CHURCHES AS INFORMAL INSURANCE NETWORKS: Prosociality, fairness, and insecurity in the D.R. Congo

JONATHAN L. WEIGEL[†]

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Abstract

Humans are often more prosocial than economic theory predicts. But individuals facing material insecurity have strong reasons to be selfish. The small stakes often used in behavioral games could actually make a difference for participants who are uncertain about whether they can provide sufficient food for their families. Nonetheless, this paper finds that highly materially insecure individuals in the urban D.R. Congo give even more to receivers in the dictator game relative to less insecure individuals. They are much more likely to share the money equally. I argue that this positive relationship between material insecurity and prosociality is explained by fairness norms associated with church-based informal insurance networks.

1

1 Introduction

A large literature in experimental economics and related disciplines finds that people often deviate from the predictions of rational-choice models.[1] Participants are influenced by fairness considerations as well as behavioral and cognitive biases. Recent multi-country studies in small-scale societies have noted the importance of market integration and religions with moral high gods in sustaining norms of prosociality and cooperation (Henrich et al., 2001, 2010; Purzycki et al., 2016). Even in impoverished settings, people seldom make the fully 'selfish' (or rational) choice.

In this paper, I document an empirical puzzle: in a high-poverty setting (the D.R. Congo), individuals facing acute material insecurity are *more prosocial* in the dictator game compared to less insecure individuals. This average increase in prosociality is driven in large part by high-insecurity individuals dividing money evenly between themselves and the receiver. The relationship between material insecurity and giving in the dictator game is robust to controlling for a number of possible omitted variables, including annual income, wealth, migrant status, years spent in urban settings, family size, and religious beliefs. It also does not appear to be explained by problems understanding the game.[2]

Although prosociality in destitute settings has been well documented, to the best of my knowledge, past work has not noted this positive relationship between prosocial behavior in economic experiments and material insecurity in such settings. This is a puzzling finding because materially insecure individuals have a more compelling reason to be selfish: experimental game winnings could make a difference for those facing uncertainty about their ability to provide food for their family. Why do participants facing greater economic insecurity exhibit *more* prosocial behavior in the dictator game, when one would expect the opposite?

One explanation motivated by economic theory is that the high rate of 50-50 allocations reflects sharing norms associated with church-based informal insurance networks in Kananga. Informal insurance and risk-sharing arrangements have been documented in many developing countries, especially in rural settings such as Nigeria (Udry, 1990), India (Townsend, 1994), and the Philippines (Fafchamps and Lund, 2003). Although participants are anonymous in this experimental set up — and thus not literally participating in risk-sharing — it is plausible that informal insurance practices have coevolved with strong norms of sharing that lead participants to split their endowment equally more often. More materially insecure individuals ought to have greater demand for informal insurance and thus stronger sharing norms.

Much of the existing literature focuses on rural settings, in which problems of moral hazard and adverse selection are less severe. In urban settings, scholars have noted a number of organizations that counter adverse selection by imposing high participation costs and counter moral hazard by enabling peer-to-peer monitoring. Examples include trade unions (Roth, 2001), burial societies (Dercon et al., 2008), and above all churches and other religious

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[1]For an overview, see Rabin (1998), Thaler (2000), and Kahneman (2011).

[2]I also show (weakly) suggestive evidence of a positive relationship between material insecurity and prosociality in a separate sample of 23 individuals who played the random-allocation game.

communities (Berman, 2000; Dekker, 2004; Karlan, 2005; Cassar et al., 2007; Dehejia et al., 2007; Barr et al., 2008; Wydick et al., 2011; Erlbeck, 2017). There are thus compelling theoretical reasons why churches might facilitate risk-sharing as well as empirical evidence confirming this positive relationship with experimental and observational data.

Churches facilitate risk-sharing in Kananga, too: 41% of individuals sampled who reported providing monetary or in-kind support to non-family adults said they offered this support to members of their church; similarly, 32% of those who said they had received support in the past six months from non-family members said this support came from church members. This informal insurance function of churches is perhaps less surprising when we note the extremely high participation costs required by most churches in Kananga. For example, at Pentecostal churches (to which over half of the population belongs), require adherents to attend church multiple times per day. Such high participation costs likely screen out bad apples and create ample opportunities for monitoring.

To explore if sharing norms associated with church-based informal insurance networks might explain why materially insecure individuals are more likely to choose the 50-50 allocation in the dictator game, I explore several types of evidence. First, I show that highly materially insecure individuals are more likely to attend public religious ceremonies but not more likely to have stronger religious beliefs. In fact, high-insecurity individuals are less likely to believe that god will intervene on their behalf. Yet the fact that they participate more in public ceremonies is consistent with the idea that churches serve broader social needs, such as the need for informal insurance.

Next, I demonstrate that the higher rates of prosociality among materially insecure individuals are concentrated among those who attend public religious ceremonies more often than the median individual. In other words, there is a meaningful positive interaction between economic insecurity and public devotion, as one would predict if equal allocations in the dictator game reflect church-based risk-sharing norms. Similarly, the difference in prosociality between high- and low-insecurity is largest when individuals are primed with a Christian image (the bible) rather than images associated with secular authorities, local ancestral worship, or flowers (neutral prime). Exploring differences in participants' responses to exit questions just after playing the dictator game, I find no differences in the use of words about sharing. However, materially insecure individuals are much more likely to use the word "money," indicating that the economic implications of their decisions in the game are highly salient to this subgroup. Taken together, these findings are consistent with the argument that materially insecure individuals choose the 50-50 allocation more often due to sharing norms associated with church-based informal insurance practices in Kananga.

One important caveat before continuing: the findings reported in this paper should be interpreted as correlational and suggestive. I am working with a small sample (111 individuals in the main analysis), and I did not preregister hypotheses about the relationship between material insecurity and fairness norms. I view this article as a chance to generate hypotheses that might be tested more systematically in future work. That said, preliminary evidence from the other field sites associated with this project "The Evolution of Religion and Morality" appears to recover this same relationship, suggesting it may have external validity. Further analysis of these and other data is needed to determine the robustness of this relationship

in different contexts and to further examine the role of church-based informal insurance networks in sustaining fairness norms among individuals facing acute material insecurity.

After an overview of the context (Section 2), Section 3 discusses the experimental design, sampling procedures, survey and game protocols, priming experiment, and anomalies from the larger multisite project. Section 4.1 documents the positive relationship between material insecurity and prosociality, and Section 4.2 explores the role of norms derived from church-based risk-sharing practices.

2   Context

The data were collected in the city of Kananga, the 4th largest city in the Democratic Republic of Congo and the capital of the Kasaï Central Province. Kananga has a moderate climate, situated at the transition from the equatorial forest to the savannah. Two dry seasons in January and in June-August punctuate the rainy seasons.

Although Kananga has a population of nearly 1 million, it and the rest of the province are particularly underdeveloped relative to other parts of the country. In the subsample that will be considered in this paper, unemployment is 52%, and self-reported median monthly household income is approximately $70. Most individuals with jobs work for the provincial government or engage in petty commerce. Three-quarters of the population has completed the six mandatory years of primary school. Despite the high rate of poverty, Kananga is an urban environment and so no individuals in the sample are subsistence farmers. Rather, all households buy food in the market.

One symptom of the underdevelopment of Kasaï is its poor infrastructure and remoteness. Overland travel from Kananga to Kinshasa, the capital of the DRC, takes nearly two weeks. Although colonial-era railroads link Kananga to Lubumbashi, the second largest city in the country and the economic capital of the southern-central DRC, trains are infrequent and unpredictable. The difficulty of overland transportation has opened small arbitrage opportunities for courageous individuals known as *bayanda* ("strong men") who strap hundreds of pounds of goods for sale (maize, onions, gasoline, local moonshine, etc) onto jerry-rigged bicycles and push them for hundreds of kilometers, from one town to another, through the mud or sand of the region's road network. Although the job subjects them to the elements and many other hazards, *bayanda* can make several hundred dollars on a weeklong trip. In a setting where decaying infrastructure generates major frictions to the free flow of goods and people, this job is the best option for many.

Another reason for the underdevelopment of Kasaï is political in nature: although the Belgians planned to make Kananga (then Luluabourg) their new colonial capital in the 1950s, the city has since been deliberately neglected by the capital because it has remained a stronghold of the opposition under the rule of Mobutu Sese Seko, and the subsequent leadership of Laurent-Désiré and Joseph Kabila. Long-time opposition leader Etienne Tshisikedi hailed from Kasaï, and his party still remains popular in Kananga.

The population of Kananga is overwhelmingly Christian, though individuals often hold tra-

ditional religious beliefs regarding ancestor worship alongside their beliefs in the Christian God. In a random sample of over 3,000 individuals across Kananga, 94% self-identified as Christian. The remaining 6% is made up mainly of individuals who subscribe to traditional religions, no religion, or one of the other major world traditions. Although the Catholic church has long been dominant in Congo — most estimate that roughly half of the population is Catholic — its adherents make up only 22% of Kananga's population. Most Christians (56%) today belong to born-again or Pentecostal churches led by charismatic founders. Protestants account for another 12.4% of the population.

Although few individuals identify as fully non-Christian, traditional religious belief persist alongside beliefs in the Christian God. Ancestor worship remains common: 46% of individuals in Kananga report that ancestral spirits punish individuals 'often' or 'sometimes.' Witchcraft beliefs are also widespread. Although few individuals report visiting witch doctors, 'feticheurs,' or the 'thunderman' — a sorcerer who can, for a price, make lightning strike specific individuals with unpaid debts or other offensive qualities — themselves, 40% say they know someone who has been affected by witchcraft. Although generally those who profess stronger Christian beliefs put less stock in traditional beliefs, these cosmologies are not perfectly negatively correlated. That is, many individuals simultaneously hold both types of beliefs.

In addition to the Luluwa, Kananga contains sizable minorities of Luntu, Luba, Kuba, Lele, Tetela, Songe, Bindi, Chokwe and other ethnic groups. Although the Luluwa have a patrilineal descent system, a number of the other groups, such as the Kuba and Lele, practice matrilineal descent (likely around 20% of the population). Nonetheless, across all ethnic groups, society is highly patriarchal. It is worth noting also that Kananga escaped much of the violence that seized Congo during the First and Second Congo Wars; it became known as the "Oasis of Peace."

See Table 7 for additional descriptive statistics about the population in Kananga and the sample analyzed in this paper.

