



Co-Ethnic And Neighborhood Ties And Financial Social Capital Formation Among The Urban Poor In Kenya

By: Hye-Sung Kim

Abstract

Objective: Lacking access to formal institutions, the poor in developing countries often use informal savings groups to financially prepare for unexpected events. They often base these groups on social ties to reduce risks, which occur when group members do not make payments. This study examines whether Kenya's urban poor rely on social ties, such as co-ethnicity and co-residency, when forming informal savings groups. Methods: This study uses list experiments on a sample of informal settlement residents in and around Nairobi. Results: Approximately 28.7 percent and 17.5 percent of respondents would consider someone outside their ethnic group or informal settlement as a member of an informal savings group, respectively. Most respondents were reluctant to accept members without social ties, with greater reluctance against those outside the settlement. Conclusions: Kenya's urban poor rely primarily on co-residents for financial security, which elevates risk as they experience shocks simultaneously and cannot help one another.

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Co-Ethnic and Neighborhood Ties and Financial Social Capital Formation Among the Urban Poor in Kenya

Hye-Sung Kim , *Winthrop University*

Objective. Lacking access to formal institutions, the poor in developing countries often use informal savings groups to financially prepare for unexpected events. They often base these groups on social ties to reduce risks, which occur when group members do not make payments. This study examines whether Kenya's urban poor rely on social ties, such as co-ethnicity and co-residency, when forming informal savings groups. *Methods.* This study uses list experiments on a sample of informal settlement residents in and around Nairobi. *Results.* Approximately 28.7 percent and 17.5 percent of respondents would consider someone outside their ethnic group or informal settlement as a member of an informal savings group, respectively. Most respondents were reluctant to accept members without social ties, with greater reluctance against those outside the settlement. *Conclusions.* Kenya's urban poor rely primarily on co-residents for financial security, which elevates risk as they experience shocks simultaneously and cannot help one another.

In poor developing countries where access to formal savings and credit institutions is limited, individuals rely on various forms of social capital to prepare for unexpected events. In Sub-Saharan African countries (SSAs), informal savings institutions, such as rotating savings and credit associations (ROSCA), are the most common form of social capital, with the purpose of providing self-help in case of financial emergency (Banerjee and Duflo, 2011). Individuals in poverty are also known to rely on social networks, including kin and co-ethnics, in the case of income shocks (Di Falco et al., 2018). However, rapid urbanization and rural to urban migration in Sub-Saharan Africa have changed the familial and social structures that have been viewed as the bases of social capital formation (Bourdieu, 1997; Coleman, 1990, 1991; Putnam, 1995, 2000). Currently, 40 percent of SSAs' population lives in urban areas. Over 60 percent of the urban population lives in informal settlements, also known as slums, facing extreme poverty (U.N. Habitat, 2016). This study focuses on these growing urban poor communities in informal settlements and examines whether social ties still play crucial roles in successful social capital formation as they use informal savings groups as a measure of financial social capital.

The study sample comes from Kenya, where approximately 30 percent of the total population lives in urban areas, and about 60 percent of urban population lives in informal settlements, according to World Bank Open data. Similar to other SSAs, the majority of the Kenyan population participates in a ROSCA as a savings mechanism, while few use formal banks to save (Dupas et al., 2012). Kenya is a network-based society, just like many other SSAs. Using Kenya as a test case, this study examines how social ties, particularly co-ethnicity and co-residency, affect the urban informal settlement residents' preferences when selecting members of their informal savings groups. It draws a sample from five

informal settlements in and on the outskirts of Nairobi, Kenya's capital city. To examine the effects of co-ethnicity and co-residency on people's preferences on whom to include in informal savings groups, I conducted list experiments on an informal settlement sample of 3,547 respondents aged 18 or above.

