from Kibera (12 percent). This can partly be explained by the higher share of recent migrants from rural areas, where witchcraft beliefs are thought to be stronger than among university students (Figure A1). Alternatively, it can be due to differences in perceived social stigma (witchcraft beliefs being associated with social backwardness), where the lack of difference between the groups in their second-order beliefs is explained by a lower level of stigma.

Almost all participants have completed primary education and one out of three participants have completed some level of tertiary education, either university, college, or some other post-secondary degree or diploma. Participants in Kibera are more likely to be married and have children than the students, while participants from the University of Nairobi are more likely to have migrated to Nairobi within the past 5 years (70 percent compared to 9 percent in Kibera).

The participants from Kibera are more likely to have an income than the students (81 vs 63 percent), often working as boda boda drivers (motorcycle taxis), in their own businesses, or as casual laborers. It is, however, evident that the students come from more wealthy households: the average household income for the student participants is twice as high as that of the participants from Kibera.

Most participants from Kibera are from the Luo or the Luhya ethnic group (49.5 and 22.2 percent respectively), followed by Nubians (10 percent). Luos are also the dominant ethnic group among university students (38.8 percent), followed by Kikuyu (18.5 percent) and Luhya (11.7 percent).

Table 1: Background characteristics

	All	UoN	Kibera
Age	23.59	20.83	26.46
Female	0.5	0.5	0.49
Beliefs			
Christian	0.78	0.98	0.82
Muslim	0.07	0.01	0.16
Witchcraft	0.36	0.39	0.12
Education			
Primary and below	0.17	0.06	0.29
Secondary	0.51	0.71	0.31
Tertiary	0.31	0.23	0.39
Recent migrant	0.35	0.7	0.09
Marital status			
Single	0.63	0.84	0.41
Relationship	0.18	0.16	0.2
Married	0.18	0	0.37
Any children	0.35	0.03	0.68
Any income	0.72	0.63	0.81
Income (in tsd KES)	11.62	15.67	7.42
Observations	202	103	99

3. Witchcraft beliefs in Nairobi

To get a better understanding of witchcraft beliefs in Nairobi, we invited a random subset of our participants to focus group discussions after the completion of the lab experiments. Each focus group consisted of 6-8 participants, and with four sessions, we reached a total of 33 participants. One group was women only, one men only, and the other two with both men and women. The discussions were organized into five topics: (1) on witchcraft in general; (2) on witchcraft's relations to economic affairs, including a question about what it would take for people to conclude that witchcraft had been involved in profit generation; (3) on the consequences of exchanging and possessing "bad money", for instance asking whether or not bad money can be cleaned, and if so, how; (4) on redistributive pressure, including if money believed to be derived from witchcraft should

or should not be redistributed and why; and (5) on perceptions of luck, whether it can happen to anyone or whether is best seen as a blessing from God. The full protocol of the focus group discussions is provided in Appendix B. We here provide insights from these discussions on the perceived prevalence and purpose of witchcraft, with a specific focus on economic affairs.

It quickly became clear that participants differentiated between several forms of witchcraft depending on where it occurs, who engages in it, and what its main purpose is. On rural versus urban witchcraft, for example, one of our participants voiced the following opinion, which supports common claims that witchcraft originating from rural areas is more powerful, having the potential to harm people: "In Nairobi, witchcraft is often used to boost business, while in rural areas, it's employed to harm others, such as causing people to go mad." While beliefs in dangerous forms of witchcraft do indeed exist in rural areas, rural areas also have a higher prevalence of herbalists (mganga, in contrast to mchawi, "witchdoctor") who use plant-based medicine to heal people while also offering love potions and other magical remedies.

Dovetailing with the anthropological observation that "modern witchcraft" is often used to explain forms of capital accumulation, one of our participants voiced the opinion that witchcraft in the village is caused by jealousy, ultimately aiming to bring someone who is economically successful down to level the playing field again, while witchcraft in the city is caused by greed, trying to make oneself more successful. It is therefore unsurprising that we find way more posters advertising for witchcraft services in areas of Nairobi characterized by stark income differences, a proof of witchcraft that one of our interlocutors cited:

> *"To prove the presence of witchcraft in Nairobi, you can visit various locations around town, and you'll find posters on public posts advertising services, including the contact numbers of witch doctors."*

These posters which exemplify that witchcraft is not only used for economic purposes but has become an industry itself offer services to "boost" or to protect one's business, to find lost items, or to increase one's virility. Taking into account witchcraft used to destroy an economic competitor, we can thus summarize that, in the economic sphere of Nairobi,

witchcraft is used for (1) the protection of one's business, (2) the growth of one's business, and (3) to harm competitors, as indicated by the following three quotes:

> *"For example, there are people who own shops and are into witchcraft. You will find that no one ever steals from them, even though they don't have any security systems. This might suggest that they are protected by black magic."*

> *"In Nairobi, business competition is fierce, and some resort to witchcraft to attract customers, especially when many dealers are selling the same type of commodity."*

> *"I have heard people say they have a 'lucky star', which is a very common phrase. In fact, it is on posters everywhere. For some people, it works, but it is very short-lived. In some instances, it might make other businesses go down and eliminate competitors."*

Several of our interlocutors thus made it clear that witchcraft beliefs emerge or are intensified by the observation of unexpected economic success:

> *"[A]s much as I don't believe in witchcraft, there is this neighbor who makes me believe to an extent. He started with a small shop, and, all of a sudden, that small shop has turned into a successful supermarket."*

Along similar lines, one participant said that:

> *"I never believed in witchcraft until a time when I was working around Ngumo. There were several shops lined up, but one shop consistently had a long line of customers, while the others, which sold similar goods, had none. This made me think that the shop owner might be using witchcraft."*

Lastly, it is important to note that witchcraft is seen as dangerous not only for those that it is used against but also for those who purchase it, potentially even tainting the money itself which is then believed to either be cursed or to have to undergo a cleansing ritual

by a priest (Schmidt, 2022). One colorful story of how the use of witchcraft seems to have backfired is the following:

> *"[A] group of women who had a business they tried so hard to prosper business wise and one of them took others to a witch doctor. They were given a cat to rear it well, giving it food and a place to sleep. One of the women didn't take care of the cat; she neglected it, and as a result, the woman began to fall ill and there were voices telling her that if she didn't want the cat then she should take it back or die; she went mad and after one month she died."*

Our focus group discussions thus point to the complexity of witchcraft, but at the same time, it is clear that witchcraft beliefs are neither an exclusively rural phenomenon nor primarily held by less educated members of Kenyan society, that witchcraft itself has become a business opportunity for thrifty members of Kenyan society, and that witchcraft rumors are used to explain economic success and inequality.