3 Experimental design

3.1 Experimental categories

The sample for this study consists of individuals living in Kananga who are both (i) born-again Christians (adherents of Pentecostal churches), and (ii) ethnically Luluwa. I restricted the sample in this way to identify common social categories salient in this population in accordance with the broader experimental protocol of "The Evolution of Religion and Morality." The first group, 'ethnic co-religionist,' includes individuals who are, like all individuals in the sample, born-again Christian and Luluwa. The second group, 'non-ethnic co-religionist,' includes individuals who are born-again Christian, and not Luluwa. The third group, 'non-ethnic, non-co-religionist' includes individuals who are neither born-again Christian, nor Luluwa. When participants in the study play behavioral games with another player from the ethnic co-religionist group, that individual will share their church (Pentecostal) and eth-

nicity. When they play with a non-ethnic co-religionist player, that anonymous individual will share their church but not their ethnicity. When they play with a non-ethnic, non-co-religionist player, that other anonymous individual will share neither church, nor ethnicity.

Pentecostal churches are heterogeneous in their beliefs and practices, driven by charismatic founders who emphasize different messages in their sermons. But they are also united in their emphasis on conversion and salvation. Consistent with evidence from Kenya, Pentecostal churches also frequently stress individual autonomy and the possibility of achieving material success from hard work (McClendon and Riedl, 2015). That said, there is no evidence that born-again Christians are wealthier or happier from those who pray at other churches.

The other criterion in identifying the sample for this paper was ethnicity: ethnically Luluwa individuals make up the sample. The Luluwa are the largest ethnic group in Kananga, comprising roughly 59% of the population. The Luluwa did not have a centralized precolonial state, as did the Kuba and the Luba, two minority ethnic groups in Kananga. The notion of the Luluwa as a distinct ethnic group origins from Belgian colonial accounts referring to the heterogeneous peoples living in the region surrounding the Luluwa river (Vansina, 1968). Most Luluwa individuals feel a stronger tie to their *groupement* (or sub-tribe) — typically a set of villages in a similar location — than to the Luluwa as a whole. Uniting the Luluwa is the Tshiluba language, one of the four national languages of the D.R. Congo. Ethnicity is salient as a marker of social identity in Kananga, and co-ethnic bias has been documented in past work (Lowes et al., 2015).

3.2 Sampling

To identify participants, I selected a sub-sample of an existing random sample of 3,097 households participating in a 'screening survey' run in conjunction with another study in Kananga (Lowes et al., 2017). Random sampling for this other project was achieved in two steps. First, we randomly sampled neighborhoods (polygons) partitioning a satellite map of Kananga (Figure 7). Second, enumerators visited selected neighborhoods and randomly sampled residents by counting every X^{th} house, where X is determined by dividing the estimated population of each neighborhood by a constant. Using this random sample, I first excluded participants in the other study and then selected (randomly, in Stata) 200 individuals who fit the sampling criteria (born-again Christian and Luluwa) as possible participants. At times, enumerators could not find the sampled households; I then randomly sampled additional households from the 3,097 sample until we reached the target of 200 participants.

Five enumerators from Kananga conducted all of the surveys and behavioral games for this project in July and August of 2014. They visited participants in their homes, administering surveys using ODK Collect on tablets and games using Genji pop-up tents to create privacy when participants were making decisions involving money. I discuss game protocols in depth in the next section.

3.3 Surveys and game protocols

Enumerators conducted surveys and games in French or Tshiluba, according to participants' preferences. Surveys and experimental protocols (available upon request) were translated, back translated, and rectified by a team of highly educated Congolese individuals living in Kinshasa and Kananga.

Participants conducted surveys to measure participants' socioeconomic and religious characteristics and played either the dictator game (DG) or random-allocation game (RAG). In the DG, the participant and enumerator sat on a mat in the participant's yard and set up a pop-up tent in which they would play the behavioral games. Figure 8 shows the experimental lab-in-the-field setup. The enumerator read out a common protocol explaining rules: the participant would receive 1,000 Congolese Francs (CF) in ten 100 CF bills, one envelope labeled *Meme* ('me,' in Tshiluba) and a second envelope labeled *Munayi mukuabu* ('other player').[3] The participant would enter into the tent, divide the money into the two envelopes, keeping the *Meme* envelope and putting the *Munayi mukuabu* envelope into a zipped bag just outside the tent. Participants were informed that all allocations they made would in fact be delivered to anonymous individuals ('receivers') in Kananga. Before actually making the allocation, the enumerator demonstrated a series of example allocations and asked the individual a number of test questions.

The enumerator specified the specific identity of the receiver verbally when explaining each round of the game. The receiver varied among: in-group, coreligionist, and out-group, each of which was defined for the participant as above. For instance, if the participant was participating with a coreligionist, the enumerator said, "In this game, the other player is an anonymous individual randomly selected from the population of Kananga who is a born-again Christian and not Luluwa." The 'other' church and ethnicity of the out-group and coreligionist participants were not specified. These receiver were selected randomly among the same 3,097 sampling frame used to identify the 'player one' participants. They were therefore fully anonymous from the perspective of the 'player one' participant. The receivers received the payoffs allocated to them.

The enumerators conducted the RAG according to a similar protocol. Participants received a die with three sides colored white and three sides colored black. Once in the tent, they rolled the die thirty times. Before each role, they were told to pick white or black in their mind. Then, if the die lands on the same color as that which they chose in their mind, they should put a 100 CF bill into the *Meme* envelope; if the die lands on the opposite color, they should put a 100 CF bill into the *Munayi mukuabu* envelope. The participants repeat this procedure thirty times until they have allocated all thirty of the 100 CF bills (and 3,000 CF has been split between the two envelopes). The distribution ought to be binomial; the expected value in each envelope is 1,500 CF. However, no one will intervene if the participant simply allocates the bills as he wishes instead of following these rules. The step of 'choosing in one's mind' adds an additional level of privacy: even if someone were watching — which they were not, because all games occurred inside the tent — they could not detect if the

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[3]In two other iterations of these games, participants divided money between two different players. These games will not be analyzed here because they do not measure altruism but rather bilateral social preferences.

participant followed the rules. As such, the game measures not just altruism toward different groups, but also one's propensity to follow rules when unobserved.

3.4 Primes

As with other projects in this multi-site study, the 160 dictator game participants were randomly assigned to priming treatments: 'moralistic,' 'local god', 'secular', and control. In this setting, 'moralistic' is the Christian God and 'local god' is ancestral spirits.

The Christian God is thought to possess the principal attributes of a moral high god, noted in Norenzayan (2013): 79.5% of the sample say that the Christian God punishes people for their behavior; 98.5% say that he can see inside people's hearts and minds. When asked what the Christian God likes, respondents answer: (1) love / love of one's neighbor, (2) adoration, (3) glory. When asks what he dislikes, they answer: (1) theft, (2) wrath, (3) adultery. Church attendance is high: 64.5% of the sample report attending every day; another 24% report attending multiple times per week. Separate from church, 88.5% of individuals in the sample report praying 'all day' or 'several times per day.' There is a Protestant and Catholic missionary tradition in Kananga, dating back to the late 19th Century when the first Catholic missionaries established a presence 30 kilometers from Kananga.

Alongside strong professed beliefs in the Christian God, individuals report beliefs in a number of local deities and spirits. The most important are ancestral spirits: 46% of individuals say they think ancestral spirits punish people 'often' or 'sometimes.' When asked what ancestral spirits like, respondents are most likely to answer: (1) sacrifice, (2) truth, and (3) candles. When asked what they dislike, respondents answer: (1) disobedience, (2) anger, (3) the Bible.

To prime individuals, enumerators laid out custom-made towels with printed images on them on top of the mats on which they sat with the participant to explain the rules of each game. They placed the towel between themselves and the participant, and demonstrated how to divide the money into the two envelopes on top of the towel. The 'moralistic' prime towel showed a photograph of a bible with the words *La Bible* printed on it. The 'local god' prime showed traditional masks, which are used in ceremonies to represent ancestral spirits. The 'secular' prime showed the emblem of the national police of Congo. The control prime showed a field of orange flowers. Figure 9 shows the photographs used for each prime. I selected each of these images after conducting focus groups and asking individuals what various images meant to them. These four most consistently generated responses in line with the prime category. Primes were not used in the random-allocation game.

3.5 Research anomalies

There were two perturbations to the research protocol worth noting. First, following the initial 'religious landscape interview,' I defined 'local god' as Kadima, the most widely recognized god other than the Christian God. However, after administering the main survey for several days, it became clear that very few individuals believe in Kadima. (Believers are

concentrated in one small part of the city.) A more general definition of 'local god' as ancestral spirits captured many more adherents. As such, after six days of survey enumeration, I changed the 'local god' category in the survey to ancestral spirits. The dataset thus contains data on both ancestral spirits and Kadima for 111 individuals, and only for Kadima for 89 individuals. This change of definition did not affect the primes used during dictator game administration.

Second, I learned the following year (2015) that two of the enumerators had faked data. I detected anomalies in their data, and then conducted a number of 'back check' surveys in which other enumerators sought out their old respondents and asked questions about what activities they conducted with the enumerators in 2014. These surveys revealed considerable anomalies for these two enumerators, suggesting that they filled in many of the surveys themselves and may have allocated money in the behavioral games themselves. The other three enumerators on the project appear to have followed the protocols correctly. Although I do not believe these two enumerators faked *all* of their data, to be conservative I discard all data from them, reducing the sample size from 200 to 111.[4]

4 Results

As noted in the introduction, this paper focuses on a different topic from the multi-site study to which it also contributed. This section first demonstrates that materially insecure individuals are more likely to exhibit prosocial behavior in the behavior games played. It then considers the role of churches as informal insurance networks in mediating this relationship.

4.1 Perceived material insecurity predicts more equal allocations in the dictator game

The dictator game is non-strategic and often used as a measure of altruism. Although the economically rational thing to do is take the entire endowment for oneself, a large literature finds that most players choose to allocate positive sums to the receiver. Fairness norms are thought to govern this behavior. Even in impoverished settings, players give nontrivial shares of their endowment to the anonymous receiver. This paper replicates this result. On average, dictator game participants allocate 389 CF to the receiver (keeping the rest of their endowment for themselves).[5] Moreover, 48% of individuals chose the 50-50 split, allocating 500 CF to the receiver.

This paper documents a striking fact: altruism and equal allocations are more pronounced among individuals in a state of material insecurity. To measure insecurity, enumerators asked participants a series of questions about the extent to which they worry about being able to

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[4]This sample size of 111 individuals does not reflect the 'local god' definition in the previous paragraph. Data from all individuals is included in the analysis, regardless of which type of 'local god(s)' were included in the survey.