The results show that the majority of residents in the five informal settlements prefer people from the same ethnic group over those from different ethnic groups and people from the same informal settlement over those from outside it. The study also finds that informal settlement residents, on average, are even more reluctant to form an informal savings group with those outside their informal settlement than with non-co-ethnics. Such preferences are concerning because uncertain events such as flood, fire, or eviction can affect entire neighborhoods, reducing neighbors' ability to help one another and increasing their vulnerability. In this article, I argue that in order for the urban poor living in informal settlements to mitigate the vulnerability they face, they need to rely more on "bridging social capital" (Putnam, 1995, 2000) across informal settlements to access more resources and opportunities in times of need. In addition, policymakers should reduce barriers to formal savings and credit institutions for the urban poor, so they can avoid default risks from participating in informal savings groups composed of people facing similar risks and vulnerability.

This article contributes to the literature in three areas. First, it adds to the literature on informal savings institutions in SSAs by examining urban poor participation in informal savings groups. Although extant literature examines participation in informal savings groups, the majority of these studies focus on the behavior of the rural poor (Fafchamps and La Ferrara, 2012), including those focused on the role of social ties in informal savings groups (Di Falco and Bulte, 2011; Udry, 1990; Fafchamps, 1992). Even though ethnic and kinship ties in urban areas can be less dense than in rural areas, the findings of this study demonstrate the importance of social ties in forming social capital even among the urban poor, suggesting the persistent influence of social networks as SSAs urbanize. Second, the study contributes to social capital literature by examining the mainstream theories of social capital, such as those of Bourdieu (1997), Coleman (1990, 1991), and Putnam (1995, 2000), in the context of the growing urban informal settlement population in SSAs, where mainstream social capital theories are rarely applied and empirically tested. This study bridges the gap between social capital literature and urban informal settlement literature in SSAs. Third, this study contributes empirically to the literature on informal savings groups by using list experiments to lessen social desirability bias in examining informal settlement residents' preferences for whom they want to form financial social capital. To the best of my knowledge, the literature on informal savings groups has not yet utilized list experiments.

The remainder of the article is organized as follows. Next, I discuss the literature connecting social ties and informal savings groups in SSAs. Then, I discuss major social capital theories and how these theories can be applied to the studies of informal savings groups among the urban informal settlement residents in SSAs. Then, I present the research design and describe the enumeration areas, which include five urban informal settlements in Kenya, the sampling methods, and experimental designs. Next, I discuss the findings from the empirical analyses as well as robustness checks. Finally, I discuss the limitations of the study and conclude the article.

Social Ties and Informal Savings Groups

Savings allow people to increase their future wealth and protection in case of future emergencies or large consumption needs (Banerjee and Duflo, 2011). In the context of developing countries, including many SSAs, informal savings mechanisms, including

ROSCAs, have been popular because formal savings institutions, such as banks, are associated with costly transaction fees or are unavailable (Dupas et al., 2012). The prevalence of informal savings mechanisms in SSAs has led scholars to study the motivations for and determinants of participating in ROSCAs (Dagnelie and Lemay-Boucher, 2012; Gugerty, 2007). As SSAs are network-based societies, scholarship has examined the link between social ties and the formation and sustainability of ROSCAs. For example, based on a study conducted in rural Cameroon, Van den Brink and Chavas (1997) found that the informal institutions of strong kinship and ethnic affiliation provide several effective mechanisms to reduce the risks of ROSCAs, including social sanctioning whereby social pressure can impose substantial costs on participants who fail to make repayments because their reputations as defaulters will limit their future opportunities.

ROSCAs are also a common savings mechanism in urban areas in SSAs, and some evidence suggests social networks are influential in forming urban-area ROSCAs as well. For example, in their data from Kenya's informal settlement, Kibera, Anderson and Baland (2002) found that approximately 37 percent of ROSCAs consist of members with the same ethnicity. Anderson and Baland show a statistically significant effect of respondents' ethnicities on their participation in ROSCAs and suggest that individuals tend to participate more in ROSCAs if other members share the same ethnic identity. Using a sample of individuals from urban Ethiopia, Kedir and Ibrahim (2011) examined the determinants of ROSCA participation and the amount of contribution to ROSCAs. While they found that individual characteristics such as income levels, gender, and occupations were important determinants of both ROSCA participation and contribution amounts, they also recognized that some ROSCAs in Ethiopia are formed around the same gender, religion, or ethnic groups.