4. Empirical approach and results

We start this section by giving an overview of the experimental design, which is based on a mixed methods of experimental tasks and qualitative evidence, and then move on to the results on redistribution, destruction, and trust, and offer our interpretations.

4.1. Empirical approach

Our experiment is designed to explore how people view and respond to income inequalities in their community. Using a within-subject design, participants are presented with vignettes involving two businessmen in Nairobi who have earned different amounts of money. The higher income was calibrated to be such that it is noteworthy but not unrealistic given the local context. More specifically, the higher-earning businessman in the vignette earned 10,000 Ksh more last week than the average businessman, equivalent to 86 percent of the average monthly household income in our sample (11,623 Ksh).

The main experimental tasks center around redistribution and destruction. We use the spectator design, which removes concerns of self-interest and hence is well suited to elicit norms. In addition, we included a trust game to get a better understanding of how the participants themselves respond to situations allegedly involving witchcraft. We complement the experimental questions with the participants commenting on their decisions, a background questionnaire, and focus group discussions.

4.2. Redistribution

The choice of income allocation centers around a vignette presenting two businessmen from Nairobi, where one of them during the last week earned 10,000 Ksh more than the other, who has earned an "average" income in the same line of business.[2]

We then ask them what they would consider a fair distribution of income between the two businessmen and allow them to redistribute accordingly. Participants have the option to leave it as it is or to redistribute 2,500, 5,000, 7,500, or 10,000 Ksh from the richer to the average businessman.

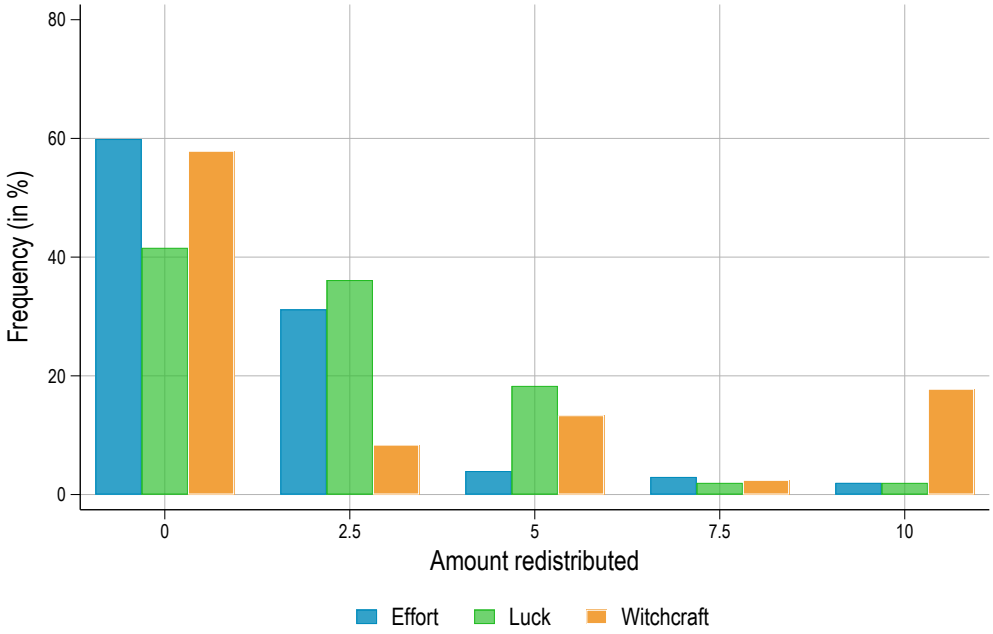
The participants make the redistributive choices in three different scenarios that differ in the source of the income. First, we present them with the "effort" scenario, where we explain that the higher income is due to hard work. We then present them with the "luck" scenario, where the high income is due to for instance the weather being good for his business. Finally, in the "witchcraft" scenario, the higher-income businessman has benefited from the use of witchcraft (in Swahili, "uchawi").

Figure 2 shows the redistributive choices of participants in the three scenarios. We find that close to 60 percent of the participants do not change the distribution when it is the result of hard work, compared to around 40 percent when it is based on luck. Only 4 percent choose to fully equalize incomes in the effort scenario compared to 20 percent in the luck scenario. This is in line with the literature, where most people find that income derived from effort is more deserved than that derived from luck.

[2]The additional weekly income of 10,000 Ksh is roughly equivalent to the average monthly household income in our sample, as evident from Table 1.

How does witchcraft fit into this pattern? Somewhat surprisingly, given the negative connotation of witchcraft, we see that the share of participants who choose not to redistribute is the same for witchcraft as with effort, and much higher than with luck. At the same time, we also find a substantial share, close to 20 percent of the participants, who are willing to take *everything* away from the high-income businessman who has used witchcraft and give to the lower-income businessman.

Figure 2: Redistribution



Interestingly, this behavior does not seem to be driven by a particular group. While participants in Kibera are much more likely to redistribute away from hard-working or lucky businessmen, compared to participants from the University of Nairobi, there is no difference when it comes to the witchcraft scenario (Table A1). This is also true for a whole range of other covariates such as age, sex, education, income, or family status. A potential explanation for this is that residents of Kibera are more egalitarian when it comes to income derived from effort or luck. When asked whether incomes should be made more equal, 23 percent of participants in Kibera agree, while only 4 percent of the university students do. This likely does not apply to incomes derived from witchcraft since it is partly seen as bad money, as will be discussed later.

4.3. Destruction

We now turn to the choice of destruction as a response to inequality. Again, the higher income businessman has 10,000 Ksh more than the average businessman, with the source of the higher earning being either luck or witchcraft.[3] Participants can take away any amount between 0 and 10,000 Ksh (in steps of 2,500), but now the money is not given to anybody, but simply destroyed.

As can be seen from Figure 3, while most people do not destroy any income in the luck scenario, some do, a finding which is in line with previous findings from joy-of-destruction tasks (Abbink and Sadrieh, 2009). Contrast this with the witchcraft scenario, where an equal number of the participants choose to destroy all of the higher earnings as those who would let him keep everything (44 percent vs. 42 percent, respectively). In fact, the amount of money destroyed is significantly higher than the amount redistributed in the preceding task (5,171 Ksh vs 2,895 Ksh).

In this scenario, destroying all income is the only way of implementing equality. However, the share of participants destroying money in the witchcraft scenario is significantly higher than in the luck scenario, suggesting that a preference for equality cannot explain this behavior.