[5]As noted above, in this paper I consider only the games involving a choice between oneself and another player.
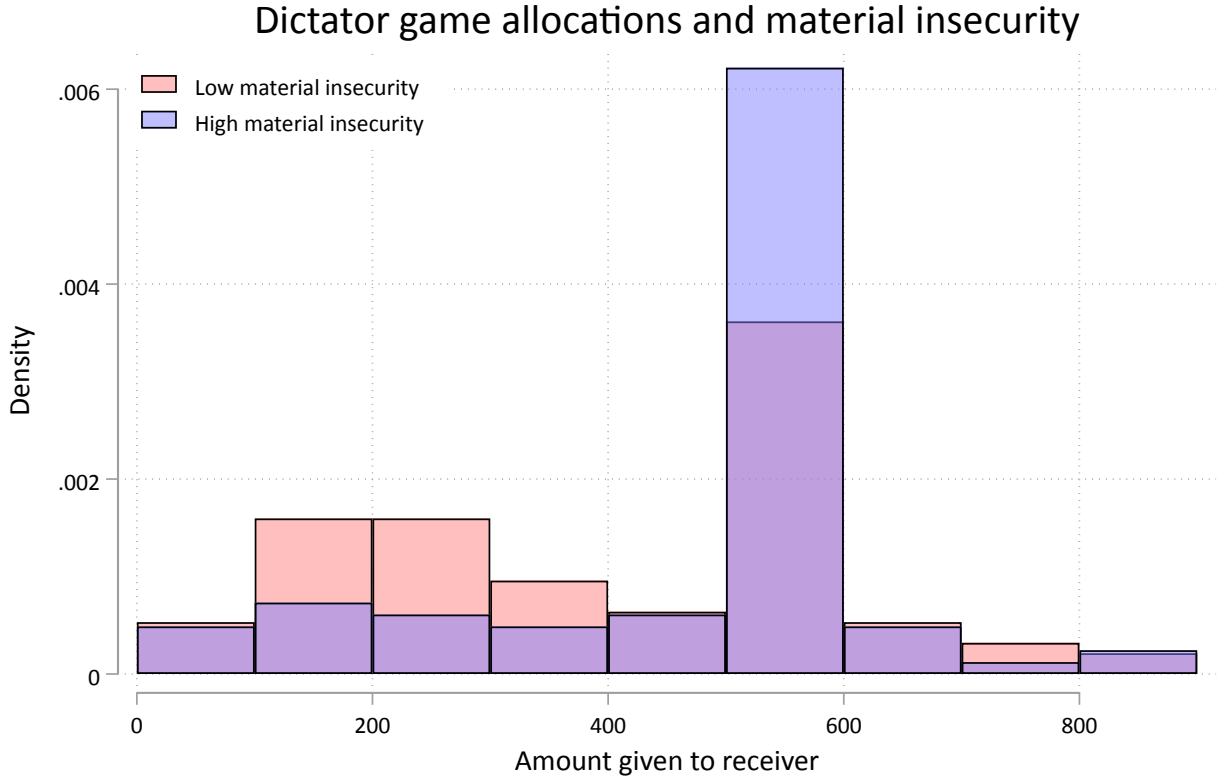
Figure 1:   Histogram of dictator game allocations to the receiver among individuals with above- and below-median material insecurity.

provide sufficient food for their families over different time intervals (one month, six months, one year, five years). See Appendix Section 6.1 for detailed variable descriptions. The level of perceived insecurity is high: 80% of individuals admit to being worried about consistently providing sufficient food for their family in the next month.[6] Moreover, perceived insecurity over these different time periods is highly correlated within individuals: those who anticipate having problems putting food on the table in the next month are also more likely to worry about putting food on the table in the next six months, next year, and next five years.

Although participants who are worried about their ability to put food on the table for their families might be thought most likely to make a 'selfish' allocation in the dictator game, these individuals do precisely the opposite. This result appears most clearly in Figure 1. The distribution of allocations to the receiver is shifted to the right among individuals with above-median insecurity. Insecure individuals are considerably more likely to make the 50-50 split.

To test these pattern systematically, I estimate ordinary least squares models, whose results are summarized in Table 1. The regressions in this table use data from both dictator game

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[6]The distribution of perceived insecurity is bimodal (Figure 2): about 16% of the sample appear considerably less worried about their family's ability to have sufficient food relative to the main mass of individuals for whom there is uncertainty around this fact.

rounds in which the participant makes a choice about how much of his own endowment to share with another player.[7] In one of these games, the receiver is a coreligionist; in the other, the player two is from the out-group. Table 1 does not exploit this variation in the identity of the receiver, but rather pools data from both games to examine average giving behavior. I include a dummy variable for the second game (with an out-group receiver) and cluster standard errors at the individual level. The relationship between dictator game giving and the perceived insecurity — the principal topic of this paper — does not appear to vary systematically by the identity of the receiver (see Figure 13 in the Appendix).

Table 1: Insecurity predicts higher DG allocations to the receiver

	Allocation to receiver (Dictator game)			Made equal allocation (Dictator game)		
	(1)	(2)	(3)	(4)	(5)	(6)
Insecurity index	59.643***	56.396***	55.255***	0.137***	0.131***	0.147***
	(16.115)	(16.527)	(16.258)	(0.041)	(0.042)	(0.044)
Income		29.642**			0.052	
		(12.005)			(0.037)	
Wealth		-4.564			-0.019	
		(13.461)			(0.045)	
High god belief			-18.851			0.044
			(18.374)			(0.052)
High god devotion			6.325			-0.004
			(18.213)			(0.057)
Game 2 dummy	3.409	3.409	3.409	-0.080*	-0.080*	-0.080*
	(21.029)	(21.154)	(21.154)	(0.044)	(0.044)	(0.044)
Covariates	Yes	Yes	Yes	Yes	Yes	Yes
Observations	176	176	176	176	176	176
R^2	0.108	0.127	0.116	0.107	0.117	0.114
Outcome Mean	389.205	389.205	389.205	0.483	0.483	0.483

Standard errors clustered by participant. $^*p < 0.1,^{**}p < 0.05,^{***}p < 0.01$

The results in Table 1 show that the relationship between material insecurity and altruistic behavior is highly statistically significant when controlling for basic individual level covariates (age, age squared, and gender). The dependent variable in columns 1-3 is the allocation (in CF) to the receiver; in columns 4-6, it is an indicator variable for 50-50 allocations. All else equal, a one standard-deviation increase in material insecurity is associated with a 60 CF increase in allocations to the receiver (column 1), or a 13.7 percentage-point increase in the probability that a participant chooses the 50-50 allocation. The positive relationship between DG giving and perceived insecurity is consistent across time periods used to gauge individuals' concern about access to food in the future (Figure 11 in the Appendix).

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[7]Two other dictator games were played in which the participant allocates 1,000 CF between two different players, rather than himself and one other player. Although these two-other-player dictator games elicit preferences between two groups, they do not measure altruism and are thus not included in this analysis.

A first concern is that highly materially insecure individuals might not have understood the game. To examine this possibility, I include a control for the number of test questions respondents answered correctly as well as their education level (Table 8). The estimated relationship between material insecurity and altruism remains unchanged.

This relationship could be explained by omitted variables, such as income and wealth. However, the results are unchanged when controlling for measures of annual income and wealth (columns 2 and 5). This is unsurprising when we note that individuals' sense of material insecurity is only weakly correlated with annual income ($\rho = 0.10, p = 0.13$) and uncorrelated with wealth. Indeed, daily income flows are highly unpredictable in Kananga; even individuals with steady annual income might face the threat of insufficient food during bad weeks.[8] Although there is a weakly upward-sloping relationship between DG giving and income, it is imprecisely measured because of the limited variation in income in the sample (see Figure 10). By far the stronger predictor of relatively larger allocations — and of equal allocations — in the dictator game is perceived material insecurity.

Another possible omitted variable — one motivated by the larger cross-country project to which this paper belongs — is religious belief and religiosity. If people reporting higher levels of material insecurity are also those with stronger beliefs in and devotion to a moral high god, then the observed relationship in Table 1 could be spurious. Controlling for measures of respondents' beliefs in a moral high god (*High god belief*) and the strength of their devotion to that god (*High god devotion*), columns 3 and 6 show that this is unlikely to be the case. The estimated coefficient on *Insecurity index* is largely unchanged. Holding constant religious belief and devotion, individuals who are more concerned about their material security in the future are more likely to make equal allocations in the dictator game.

Still another possible omitted variable that could be associated with both material insecurity and dictator game allocations is migrant status. Most people in Kananga were either born there or moved from a village in the surrounding area. It is possible that individuals born in villages who recently moved to Kananga are less materially secure and also have stronger norms of fairness in the dictator game. To test this, I include an indicator for individuals who were born in Kananga, as well as a count of the number of total years spent in Kananga, as controls (Table 8 columns 2 and 5). The estimated coefficient on *Insecurity index* remains large and highly significant. Finally, it could be that larger families have a harder time obtaining sufficient food for everyone and have stronger sharing norms. Including measures of the number of children and the overall household size as controls also does not meaningfully alter the results (Table 8 columns 3 and 6).

To explore where in the distribution of perceived insecurity the effect on dictator-game giving derives, Figure 2 estimates a quadratic fit between the two variables. The positive slope appears at all values of the insecurity index. Although the bimodality of the insecurity index could imply a less general relationship, the average allocation to the receiver does consistently increase by quantiles of the insecurity index (Figure 12 in the Appendix).

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[8]Even individuals with government jobs are often subject to such uncertainty. Although the provincial government in theory pays at the end of every month, salary disbursements are often late — sometimes several months late.
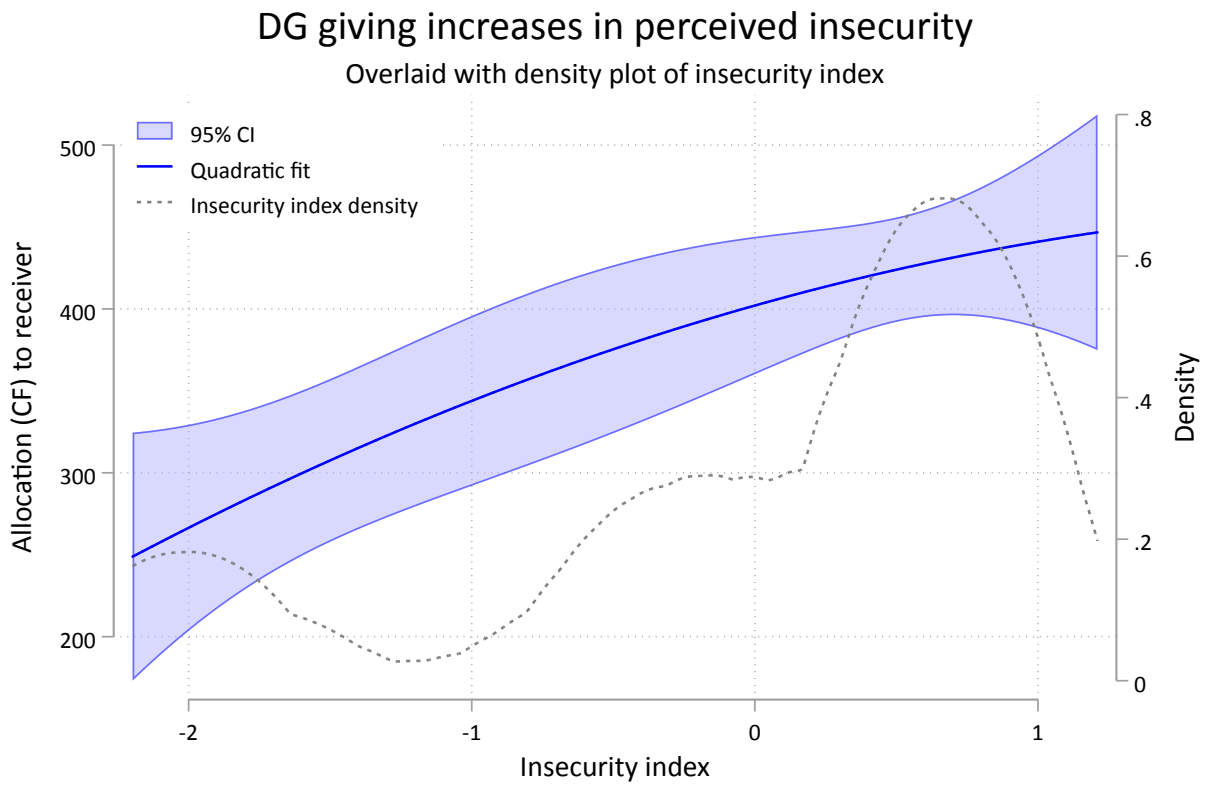
Figure 2: Quadratic fit of relationship between dictator game giving and perceived material insecurity, overlaid with density plot of insecurity index.
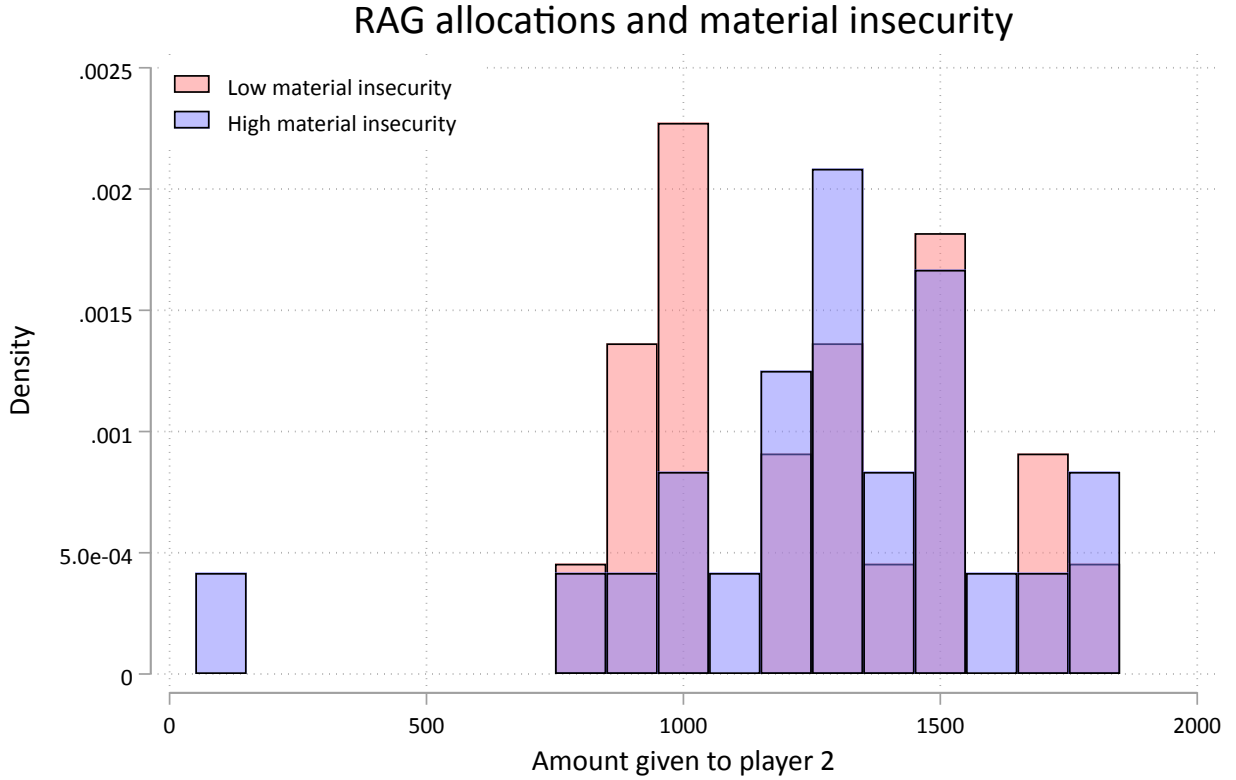
Figure 3: Histogram of random-allocation game giving to the receiver among individuals with above- and below-median material insecurity.

Although the relationship is less robust, material insecurity appears positively associated with allocations to the receiver in the random allocation game as well. Analysis of RAG outcomes is extremely suggestive because (1) there are only 23 participants once I drop data from the two problematic enumerators, (2) the RAG captures not just a participant's altruism but also his willingness to follow the rules when unobserved. However, it is reassuring to see the same broad pattern reflected in RAG results, summarized in Figure 3 and Table 2. Although the coefficients on *Insecurity index* are not statistically significant, they are consistently positive across the analogous specifications examined in Table 1, suggesting that, if we had a larger sample, we would observe a similar relationship between perceived material insecurity and allocations to the receiver.[9]

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[9]Note in defining 'fair' allocations in the RAG, I coded any allocation of 1,300 CF, 1,400 CF, 1,500 CF, 1,600 CF, or 1,700 CF as 'fair' given that there is uncertainty in the game corresponding to the die rolls.

Table 2: Insecurity and RAG allocations to the receiver

	Allocation to receiver (Random-allocation game)			Made 'fair' allocation (Random-allocation game)		
	(1)	(2)	(3)	(4)	(5)	(6)
Insecurity index	31.591	24.358	119.085	0.064	0.067	0.150
	(68.696)	(68.994)	(75.607)	(0.102)	(0.109)	(0.137)
Game 2 dummy	-21.739	-21.739	-21.739	-0.130	-0.130	-0.130
	(91.177)	(93.546)	(93.546)	(0.154)	(0.158)	(0.158)
Income		49.198			-0.013	
		(51.762)			(0.039)	
Wealth		-22.926			-0.021	
		(47.421)			(0.075)	
High god belief			97.687			0.036
			(71.783)			(0.121)
High god participation			72.684			0.178
			(58.607)			(0.122)
Covariates	Yes	Yes	Yes	Yes	Yes	Yes
Observations	46	46	46	46	46	46
R^2	0.059	0.077	0.108	0.079	0.083	0.142
Outcome Mean	1263.043	1263.043	1263.043	0.500	0.500	0.500

Standard errors clustered by participant. $^*p < 0.1,$ $^{**}p < 0.05,$ $^{***}p < 0.01$

4.2 Why do materially insecure participants give more?

Having documented the positive association between material insecurity and giving in the dictator game, I next investigate the origins of this relationship. Why do participants facing greater uncertainty about their ability to provide food for their families in the future exhibit *more* prosocial behavior in the dictator game, when they have strong reasons to be selfish?

One explanation motivated by economic theory is that the high rate of equal DG allocations among materially insecure participants reflects sharing norms derived from informal insurance mechanisms in Kananga. When individuals are uncertain if they will be able to provide food for their family due to variability in income shocks over time, a natural solution is to share income or food with neighbors (whose income shocks might be uncorrelated with their own). Informal insurance mechanisms of this nature have been documented in many settings, including rural Nigeria (Udry, 1990) and India (Townsend, 1994). In the present study, the identity of the receiver in the dictator game is unknown, so it is unreasonable to think participants are literally sharing their endowment equally in order to protect against future negative income shocks. But it is plausible that informal insurance and redistribution practices have coevolved with strong norms of sharing that lead participants to split their endowment equally more often. People who are more materially insecure ought to have greater demand for informal insurance and thus stronger sharing norms.

Problems of moral hazard and adverse selection are more acute in cities relative to villages,

where participating individuals live in close proximity and thus the costs of monitoring are low. Organizations that require frequent in-person contact provide one solution to these problems, enabling their members to provide credit and help insure one another against negative consumption shocks. Scholars have noted a number of organizations that foster informal insurance, such as trade unions (Roth, 2001) and burial societies (Dercon et al., 2008). Perhaps the most commonly cited such organizations are churches and other religious communities (Berman, 2000; Dekker, 2004; Karlan, 2005; Cassar et al., 2007; Dehejia et al., 2007; Barr et al., 2008; Wydick et al., 2011; Erlbeck, 2017). On a theoretical level, churches facilitate informal insurance in several ways. Berman (2000) argues that the high costs of participation established by churches are mechanisms to screen out free riders. Frequent public prayer facilitates monitoring to reduce moral hazard (Dehejia et al., 2007). A number of empirical studies have documented a positive relationship between mutual lending/insurance and church membership in experimental (Karlan, 2005; Cassar et al., 2007; Barr et al., 2008) and observational (Dekker, 2004; Dehejia et al., 2007; Wydick et al., 2011) data.

Churches are a salient aspect of social life in Kananga: 94% of the population report being Christian, and 90% report participating in communal religious ceremonies at least once per week (with 67% participating more than once per week). Anecdotally, most people openly report their church as the most important social network to which they belong outside of their family. They also report frequently supporting, and being supporting by, other adherents: 41% reported providing monetary or in-kind support, while 32% reported receiving support in the past six months. Concerning the role of participation norms in mitigating adverse selection and moral hazard, it is worth noting that pentecostal churches — those studied in this paper — in particular require that their adherents devote considerable amounts of time, with public prayer typically at least once per day and in most cases multiple times per day. Indeed, among the born-again individuals in the current sample, 69% report attending church multiple times per day. Such high participation costs may facilitate informal insurance among the network of believers.

Given the apparent importance of churches as redistributive networks in the literature and anecdotally among individuals in Kananga, we might then expect more materially insecure individuals to participate more in public rituals. To examine this, I consider an index (*Public devotion*) of two survey questions asking respondents, respectively, how often they pray at church and how often they participate in other public rituals. Figure 4 demonstrates that highly insecure individuals do appear to participate more in public religious ceremonies. Although participation in public rituals is flat over most of the insecurity index, at high levels of insecurity, it increases sharply. Table 3 summarizes regressions testing these relationships formally. The linear relationship between the insecurity index and participation in public rituals is positive in slope but not statistically significant. This relationship becomes larger in magnitude and marginally significant when you include a quadratic term to model the nonlinearity seen in Figure 4. Moreover, regressing *Public devotion* on an indicator for highly insecure individuals picks up the sharp uptick at the right tail of the distribution: above-median insecurity individuals are 0.53 standard deviations more engaged in public Christian ceremonies.