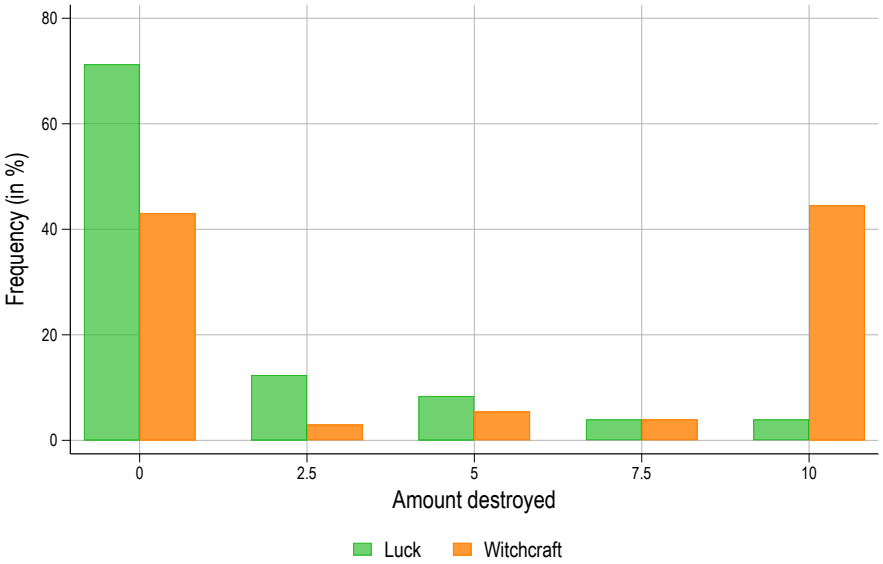
Similar to the redistribution choice, participants from Kibera are more likely to destroy in the luck scenario, but not in the witchcraft scenario. However, participants that have migrated to Nairobi during the past five years are more likely to destroy, and destroy larger amounts, when the businessman used witchcraft (Table A2), potentially hinting at the difference between rural and urban witchcraft, as discussed in chapter 3.

4.4. Discussion

Two striking observations emerge from the redistribution and destruction choices. First, more people choose to destroy rather than redistribute money associated with witchcraft.

[3] We did not elicit this task for the effort scenario, since results from a pilot and discussions indicated that participants would not destroy money derived from effort.

Figure 3: Destroying money



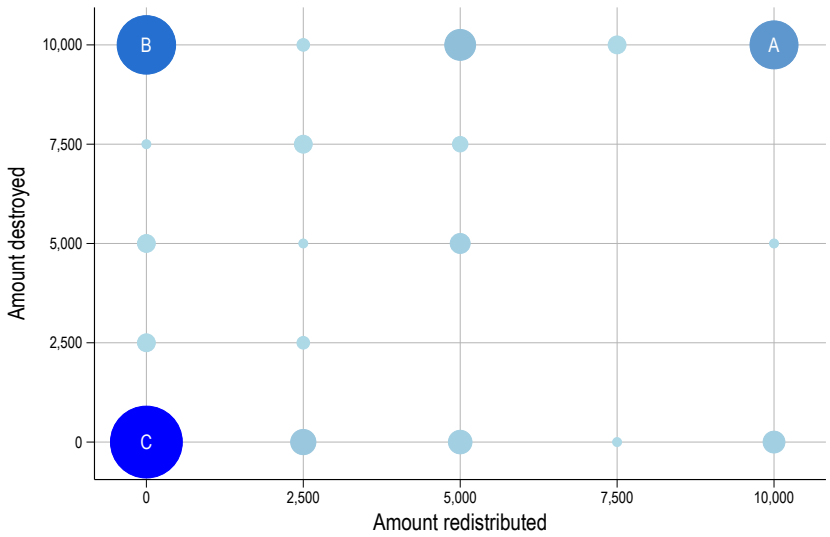
If one thinks that money derived from witchcraft is undeserved, why destroy it rather than give it to someone else? Second, and in contrast to the first observation, a large group of people prefer not to intervene: in fact, the share who would let the high-income businessman keep all the money is the same in the witchcraft scenario as in the effort scenario, and higher than in the luck scenario. In combination, these two observations point to a highly polarized view on money from witchcraft: while many are eager to destroy it, many also do not want to intervene.

Figure 4 illustrates participants' behavior in the witchcraft scenario, plotting choices in the redistribution and the destruction task. Most participants fall into one of the following three groups (with the parenthesis giving the corner solutions): Group A, redistribute and destroy (14 percent); Group B, destroy but do not redistribute (21 percent), and Group C, neither redistribute nor destroy (32 percent).[4]

The redistribute and destroy group (A) sees witchcraft money as undeserved, illegal, and immoral, and chooses to take it away from the high-income businessman (redistribute or

[4]Most remaining participants either (i) redistribute some money but do not destroy, suggesting efficiency-related motifs (around 10 percent), or (ii) redistribute half and destroy all, suggesting equality-related motifs (around 6 percent). These groups are relatively small, both compared to previous literature and to choices made by the participants in the effort or luck scenario, suggesting that neither equality nor efficiency considerations are of major importance when confronted with inequalities due to witchcraft.

Figure 4: Response types



Note: Figure 4 plots the choice of individuals in the redistribution (x-axis) vs destruction (y-axis) task for the witchcraft scenario.

destroy). Two quotes from the focus group discussions illustrate this perspective:

> *"The money was not acquired legally, hence it is not fair for him to keep it all."*

> *"Witchcraft is against my Christian faith hence the decision I made. I believe in god given wealth."*

The second group (B) does not redistribute any witchcraft money but destroys it when given the opportunity to do so, a pattern that has not been documented in experimental research up to now. Compared to Group A, these participants not only disapprove of the use of witchcraft for economic gain, but they also think of the money itself as bad or cursed. Redistributing it would harm the recipient (or at least not benefit him) while leaving it with the businessman using witchcraft will make him suffer instead. Typical explanations for not redistributing witchcraft money involve the following lines of argumentation:

> *"This is because witchcraft is not good, and by giving the money to the average businessman, the money would bring harm to him, therefore the best option is not to give money to the average businessman."*

"The one who used witchcraft should just bear his own consequences not affecting the other businessman."

Finally, a third group of respondents (C) never takes away any witchcraft money, neither to redistribute nor to destroy it. The participants' comments suggest that there are two very different motivations for the lack of intervention. The first one is in line with the reasoning applied by Group B: witchcraft money is bad and should not be touched.[5] In contrast to Group B, participants here even refrain from destroying it, because they do not want to engage with witchcraft money at all. One participant explains his choice as follows:

"I will not want to involve myself with dirty money from witchcraft."

However, there are also participants who accept witchcraft as a legitimate way of earning an income. Witchcraft is framed as an investment open to everyone, and the risk of engaging with it should be rewarded. The quotes below illustrate this line of reasoning:

"The man who used witchcraft went out of his way to look for extra income. If the other man wanted an extra income he could have looked for his own way of earning it."