Are materially insecure individuals participating more in public rituals because they seek
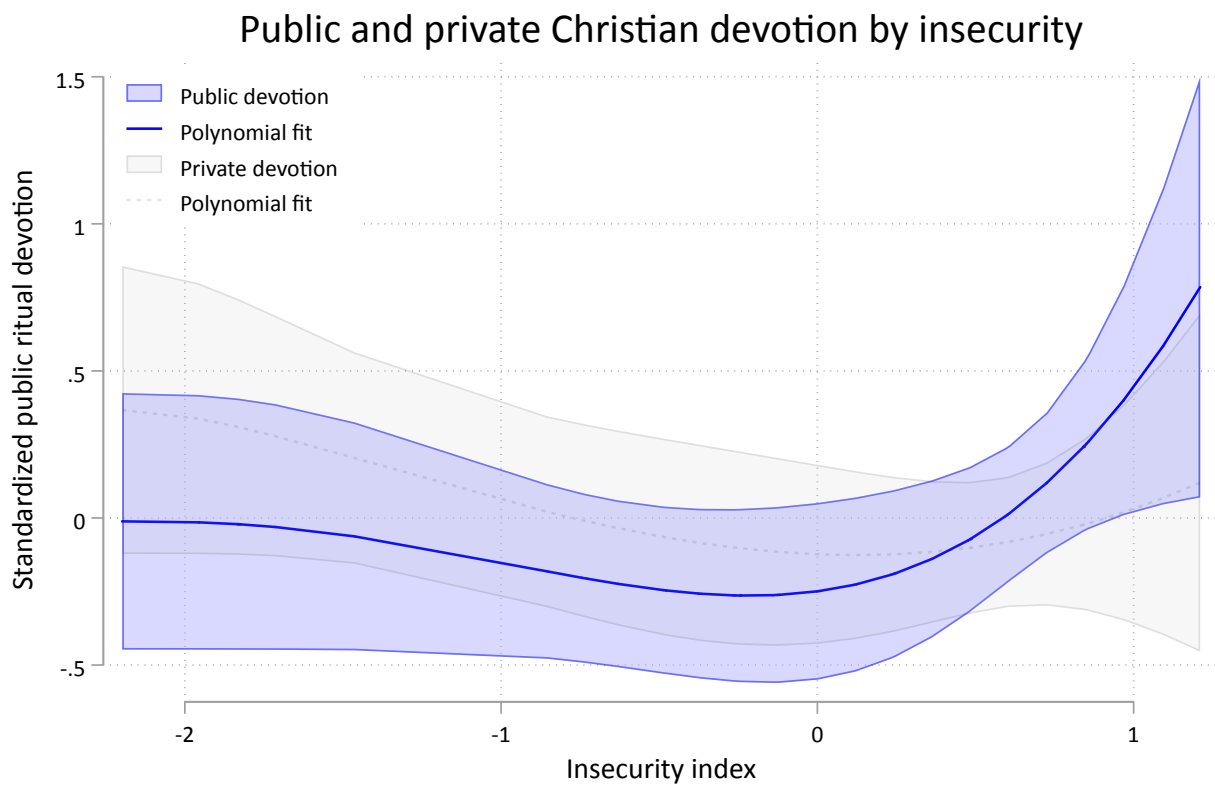
Figure 4: Participation in public and private Christian rituals by material insecurity.

Table 3: Insecurity correlated with public but not private Christian devotion

	Public devotion			Private devotion		
	(1)	(2)	(3)	(4)	(5)	(6)
Insecurity index	0.114	0.243*		-0.113	-0.042	
	(0.080)	(0.128)		(0.077)	(0.182)	
Insecurity squared		0.115			0.063	
		(0.101)			(0.132)	
High insecurity			0.530***			0.183
			(0.186)			(0.193)
Covariates	Yes	Yes	Yes	Yes	Yes	Yes
Observations	111	111	111	111	111	111
R^2	0.036	0.046	0.090	0.042	0.044	0.037
Outcome Mean	-0.000	-0.000	-0.000	0.000	0.000	0.000

Standard errors clustered by participant. $^*p < 0.1,^{**}p < 0.05,^{***}p < 0.01$

access to church redistributive networks, as suggested above, or because they actually have stronger faith? One source of evidence comes from considering instead of public devotion, individuals' *private* devotion. Specifically, I examine an index of two survey questions that ask respondents how often they think of the Christian god, and how often they worry what the Christian god thinks about them. There is no corresponding relationship between material insecurity and private devotion (also shown in Figure 4 and Table 3). The divergent relationships for public and private devotion are consistent with materially insecure individuals participating in public ceremonies to gain access to insurance provided by church networks.

Survey evidence about the content of respondents' religious beliefs reinforces this interpretation. Specifically, in Table 4, I examine three indices capturing the strength of respondents' beliefs in a moral high god: *God cares about what I do* is composed of questions concerning whether the Christian god cares about various aspects of individual behavior; *God intervenes in our world*, of questions about the Christian god's ability and engagement in human affairs; and *God punishes those who sin*, of questions about how likely it is the Christian god will punish people for various 'bad' behaviors.[10] Consistent with the results in examining private Christian devotion, materially insecure individuals do not appear to hold stronger beliefs on any of these three dimensions. Interestingly, they are substantially *less* likely to report that the Christian god actively intervenes in human affairs. This fact, not surprising given their manifest feeling of uncertainty and vulnerability, makes it particularly difficult to believe that materially insecure people are showing up more to church due to stronger beliefs. Rather, instead of hoping for divine intervention, these individuals are more likely to take matters into their own hands by showing up in person and building a network of friends and fellow adherents in Kananga who might be able to assist them in difficult times.

Materially insecure individuals are thus more likely to exhibit altruistic and fair behavior in behavioral games, and they are more likely to attend public Christian rituals. But are these

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[10]Detailed variable descriptions are contained in the appendix.

Table 4: Insecurity not correlated with stronger beliefs in moral high god

	God cares about what I do (1)	God intervenes in our world (2)	God punishes those who sin (3)
High insecurity	0.022	-0.603***	-0.071
	(0.231)	(0.193)	(0.191)
Covariates	Yes	Yes	Yes
Observations	111	111	111
R^2	0.014	0.115	0.013
Outcome Mean	-0.000	-0.000	0.000

Standard errors clustered by participant. $^*p < 0.1,$ $^{**}p < 0.05,$ $^{***}p < 0.01$

two observations related?

A first form of evidence on the link between prosociality, material insecurity, and participation in public religious ceremonies comes from simply binning material insecurity and public devotion into above- and below-median groups and analyzing dictator giving across these four cells. If fairness norms associated with church-based informal insurance networks explain the higher levels of prosociality observed among materially insecure individuals in Kananga, then above-median individuals in insecurity *and* in public devotion ought to be giving the most in the dictator game. In other words, we would expect a positive interaction effect between material insecurity and public devotion. Figure 5 demonstrates this positive interaction: giving is highest among high-insecurity individuals who frequently engage in public religious ceremonies. The same relationship holds if we consider only equal allocations in the dictator game (Figure 14).

Another source of evidence on this question exploits the different priming conditions in the dictator game. As noted above, individuals played with primes about Christianity, ancestral spirits, secular authority, or flowers (neutral). If the strong fairness norms we observe from game play is linked to elevated church attendance, one would expect materially insecure people to give differentially more when primed with Christianity relative to the other primes. Figure 6 corroborates this supposition. The largest gap in giving among above- and below-median insecurity individual in fact occurs when primed with a picture of the Christian Bible. High-insecurity individuals give 433 CF on average, while low-insecurity individuals give 292 CF. This difference is statistically significant at the 5% level. Although high-insecurity individuals give more than low-insecurity individuals under the other prime conditions, the differences are never statistically significant.

That the effect of material insecurity on dictator-game giving is more pronounced in the Bible prime condition suggests this relationship is mediated by religious factors. Thinking of their church after viewing the Bible prime, individuals are more likely to make an even split of their endowment. Although this priming effect could reflect church teachings about fairness and 'loving one's neighbor,' this interpretation appears less likely given the lack of association between materially insecure individuals and Christian beliefs. More likely, then, the Bible prime makes participants think of the redistributive aspect of their church
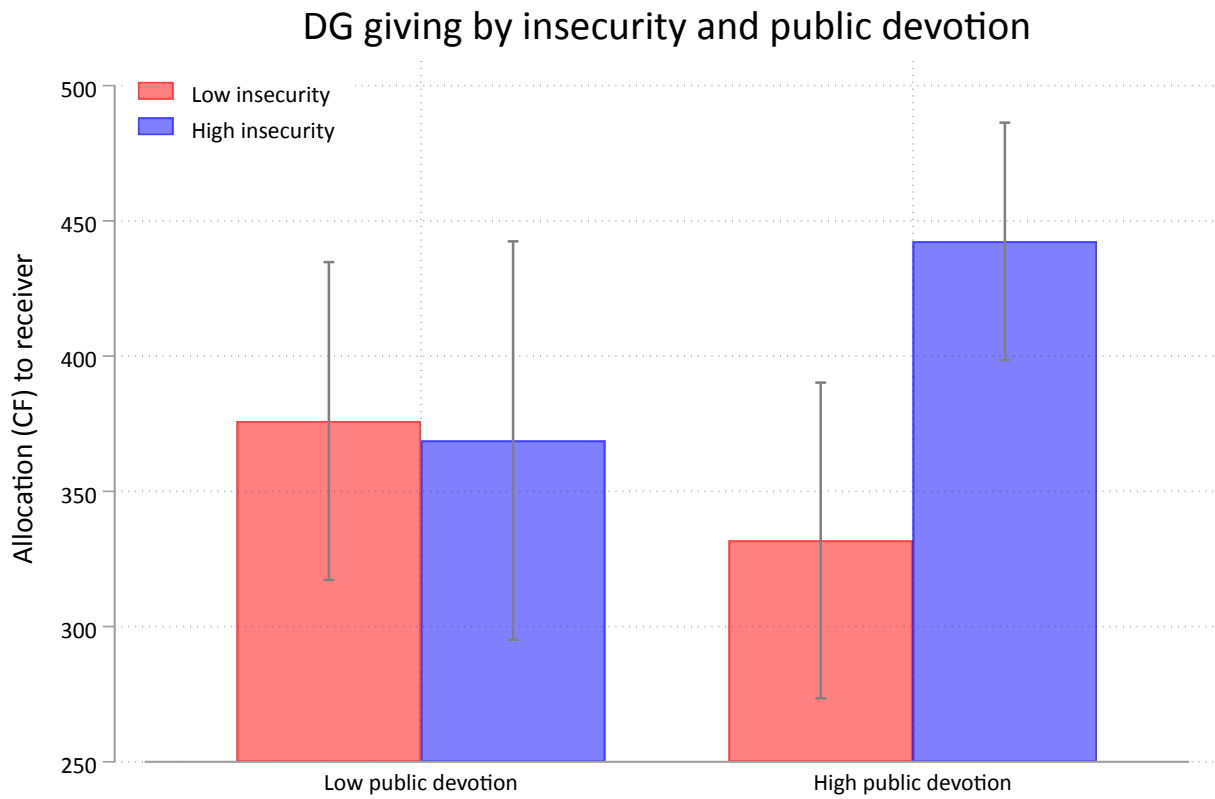
Figure 5: Dictator game allocations by above- and below-median material insecurity, disaggregated by public religious devotion.
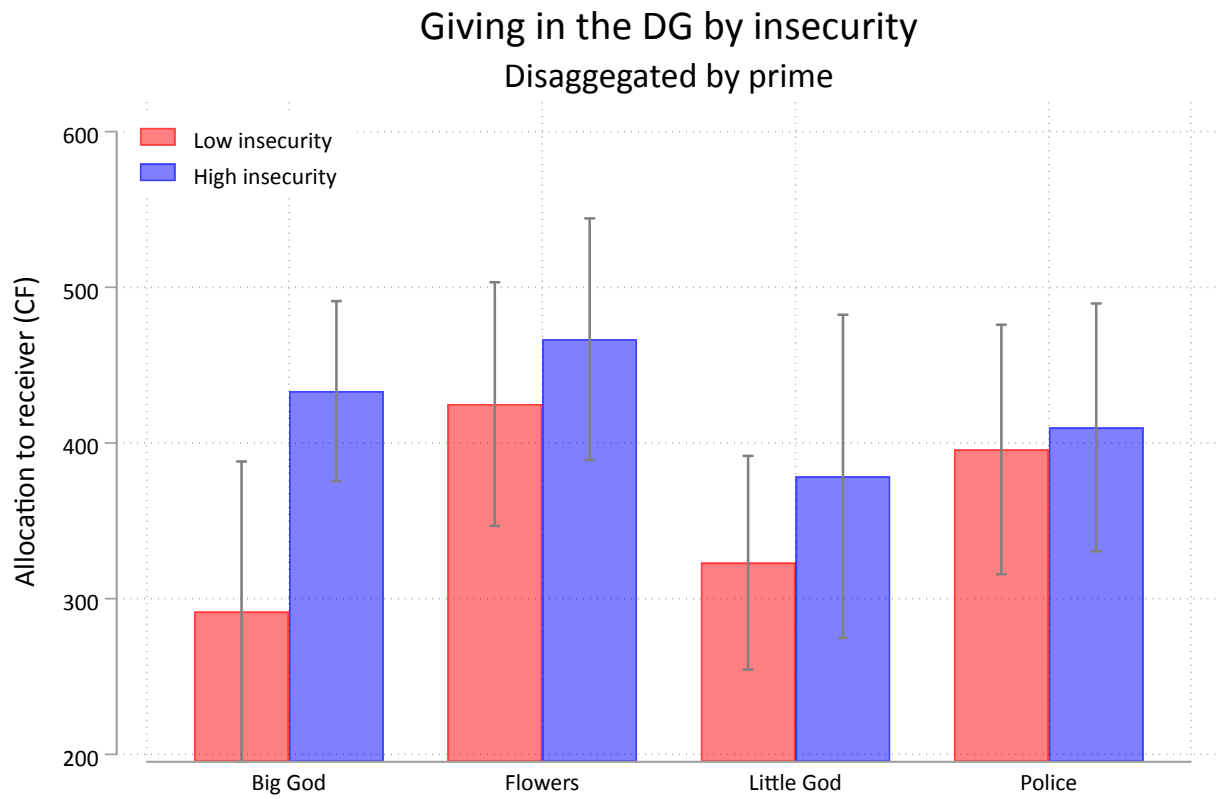
Figure 6: Dictator game allocations by above- and below-median material insecurity, disaggegated by four prime conditions.

community, activating the associated sharing norm, and leading them to contribute more money in the dictator game.

Another form of evidence comes from examining participants' responses to an 'exit question' posed to participants just after playing the dictator game. Enumerators asked respondents "What did the game remind you of in real life?" If norms of sharing are stronger among those with less security about future consumption, then they should be more likely to use sharing language in answers to this question. Figure 6 shows the ten most frequent words used to answer this question for below- and above-median insecurity individuals.[11] The word 'share' is used by 16% of low-insecurity respondents and 11% of high-insecurity respondents. To test if this difference is statistically significant, I define an indicator, *Sharing words mentioned*, for respondents who use any of the following words in response to the dictator game exit question: 'sharing,' 'share,' 'generosity,' 'greed,' 'social,' 'help,' 'mutual,' or 'support.' Second, I define a stricter indicator that equals 1 only if respondents used 'sharing' or 'share.' As shown in Table 5, there are no meaningful differences between above- and below-median insecurity individuals in the use of these sharing words.[12]

One word that does appear more often among high-insecurity types is 'money.' While 42% percent of high-insecurity participants used this word, the word does not even figure in the top-ten list for low-insecurity participants. 'Wealth' is the closest analog, appearing among 3% of participants. The fifth and sixth columns of Table 5 confirm that this difference is highly statistically significant. This observation reinforces that high-insecurity individuals took the game seriously. The economic consequences of their decision — how much money they take home — appear to have been salient among this materially insecure subgroup.

That money would be more salient (or "top of mind") to materially insecure individuals is consistent with a growing body of evidence about the effects of poverty on psychology (Mani et al., 2013; Mullainathan and Shafir, 2013). However, it is not obvious why such cognitive constraints could explain the altruistic behavior observed in the dictator game. Although the literature is mixed, most studies find that ego-depletion is associated with more selfish behavior in the dictator game (Achtziger et al., 2015), the opposite of what we observe in this setting.[13]

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[11]I excluded articles, pronouns, and conjunctions from this list.

[12]I also examine responses to an open-ended "free-list" question asking respondents to "list up to 5 behaviors that make someone a good/virtuous/moral person" and "up to 5 behaviors that make a bad/immoral person." Under the insurance norm explanation, one would expect materially insecure people to be more likely to use words about sharing when describing a 'good' or 'bad' person. I thus code an indicator variable, *Free list question*, that equals 1 if a respondent used any of the aforementioned words. As shown in Figure 9, there are no discernible differences between the words used by low- and high-insecurity individuals.

[13]One could argue perhaps that 50-50 is a simple rule of thumb and thus less cognitively demanding to follow in making an allocation decision in the dictator game. However, it is not clear why 50-50 would be a more natural rule of thumb than 100-0, which would also be more highly desirable for individuals in a state of material insecurity, as suggested by previous experimental studies (Achtziger et al., 2015).

Table 5: DG exit question analysis

	Sharing words mentioned		"Share" mentioned		"Money" mentioned	
	(1)	(2)	(3)	(4)	(5)	(6)
Insecurity index	-0.001		0.017		0.137***	
	(0.033)		(0.029)		(0.034)	
High insecurity		-0.049		-0.033		0.392***
		(0.066)		(0.065)		(0.073)
Covariates	Yes	Yes	Yes	Yes	Yes	Yes
Observations	111	111	111	111	111	111
R^2	0.047	0.052	0.044	0.044	0.128	0.233
Outcome Mean	0.153	0.153	0.144	0.144	0.216	0.216

Robust standard errors. $^*p < 0.1,^{**}p < 0.05,^{***}p < 0.01$

Table 6: Dictator game exit question analysis by material insecurity

Low insecurity			High insecurity		
Word	Count	Proportion	Word	Count	Proportion
game	46	0.79	game	25	0.47
share	9	0.16	money	22	0.42
six	7	0.12	dice	8	0.15
foreigner	6	0.1	share	6	0.11
dice	6	0.1	foreigner	5	0.09
cards	5	0.09	love	3	0.06
love	5	0.09	six	2	0.04
lottery	2	0.03	others	2	0.04
others	2	0.03	giving	1	0.02
wealth	2	0.03	lottery	1	0.02

5 Conclusion

This paper documented a positive relationship between material insecurity and prosociality in the dictator game. More insecure individuals were particularly more likely to divide money evenly between themselves and the anonymous recipient. I argue that this reflects strong sharing norms associated with church-based informal insurance networks. These findings are preliminary and suggestive at best due to the small sample size and lack of pre-registered hypotheses. Further research is needed to explore the generalizability of these findings.