"Witchcraft is open to any person who would want to use if the average person wanted to have the 10,000 he could have opted to the same way or remain without."

A rough classification of the comments made by lab participants in Group C explaining their choices suggests that, while the majority has a negative opinion on witchcraft, a substantial number of them hold the more positive, instrumental view. Interestingly, while participants from Kibera and the University are represented equally in this group, they differ in their motivation to do so. Of those who do not touch the money because they think it's bad, 70 percent are from Kibera, while from those who do so because they think it is justified, it is only 27 percent (Table A3). Those who do not want to touch

[5] Alternatively, participants do not believe that witchcraft money will be useful and would just disappear, so redistributing or destroying money is not necessary.

witchcraft money and think of it as bad are also more likely to have migrated to Nairobi during the past five years.

In sum, therefore, the majority of the participants in our sample think that money derived from witchcraft is undeserved, but their reaction to it differs, depending on whether they think the money itself is good or bad and whether intervening is safe or may lead to repercussions. A sizeable minority, however, view the use of witchcraft as any other investment strategy, available to everyone, and with the returns therefore being legitimate and deserved.

4.5. Trust game

We have so far discussed fairness preferences over inequalities with varying sources. Views on income associated with witchcraft substantially differ from income derived from other sources such as effort or luck. It is however not clear how such preferences over distributions translate into actual behavior. Do witchcraft beliefs affect how people interact and cooperate?

In this final section of the chapter, we provide some initial evidence on this question. In a first task, participants choose between receiving a gift of 1,000 Ksh from a hard-working businessman or one who has used witchcraft. If participants choose the gift from the hard-working businessman, the gift amount from the witchcraft businessman is gradually increased to first 5,000 Ksh and finally 10,000 Ksh.

Only two out of 202 participants choose the gift from the witchcraft businessman when the amounts are equal (Figure A2). While the share increases to 20 percent when in the final choice, this still indicates that the vast majority of participants are willing to forego a significant monetary gain to avoid witchcraft money.

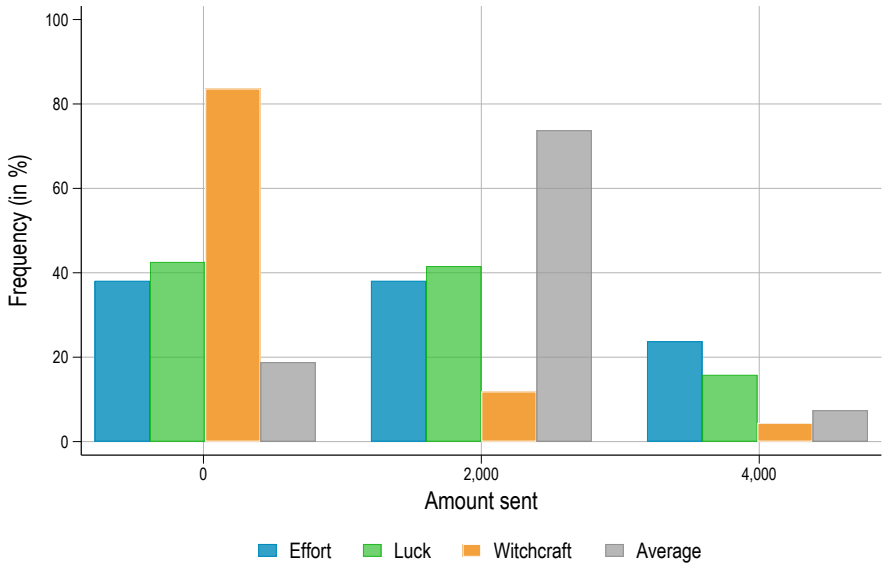
In a second task, we ask participants to play a trust game (Berg et al., 1995). Typically, a trust game is made of two stages. In the first stage, participants receive an endowment, of which they can send a certain amount to a second participant. The money sent will be multiplied and the receiver in a second stage decides how much to send back. Sending

money is beneficial when the sender believes the receiver to send back at least half of the money. In our case, participants receive an endowment of 4,000 Kenyan Shillings and decide between send nothing, half, or all of that endowment to a second player. The amount that is sent is tripled. While the task itself is hypothetical, we ask participants to assume that the second player will have the opportunity to send some money back, and to act according to what they believe is optimal.

Participants make four sending choices, one for each of the four types of partners: Hard-working businessman, lucky businessman, businessman that used witchcraft, and average businessman.

We find that in the trust game, the vast majority of participants do not send any money to a second player who they know has used witchcraft. Below 4 percent of participants send all the money, which is the choice that maximizes the total payoff. Similarly, participants rank the player who used witchcraft as their least preferred player (Figure A3).

Figure 5: Trust game



This is in line with the findings in Le Rossignol et al. (2022), who find that participants in a Lab-in-the-field experiment in the Democratic Republic of Congo act less pro-social towards individuals who have a strong belief in witchcraft. It is also in line with the finding that, when being given the choice between accepting a gift of 1,000 Ksh from a hard-working businessman or 10,000 Ksh from a businessman who used witchcraft, around

80 percent chose the lower amount.

These findings suggest that preferences over the distribution of witchcraft money do translate into personal behavior towards individuals engaging with witchcraft, and reinforce the notion of bad money, which should not only be taken away but would also not be accepted by the participants themselves.

5. Conclusion

Witchcraft beliefs are prevalent around the world and are often seen as an important explanation for economic success, failure, and inequality. While there are a number of studies on attitudes to inequality, the present paper provides the first experimental evidence on fairness views and redistributive choices for money related to witchcraft.

Using a lab-in-the-field experiment in Nairobi, Kenya, involving around 200 participants from very diverse socio-economic backgrounds, we find highly diverging attitudes and reactions to witchcraft. Based on decisions in the lab, we can divide people into three groups. First, there are those who choose to take away all the money associated with witchcraft, either giving it to the average businessman or destroying it. Evidently, this group views the money as "undeserved". Second, some would destroy all the money but not redistribute it. The motive behind this choice, which at first sight may seem paradoxical, seems to be that money associated with witchcraft is not only undeserved but also inherently "bad": redistributing it would negatively affect the recipient. The third group consists of those who do not intervene at all, neither redistributing nor destroying any money. Based on the qualitative evidence, there seem to be two main motives behind this choice: first, those who see this money as toxic and that any meddling with it may cause harm to those doing so; second, those who see the use of witchcraft as a sign of entrepreneurship, which should be rewarded in much the same way as any other effort (and perhaps even more deserved than luck). Interestingly, the choices of this third "non-interventionistic" group are the same, but for very different reasons.

We also explore how suspicions of witchcraft may affect economic interactions. Using the

trust game, we see that people are far less likely to send money to a receiver who has made money associated with witchcraft, as compared to situations where the receiver has an income derived from effort or luck. In this way, witchcraft beliefs can be a source of economic inefficiency.