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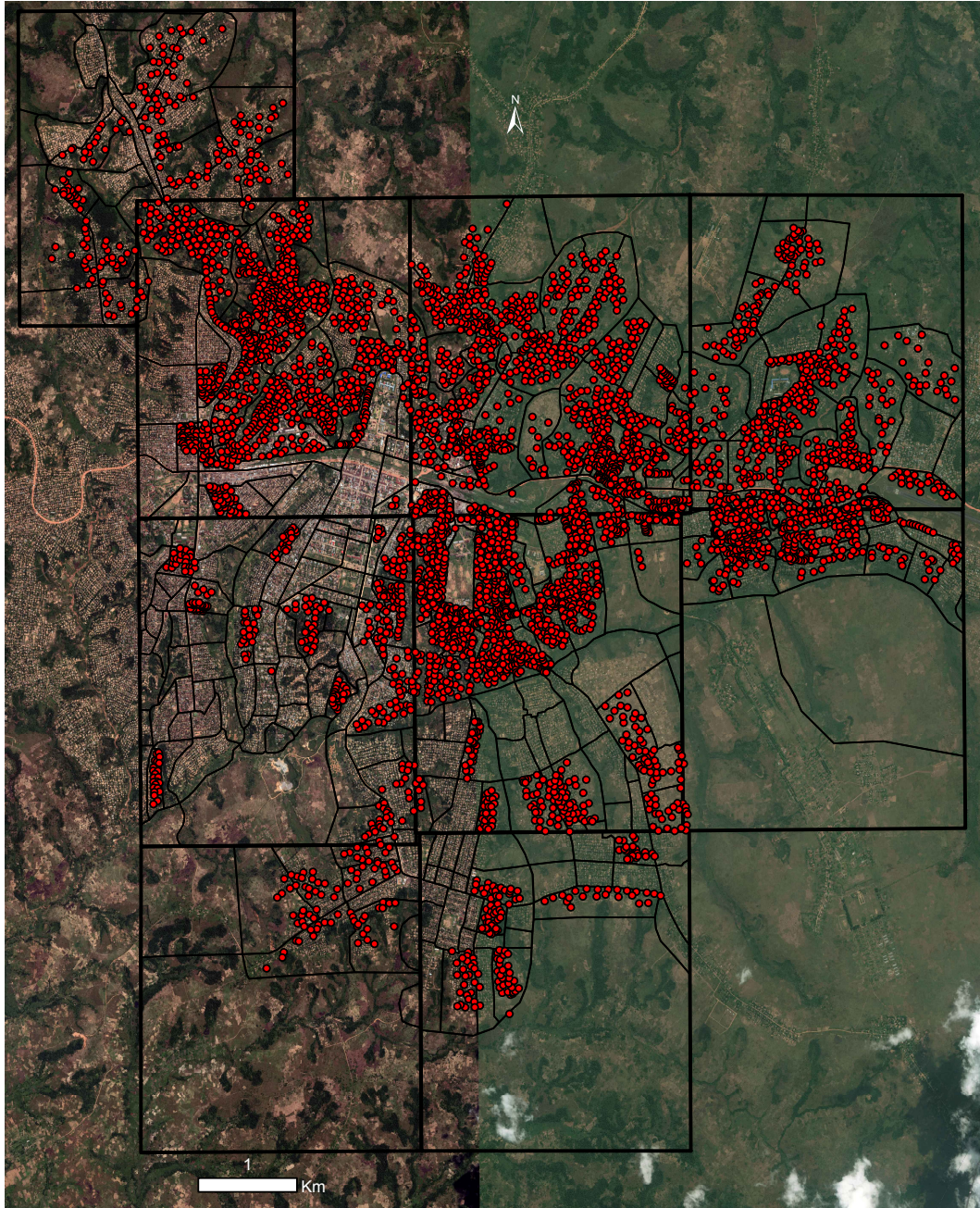
6 Appendix

Figure 7: Satellite map of Kananga partitioned into polygons showing household locations for the full random sample in Lowes et al. (2017).

Figure 8: The experimental set up: labs in the field

Figure 9: Prime images (printed on towels, on which the game protocols were explained).

Table 7: Summary statistics

	Mean	SD	Min	Max	N
Full screening sample					
Age	41.89	17.66	18	96	3097
Female	0.475	0.499	0	1	3097
Born outside of Kananga	0.649	0.477	0	1	3097
Years of education	10.09	3.130	2	19	2987
Unemployed	0.418	0.493	0	1	3087
Christian	0.941	0.235	0	1	3097
Born-again Christian (Pentecostal)	0.563	0.496	0	1	3097
Catholic	0.220	0.414	0	1	3097
Protestant	0.124	0.330	0	1	3097
Ethnically Luluwa	0.589	0.492	0	1	3097
This project subsample					
Age	37.41	13.99	19	87	111
Female	0.658	0.477	0	1	111
Born outside of Kananga	0.486	0.502	0	1	111
Years of education	9.495	3.560	0	19	111
Unemployed	0.523	0.502	0	1	111
Percentage of life spent in city or town	0.705	0.303	0.0333	1	111
Size of household (# family members)	7.243	3.254	1	16	111
Number of children	4.423	3.112	0	13	111
Household daily income (USD)	0.736	1.266	0	7.002	111
Market integration	0.412	0.487	0	1	111

Notes: summary statistics from screening survey and from sub-sample analyzed in this paper.

6.1 Variable descriptions

All index variables were constructed using the following procedure. First, I coded each of the component variables to be increasing in the same direction and standardized them (divided by the mean, divided by the standard deviation). Second, I took the sum of all component variables. Third, I standardized the resulting synthetic variable. The exact question text for each of sub-questions composing the indices used in the analysis can be found below. Responses are either binary yes-no (indicated as 1-0), Likert style (indicated as 1-5, e.g.), or integers.

Insecurity index

- Do you worry that in the next month your household will have a time when it is not able to buy or produce enough food to eat? (0-1)

- How certain are you that you will be able to buy or produce enough food to eat in the next month? (1-5)

- Do you worry that in the next six months your household will have a time when it is not able to buy or produce enough food to eat? (0-1)

- How certain are you that you will be able to buy or produce enough food to eat in the next six months? (1-5)

- Do you worry that in the next year your household will have a time when it is not able to buy or produce enough food to eat? (0-1)

- How certain are you that you will be able to buy or produce enough food to eat in the next year? (1-5)

- Do you worry that in the next five years your household will have a time when it is not able to buy or produce enough food to eat? (0-1)

- How certain are you that you will be able to buy or produce enough food to eat in the next five years? (1-5)

Income

- What is the annual income from wage work? (integer)

- What is the annual income from trade (re-selling products)? (integer)

- What is the annual income from selling goods produced at home? (integer)

- What is the annual income from rental properties that you own? (integer)

- What is the annual income from black market trade? (integer)

- What is the annual income from remittances? (integer)

Wealth

- Do you own rental properties? If so, how much money does this asset earn you each year? (integer)

- Do you own farm equipment (tractors, plows, mills, generators)? If you wanted to sell this good/these goods in the market, how much would they sell for? (integer)

- Do you own boats? If you wanted to sell this good/these goods in the market, how much would they sell for? (integer)

- Do you own sewing machines? If you wanted to sell this good/these goods in the market, how much would they sell for? (integer)

- Do you own any commercial vehicles (truck, motorbike, pushcart, bicycle)? If you wanted to sell this good/these goods in the market, how much would they sell for? (integer)

- Do you own a bank account? If so, how much money does this asset earn you each year? (integer)

- Do you own a shop? If so, how much money does this asset earn you each year? (integer)

- Do you own agricultural property? If so, how much money does this asset earn you

each year? (integer)

- Do you own any birds, goats, pigs, cows, sheep, dogs, or fish ponds? If you wanted to sell all of these animals in the market, how much would they cost? (integer)

- Do you own any firearms? If you wanted to sell this item/these items in the market, how much would they sell for? (integer)

- Do you have any other assets from which you earn money? If so, how much money does this asset earn you each year? (integer)

High god belief

- Does the Christian god already punish people for their behavior? (0-1)

- How often does the Christian god punish people for stealing?

- How important is it to the Christian god to punish thieves

- How often does the Christian god punish people for lying

- How important is it to the Christian god to punish liars.

- How often does the Christian god punish people for murder?

- How important is it to the Christian god to punish murderers

- Can the Christian god see in the hearts of people or know their thoughts and feelings? (0-1)

- Can the Christian god see what people do if they are far away in Kinshasa? (0-1)

- How often does the Christian god help people in their lives or recompense them for good behavior?

- Can the Christian god influence what happens to people after they die?

- Does the Christian god care how people treat strangers? (0-1)

- Does the Christian god care how people treat other people who do rituals for the Christian god?

- Does the Christian god care if people do certain rituals? (0-1)

- Does the Christian god care about the fact that some people have more money and food than others? (0-1)

High god devotion

- How often do you pray? (1-5)

- How often do you participate in rituals or ceremonies to the Christian god? (1-5)

- How often do you think of the Christian god? (1-5)

- How often do you worry about what the Christian god thinks of your subject? (1-5)
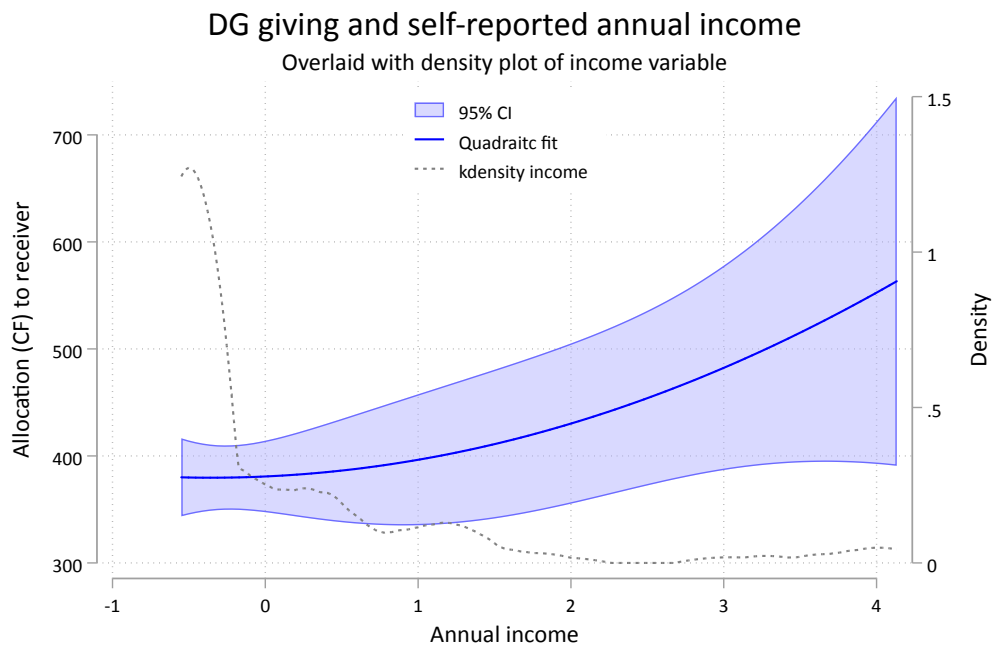
6.2 Robustness tables

Figure 10: Quadratic fit of relationship between dictator game giving and annual income, overlaid with density of income variable.
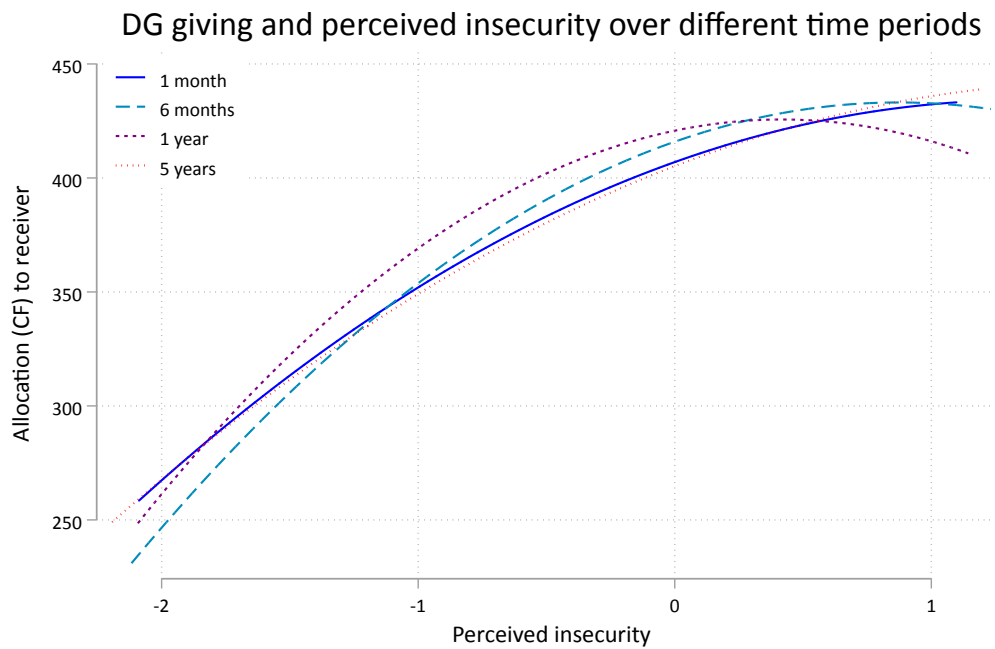