Given the importance of unfair inequality as a driver of social instability, exploring attitudes to income associated with supernatural forces such as divine intervention or witch-doctors is clearly relevant. However, the implications of prescribing a moral dimension to money based on suspicions of witchcraft beliefs go beyond attitudes to inequality, and can potentially affect all kinds of economic interactions. Future research should look more closely into when certain situations evoke witchcraft suspicions, how they can be avoided, and how bad money can still be used efficiently. It is also important to better understand the different conceptualizations of witchcraft beliefs and how those compare to monotheistic religions.

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A. Tables and graphs

Figure A1: Witchcraft beliefs

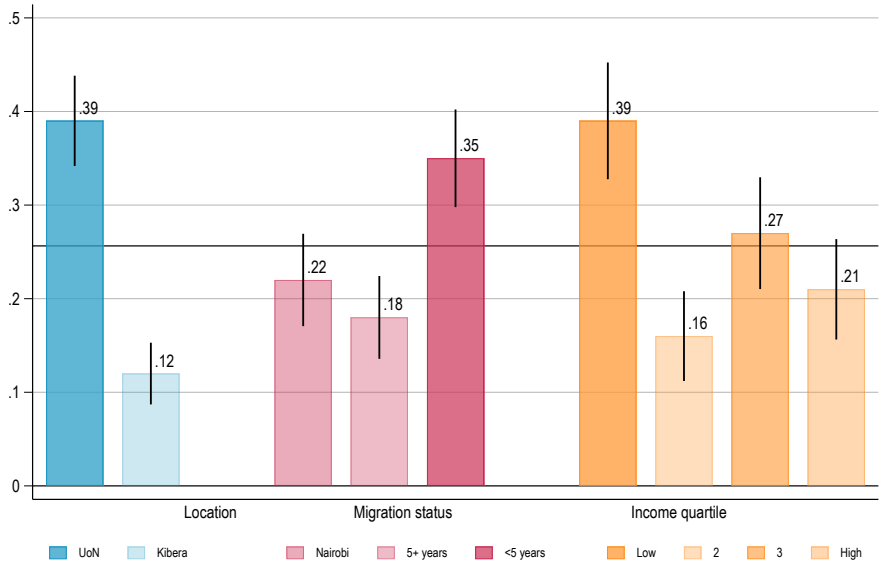


Figure A2: Choice of gift

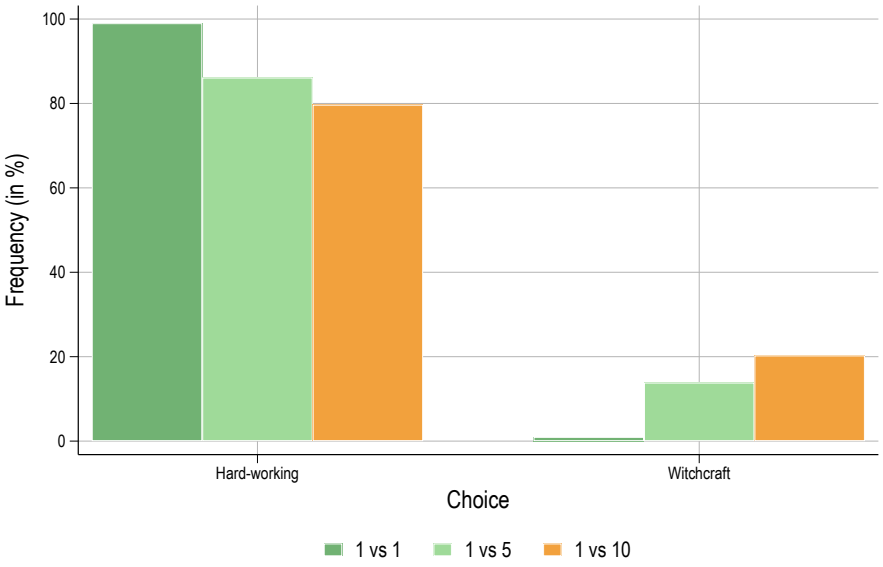


Table A1: Redistribution choices

	Amount			Any redistribution		
	Effort	Luck	Witchcraft	Effort	Luck	Witchcraft
	(1)	(2)	(3)	(4)	(5)	(6)
Female	16.59	-223.18	-48.27	-0.02	-0.03	0.04
	(302.25)	(317.98)	(575.04)	(0.07)	(0.07)	(0.07)
Age	110.05	10.25	127.88	0.03	0.01	0.03*
	(68.50)	(70.83)	(115.75)	(0.02)	(0.02)	(0.02)
Kibera	1432.74***	1785.59***	-35.36	0.30**	0.31**	0.04
	(509.39)	(586.76)	(898.40)	(0.12)	(0.13)	(0.13)
Economically active	70.28	74.03	128.05	0.15	0.04	0.01
	(470.33)	(407.25)	(684.90)	(0.10)	(0.09)	(0.10)
Secondary education	451.86	406.09	292.00	0.16	0.05	-0.07
	(468.91)	(509.32)	(834.44)	(0.10)	(0.11)	(0.11)
Tertiary education	283.62	718.01	1074.10	0.07	0.16	0.01
	(468.14)	(511.31)	(854.95)	(0.10)	(0.11)	(0.12)
Belief in witchcraft	263.46	-181.93	568.41	0.03	0.04	0.11
	(340.15)	(332.81)	(663.55)	(0.08)	(0.08)	(0.09)
Partner	-48.97	-303.43	522.70	-0.00	-0.03	0.11
	(362.13)	(412.34)	(741.78)	(0.08)	(0.08)	(0.09)
Any own children	-1016.56*	-234.54	-913.15	-0.32**	-0.03	-0.23*
	(596.70)	(585.37)	(1027.81)	(0.13)	(0.12)	(0.13)
Recent migrant	71.49	433.05	465.39	0.03	0.07	0.07
	(250.76)	(325.01)	(738.55)	(0.08)	(0.09)	(0.09)
Observations	202	202	202	202	202	202

Notes: The dependent variables measure the amount redistributed (columns 1-3) and whether a participant redistributes any income (columns 4-6). Robust standard errors are reported in parenthesis. Statistical significance is indicated by $* \ p < 0.1$, $** \ p < 0.05$, $*** \ p < 0.01$.

Table A2: Destruction choices

	Amount		Any destruction	
	Luck	Witchcraft	Luck	Witchcraft
	(1)	(2)	(3)	(4)
Female	-172.25	-373.41	-0.00	0.01
	(393.80)	(672.50)	(0.07)	(0.07)
Age	142.73*	-192.75	0.02	-0.02
	(82.59)	(149.44)	(0.02)	(0.02)
Kibera	1308.05**	538.31	0.32***	0.02
	(654.80)	(1179.85)	(0.11)	(0.13)
Economically active	-333.39	-1568.60*	-0.02	-0.04
	(589.45)	(850.11)	(0.09)	(0.09)
Secondary education	403.40	1303.19	0.06	0.07
	(575.84)	(984.02)	(0.10)	(0.12)
Tertiary education	32.54	1172.45	0.01	0.05
	(556.32)	(1040.56)	(0.10)	(0.12)
Belief in witchcraft	166.66	896.85	0.04	0.10
	(407.82)	(761.55)	(0.07)	(0.08)
Partner	760.87	1317.55	0.11	0.18**
	(495.06)	(841.33)	(0.08)	(0.09)
Any own children	-968.53	1650.35	-0.19	0.06
	(755.10)	(1292.50)	(0.13)	(0.14)
Recent migrant	875.74**	1800.60**	0.16**	0.16*
	(443.15)	(845.92)	(0.07)	(0.09)
Observations	202	202	202	202

Notes: The dependent variables measure the amount destroyed (columns 1-2) and whether a participant destroys any income (columns 3-4). Robust standard errors are reported in parenthesis. Statistical significance is indicated by $* p < 0.1$, $** p < 0.05$, $*** p < 0.01$.

Table A3: Group composition

	Group A	Group B	Group C (bad)	Group C (good)
Female	.34	.47	.56	.31
Age	23	22	25	23
Kibera	.41	.4	.68	.27
Any income	.66	.7	.79	.58
Secondary education	.52	.67	.44	.62
Tertiary education	.41	.26	.29	.31
Belief in witchcraft	.34	.23	.21	.23
Partner	.31	.37	.38	.12
Any own children	.21	.35	.47	.12
Recent migrant	.41	.51	.24	.46
Observations	29	43	34	26

Notes: The table reports the share of participants within the respective group. Group C is split according to whether the comment in the redistribution and destruction scenario includes any notion of bad or good/deserved money. 5 participants could not be assigned.

Figure A3: Trust game, ranking

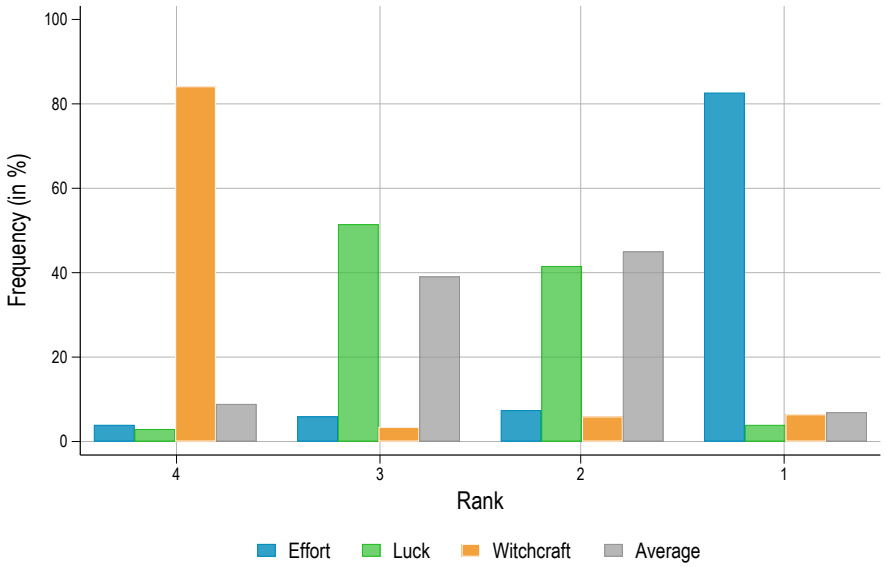


Table A4: Task overview

Theme	Items	Question	Min	Max
1. Perceptions of inequalities and witchcraft				
Likelihood	3	*How likely do you think are the following reasons for this businessman's high earnings?*	1 (very unlikely)	5 (very likely)
Good vs bad	3	*What do you think about these high earnings? Is it good money or bad money?*	1 (very bad)	5 (very good)
Acceptance	3	*Imagine that you are offered money as a gift. Which gift would you prefer? The gift from a hard-working businessman or the one from a businessman who has used witchcraft?*	0	1
2. Fairness preferences				
Redistribution	3	*What do you think would be a fair distribution of earnings between the two businessmen?*	1 (10,000 vs 0)	5 (0 vs 10,000)
Destruction	2	*How much of this money do you think it's fair to take away from him (note that no one else will receive any of this money)?*	1 (0)	5 (10,000)
3. Trust game				
Sending money	4	*Imagine that you have an initial endowment of 4,000 Ksh. You can choose to keep it, or to send some of it to the other person.*	1 (0)	3 (0 vs 4,000)
Ranking	1	*Imagine now that you can choose your partner in the trust game. You will be presented with four different people, and we ask you to rank them in your preferred order, where 1 means your number one choice and 4 means your least preferred choice.*	1	4
4. Questionnaire				
Witchcraft beliefs	1	*How strongly held are your beliefs in witchcraft?*	1 (don't believe)	3 (believe strongly)
Witchcraft beliefs, 2nd order	1	*Of 100 people in your neighborhood in Nairobi, how many do you think believe in witchcraft?*	0	100

Notes: All tasks with 3 items/questions are repeated for the scenario where the high-income businessman has higher earnings because of (i) hard work, (ii) luck, and (iii) witchcraft. The destruction scenario omits the hard-working scenario, the sending money decisions includes the businessman with average earnings.

B. Protocol - FGD

We aim to conduct 4 FGDs with participants from the experiment. We will invite the participants randomly. Each FGD will consist of 6-8 participants and include participants from both Kibera and UoN. One FGD will be with females only, one with males only, and the other two with both males and females. We are particularly interested in finding out more about participants' thoughts about the following topics.

Topic 1: Witchcraft

- Have you ever experienced or observed witchcraft suspicions or accusations? If yes, can you share them with us so that we can discuss these situations?
- In which areas of life are witchcraft most important? Personal (marriage, love, fertility), business, health, politics, etc.
- Is witchcraft common in Nairobi?
- How do you compare the witchcraft in Nairobi to your rural home or the rural home of your relatives?
- Do you think urban witchcraft differs from rural witchcraft? If yes, how?

Topic 2: Witchcraft in economic affairs

- How important would you say witchcraft is in explaining success in business?
- What would it take to make you conclude that witchcraft has been involved in situations involving money?
- Are money transfers/monetary gifts/monetary transactions suspicious? When are they suspicious and when are they not?
- How do those suspicions and accusations develop?[Probe for: Does it depend on the

amount of money? The persons who are involved? The type of business?]