Figure 11: Quadratic fit of relationship between dictator game giving and perceived insecurity over different time periods.
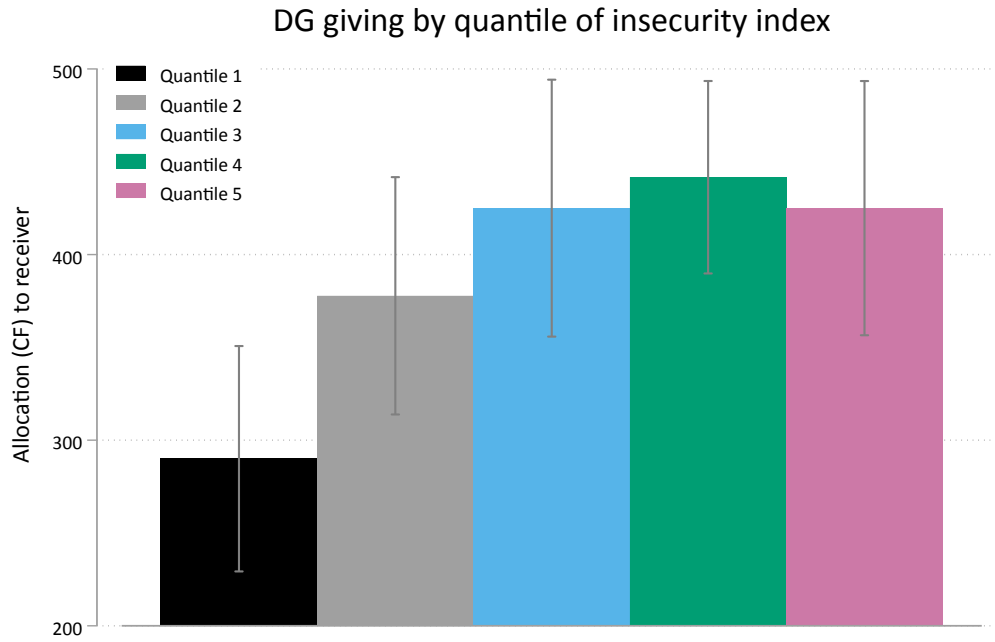
Figure 12: Average dictator game allocations to the receiver by quantile of the insecurity index.
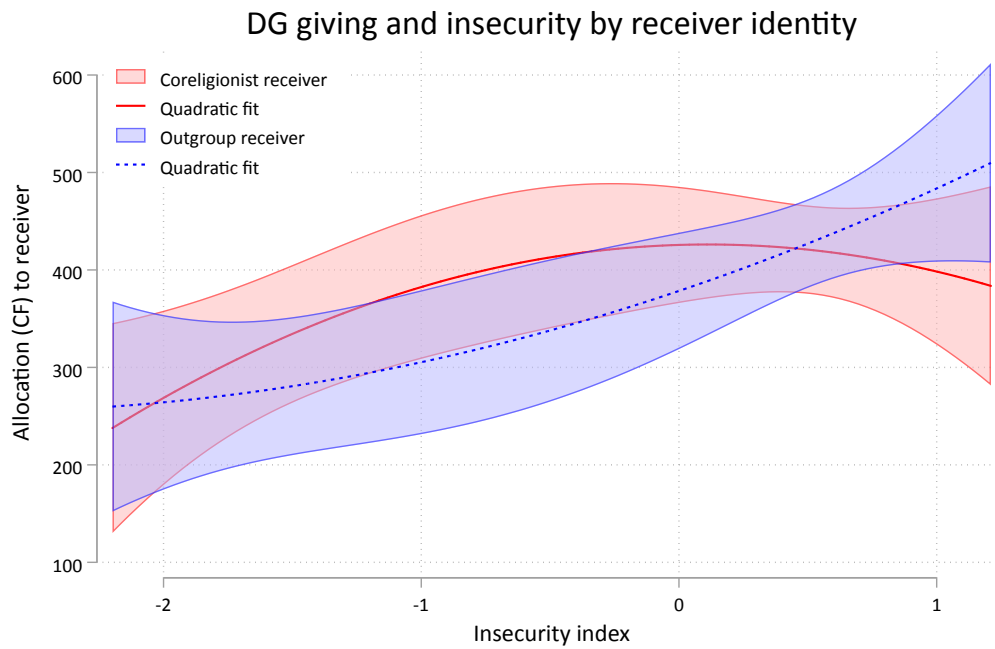

Figure 13: Quadratic fit of relationship between dictator game giving and insecurity in rounds with a coreligionist (red) and out-group (blue) receiver.
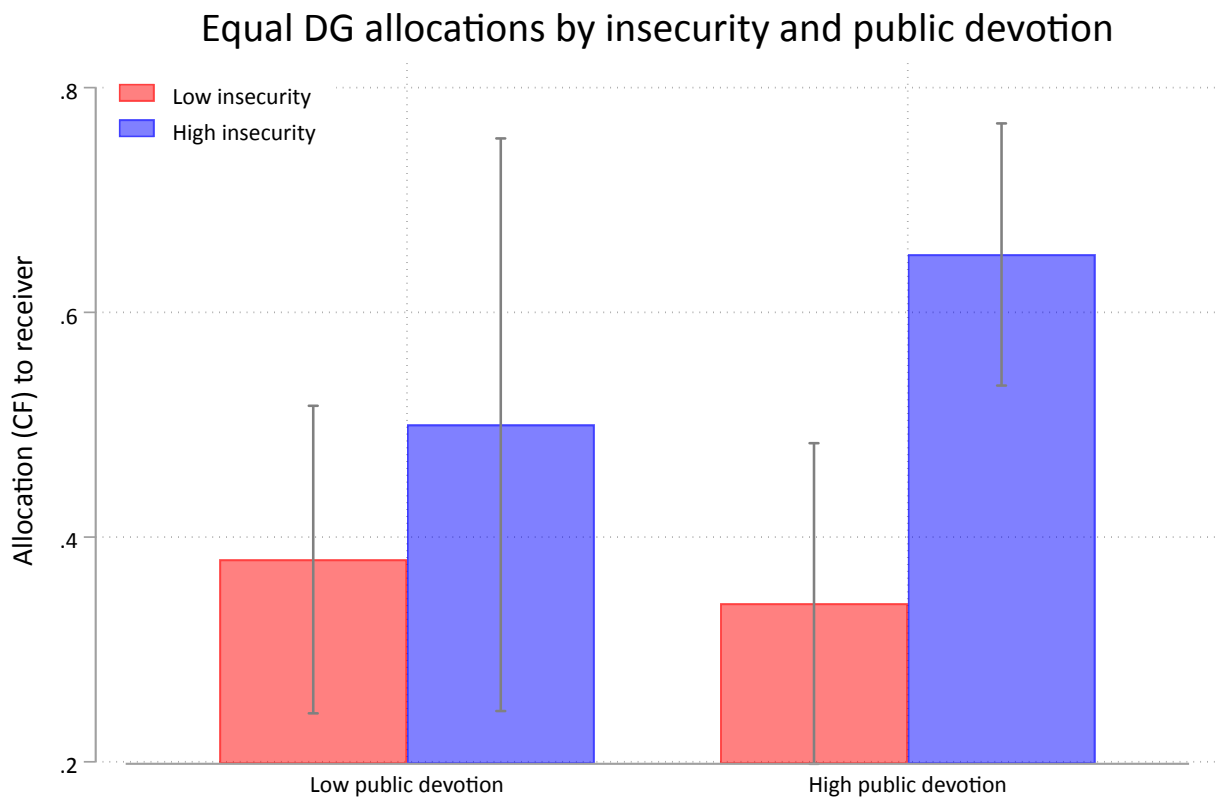
Figure 14: Equal allocations in the DG by above- and below-median material insecurity, disaggregated by public religious devotion.

Table 8: Robustness checks

	Allocation to receiver (Dictator game)			Made equal allocation (Dictator game)		
	(1)	(2)	(3)	(4)	(5)	(6)
Insecurity index	67.220***	59.708***	60.446***	0.129**	0.135***	0.131***
	(18.590)	(16.331)	(17.354)	(0.051)	(0.043)	(0.042)
Test questions correct	9.881			-0.016		
	(17.026)			(0.054)		
Education level	4.647			-0.002		
	(6.678)			(0.020)		
Game 2 dummy	3.409	3.409	3.409	-0.080*	-0.080*	-0.080*
	(21.154)	(21.154)	(21.154)	(0.044)	(0.044)	(0.044)
Years in Kananga		1.208			0.000	
		(1.995)			(0.005)	
Born in Kananga		-29.482			-0.034	
		(40.369)			(0.113)	
Number of children			-1.949			0.020
			(9.956)			(0.028)
Household size			5.685			-0.019
			(9.709)			(0.026)
Covariates	Yes	Yes	Yes	Yes	Yes	Yes
Observations	176	176	176	176	176	176
R^2	0.114	0.114	0.112	0.108	0.108	0.113
Outcome Mean	389.205	389.205	389.205	0.483	0.483	0.483

Standard errors clustered by participant. $^*p < 0.1,^{**}p < 0.05,^{***}p < 0.01$

Table 9: Freelist about 'good' person analysis by material insecurity

Low insecurity			High insecurity		
Word	Count	Proportion	Word	Count	Proportion
love	29	0.5	love	26	0.49
patience	17	0.29	know	24	0.45
truth	17	0.29	patience	12	0.23
humility	16	0.28	humility	10	0.19
know	15	0.26	kindness	8	0.15
joy	14	0.24	compassion	8	0.15
solidarity	13	0.22	joy	7	0.13
kindness	11	0.19	honesty	7	0.13
respect	10	0.17	respect	6	0.11
brotherhood	10	0.17	truth	5	0.09