- When is a situation (involving a lot of money) not suspicious?

Topic 3: Consequences of exchanging and possessing bad money

- What happens to someone (knowingly or unknowingly) using bad/witchcraft money?
- Is it possible to clean such money?
- What are real-life equivalents of burning and redistributing money?
- What would you do if you found yourself in possession of money that came from a witchdoctor?

Topic 4: Redistributive pressure

- Do you sometimes feel the pressure to redistribute money?
- Which ways can you think of to avoid redistributing/sharing money?
- Are people involved with/or using witchcraft expected to share the money that they got through witchcraft?
- Can using witchcraft be a way to avoid sharing/redistributive pressure (in the sense that other people then don't want any of it)?

Topic 5: Understanding luck

- Consider the following two statements, which one do you agree most with:

    1. Luck is purely random, and can happen to anyone
    2. Luck is a sign that you have been blessed by God

- Please discuss your answers.

- Consider the following two statements, which one do you agree most with:

    1. Income based on luck (rather than hard work) is not really deserved, and should be shared

    2. Luck is a blessing from God, and income derived from it should therefore not be shared (it is even more deserved than income from hard work)

- Please discuss your answers.

Lab protocol

Introduction

Welcome to this lab session. This session is part of a research project on how people living in Nairobi understand fairness. In this session, we will ask you to make decisions on what you think is a fair distribution of earnings between people in Nairobi. Our research involves people from different parts of Nairobi, who take part in similar sessions as the one you are now participating in. While today, everyone of you is from Kibera/UoN, some of the participants in other sessions were from Riruta and some will be from Kibera/UoN.

The session consists of two parts. In each part, we will ask you about your opinion on the fair distribution of earnings in different cases. We ask you to read and listen to the instructions carefully and answer as best as you can about what you want to do. Please keep in mind that there are no right or wrong answers. We want to hear your thoughts and learn from you. Throughout the session, don't hesitate to contact us if you have any questions. If you have a question, simply raise your hand. It is not allowed to speak to the other participants during the session.

You will be paid a participation fee a few days after this session.

In this first part of the session, we invite you to think about inequality and fairness. We will present various cases. Please think about them as real cases involving real people in Nairobi.

A. Beliefs and attitudes

Think about a Nairobi businessman who has recently earned much more money than the average person. In fact, last week he earned 10,000 Ksh more than the average income this type of business brings in Nairobi.

A1. **How likely do you think are the following reasons for this businessman's high earnings? Use a scale from 1 (very unlikely) to 5 (very likely)**

a) He worked very hard.

⬜ Very unlikely ⬜ Unlikely ⬜ Neither unlikely nor likely ⬜ Likely ⬜ Very likely

b) He was lucky (for instance, because the weather was good for his business).

⬜ Very unlikely ⬜ Unlikely ⬜ Neither unlikely nor likely ⬜ Likely ⬜ Very likely

c) He used witchcraft.

⬜ Very unlikely ⬜ Unlikely ⬜ Neither unlikely nor likely ⬜ Likely ⬜ Very likely

d) Are there other reasons you could think about? If yes, please specify:

Please comment:

A2. What do you think about these high earnings? Is it good money or bad money? Please use a scale from 1 (bad money) to 5 (good money).

a) Let's say that the businessman worked very hard to earn the money. In this case, I would say that his money is:

⬜ Bad ⬜ Somewhat bad ⬜ Neither bad nor good ⬜ Somewhat good ⬜ Good

b) Let's say that the businessman was lucky. In this case, I would say his money is:

⬜ Bad ⬜ Somewhat bad ⬜ Neither bad nor good ⬜ Somewhat good ⬜ Good

c) Let's say that the businessman has used witchcraft. In this case, I would say his money is:

⬜ Bad ⬜ Somewhat bad ⬜ Neither bad nor good ⬜ Somewhat good ⬜ Good

Please explain your opinions:

A3. Whose money would you accept?
Imagine that you are offered money as a gift. Which gift would you prefer? The gift from a hard-working businessman or the one from a businessman who has used witchcraft? Tick off one.

	Option 1		Option 2
Case 1	Hard working businessman 1,000	or	Businessman who has used witchcraft 1,000

(IF OPTION 1 CHOSEN) You chose Option 1 in the previous decision. Consider now another case, which you should think of as completely independent of the first case, involving different people. Again, the choice involves two options, where in Option 1 is the gift from the hard-working businessman and Option 2 is the gift from a businessman who has used witchcraft.

	Option 1		Option 2
	Hard working businessman	or	Businessman who has used witchcraft
Case 2	1,000		5,000

(IF OPTION 1 CHOSEN) You chose Option 1 in the previous decision. Consider now another case, which you should think of as completely independent of the first case, involving different people. Again, the choice involves two options, where in Option 1 is the gift from the hard-working businessman and Option 2 is the gift from a businessman who has used witchcraft.

	Option 1		Option 2
	Hard working businessman	or	Businessman who has used witchcraft
Case 3	1,000		10,000

Please comment on your choice.

B. Redistribution

We now present you with three scenarios about two businessmen in Nairobi. You should think about the scenarios as completely independent, each time involving different people.

The two businessmen work in the same type of business, have the same gender, the same experience, and the same level of education. Although they are thus very similar, one of the businessmen has recently earned much more money than the average person. In fact, last week he earned 10,000 KSh more than the second one, who earned an average income.

In each of the scenarios that follow, we want to know what you think would be a fair distribution of earnings between the two businessmen.

B1. Hard work.
In this scenario, one businessman has worked very hard and, as a result, has 10,000 Ksh higher earnings than the other one. What do you think would be a fair distribution of earnings between the two businessmen?

If you think the distribution is fair as it is, you may choose not to redistribute. In this case, the hard-working businessman keeps his 10,000 Ksh and the average businessman receives nothing from this 10,000 Ksh.

If you think that the initial distribution is *not* fair, you may choose to redistribute. Depending on how much money you redistribute, the hard-working businessman will then keep less than his initial earnings and the average businessman will receive more than his initial earnings.

Please tick off the alternative that you choose.

Hard-working businessman is paid	10,000	7,500	5,000	2,500	0
Average businessman is paid	0	2,500	5,000	7,500	10,000
I choose:					

Please comment on your choice:

B2. Luck

Consider now a new scenario, involving two other businesspeople than the ones of scenario 1. Again, their earnings differ although they work in the same type of business, have the same experience and gender, and the same educational background. They also worked equally hard.

In this case, one businessman has been lucky (for instance the weather has been good for his business) and as a result has 10,000 Ksh higher earnings than the other one.
What do you think would be a fair distribution of earnings between the two businessmen?

If you think the distribution is fair as it is, you may choose not to redistribute. In this case, the lucky businessman keeps his 10,000 Ksh and the average businessman receives nothing from this 10,000 Ksh.

If you think that the initial distribution is *not* fair, you may choose to redistribute. Depending on how much money you redistribute, the lucky businessman will then keep less than his initial earnings and the average businessman will receive more than his initial earnings.

Please tick off the alternative that you choose.

Lucky businessman is paid	10,000	7,500	5,000	2,500	0
Average businessman is paid	0	2,500	5,000	7,500	10,000
I choose:					

Please comment on your choice:

B3. Witchcraft

Consider now yet another scenario, involving two other businesspeople than the ones of the last two scenarios. Again, their earnings differ although they work in the same type of business, have the same experience, and the same educational background. They also worked equally hard and none of them had more luck than the other.

In this case, one businessman has used witchcraft and as a result has 10,000 Ksh higher earnings than the other one. What do you think would be a fair distribution of earnings between the two businessmen?

If you think the distribution is fair as it is, you may choose not to redistribute. In this case, the businessman using witchcraft keeps his 10,000 Ksh and the average businessman receives nothing from this 10,000 Ksh.

If you think that the initial distribution is *not* fair, you may choose to redistribute. Depending on how much money you redistribute, the businessman using witchcraft will then keep less than his initial earnings and the average businessman will receive more than his initial earnings.

Please tick off the alternative that you choose.

Businessman using witchcraft is paid	10,000	7,500	5,000	2,500	0
Average businessman is paid	0	2,500	5,000	7,500	10,000
I choose:					

Please comment on your choice:

C. Burning money

C1. Witchcraft

Now imagine that you have the opportunity to take money away from the high-earning businessman who has used witchcraft without giving it to anybody else. Think about the money as simply being destroyed.

In this case, one businessman has 10,000 Ksh higher earnings because he has used witchcraft. Please keep in mind that his higher earnings in this case are not due to hard work or luck.

How much of this money do you think it's fair to take away from him (note that no one else will receive any of this money)?

You may choose not to take away anything, in which case the businessman using witchcraft keeps his 10,000 Ksh, or you may choose to take away money, in which case he will keep less. The more you take away, the less he will keep. Remember that the money you take away is destroyed, so the average businessman in any case receives nothing.

Please tick off the alternative that you choose.

Businessman using witchcraft is paid	10,000	7,500	5,000	2,500	0
Average businessman is paid	0	0	0	0	0
I choose:					

Please comment on your choice:

C2. Luck

Now imagine that you have the opportunity to take money away from the high-earning businessman who was lucky without giving it to anybody else. Think about the money as simply being destroyed.

In this case, one businessman has 10,000 Ksh higher earnings because he was lucky.

How much of this money do you think it's fair to take away from him (note that no one else will receive any of this money)? Remember that the money you take away is destroyed, so the average businessman in any case receives nothing.

I think the lucky businessman should keep:

Lucky businessman should keep	10,000	7,500	5,000	2,500	0
Average businessman is paid	0	0	0	0	0
I choose:					

Please comment on your choice:

D. Trust game

The task consists of two phases.

In phase 1, imagine that you have 4,000 Ksh and that you can send some of it, or all of it, to another person. The amount that you decide to send will be tripled so that the other person receives three times the amount you sent.

In phase 2, the other person decides whether or not to send back some money to you.

The other person knows how much money you have and how much you send. Since the amount you send is tripled, there are potential gains to be had from sending money, but of course, if the other person does not return anything, you lose. This is why it is called the trust game: Can you trust the other one to send money back so that both of you win? Or perhaps he will return less than what you sent, or perhaps he will not return anything at all, in which case you lose?

D1. How much do you want to send to different types?

Imagine that you have an initial endowment of 4,000 Ksh. You can choose to keep it, or to send some of it to the other person. If you send, the amount the other person receives is tripled. We will now ask you two questions to test whether you paid attention and understood the instructions.

a) If you decide to send half of your endowment, that is, if you send 2,000 Ksh, how much will the other person receive?
   ⬜ 0 Ksh ⬜ 2,000 Ksh ⬜ 4,000 Ksh ⬜ 6,000 Ksh

b) This is correct, the other person will receive 6,000 Ksh. If the person returns half of this to you, will you end up with more than, the same as, or less than your initial endowment?
⬜ More ⬜ Same ⬜ Less

c) This is wrong. The other person will receive three times the amount you sent, that is three times 2,000 Ksh which is 6,000 Ksh. If the person returns half of this to you, will you end up with more than, the same as, or less than your initial endowment?
⬜ More ⬜ Same ⬜ Less

Is this understood? If not, please raise your hand and we will explain.

You can choose between NOT sending, sending half, or sending all of your endowment. Please make a sending decision (tick off one) when the other person is a businessman of the following type:

a. If my assigned partner has average earnings, I will send:
⬜ 0 Ksh ⬜ 2,000 Ksh ⬜ 4,000 Ksh

b. In case my assigned partner has high earnings because of hard work, I will send:
⬜ 0 Ksh ⬜ 2,000 Ksh ⬜ 4,000 Ksh

c. If my assigned partner has high earnings because of luck, I will send:
⬜ 0 Ksh ⬜ 2,000 Ksh ⬜ 4,000 Ksh

d. If my assigned partner has high earnings because of witchcraft, I will send:
⬜ 0 Ksh ⬜ 2,000 Ksh ⬜ 4,000 Ksh

D2. Who do you want as your partner?
Imagine now that you can choose your partner in the trust game. You will be presented with four different people, and we ask you to rank them in your preferred order, where 1 means your number one choice and 4 means your least preferred choice.
⬜ The average-earning businessman
⬜ The businessman who has high earnings because of hard work
⬜ The businessman who has high earnings because of luck
⬜ The businessman who has high earnings because of witchcraft

E. Questionnaire

1. What is your age? [Number]
2. What is your gender? [0=Male, 1=Female]
3. What is your ethnicity? [text]
4. How strongly held are your beliefs in witchcraft?
[1=don't believe, 2=somewhat believe, 3=strongly believe]
5. Of 100 people in your neighborhood in Nairobi, how many do you think believe in witchcraft?
6. What is your religion?
7. How strongly held are your beliefs in a Christian/Muslim god?
[1=don't believe, 2=somewhat believe, 3=strongly believe]
8. What is your monthly household income [Number]
9. What is your current main occupation? [Text]
10. What is your highest completed level of education?
11. How many people are living in your household? [Number]
13. What is your marital status? [1=Single, 2=In a relationship, 3=Married, 4=Widowed]
14. Do you have children? [0=yes, 1=no]
15. If yes, how many?
16. Where did you grow up? [Text]
17. Since when are you living in Nairobi? [Year]