Other studies provide suggestive evidence for the importance of another social tie, sharing a residential area, in forming ROSCAs among urban informal settlement residents. For example, one of the findings by Anderson and Baland (2002) is that the longer individuals have lived in Kibera, the more likely they are to participate in a ROSCA in Kibera, as they developed more trust for their neighbors. Anderson, Baland, and Moene (2009) also found that people are more likely to start a fixed-order ROSCA—a predominant form of ROSCA in their sample area—in the same neighborhood than across different neighborhoods. These findings indicate that living in the same informal settlement is an important basis of ROSCA formation among the urban poor in Kenya.

Informal Savings Group as Measure of Social Capital

Mainstream social capital theories show that family-based social ties are critical in the formation and persistence of social capital (Bourdieu, 1997; Coleman, 1990, 1991; Putnam, 1995, 2000). They also provide important implications of social structural changes, such as urbanization in SSAs, to different types of social capital. By social capital, scholars refer to the “networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit” (Putnam, 1995:67). Using this definition, informal savings groups are social capital because they are based on social networks in which norms of reciprocal financial contribution and trust among members determine successful collective action through coordination and cooperation. However, very little research on informal savings institutions in SSAs examines them in the context of social capital. Below, I apply the implications of main social capital theories to informal savings groups in SSAs to understand the role of different social ties, particularly co-ethnicity and co-residency, in an informal settlement in the success of informal savings groups.

Coleman (1990, 1991) views social capital as built on two types of social organizations. One is primordial and spontaneous organizations, and the other is socially constructed organizations for a specific purpose. The former includes family, kin, clan, and ethnic groups, whose sustainability is based on intrinsic relationships. Constructed social organizations, on the other hand, are organized with a certain purpose. Their sustainability is extrinsic, as it depends on external factors, such as monitoring and sanctioning. Coleman (1990, 1991) also views the former type as eroding over time with urbanization, leading to a rise in the latter type. Because many people living in Kenya's urban informal settlements are recent migrants who have left their family kin and ethnic groups in their hometowns, applying Coleman's framework allows us to predict that the need to form a purposive, socially constructed organization that provides collective goods rather than to rely on primordial and spontaneous organizations has grown. For example, the Kenyan federation of slum dwellers (Muungano wa Wanavijiji) is an example of socially constructive organizations built on the purpose of developing and upgrading impoverished Kenyan urban slums, operating through 30 regional networks across 14 counties in Kenya.

Putnam (2000) also makes an important distinction between types of social capital: bonding versus bridging. Bonding social capital is based on social ties between people who share similar characteristics, such as ethnic groups, religious groups, kin, and clans, while bridging social capital is based on ties across different groups. Although ethnic groups and shared neighborhoods are examples of bonding social capital, co-residency in an informal settlement can also be considered a bridging social capital because the membership is "across" different ethnic or other social groups within each settlement. In Putnam's (2000) view, access to opportunities and resources increases through bridging social capital rather than through bonding social capital. As co-residency has an element of bridging social capital, applying Putnam's theory to social capital formation in Kenya's urban informal settlement suggests that social capital based on co-residency may provide opportunities and resources to the urban poor who belong to the group if it bridges different homogeneous groups.

As a key to successful collective action, Putnam (1995, 2000) points to the density of social capital because the denser a social capital's network is, the easier it will be to create norms of reciprocity and social trust, contributing to coordination and communication among the members in the network. For example, a dense social capital creates an effective enforcement mechanism because the reputation of a member's action can have a higher impact on consequences in a dense network than in a loose network. Kenya's urban informal settlements have extremely dense structures due to the concentrated living arrangements. Due to the high density of social networks among people living in the same informal settlement and the fact that co-residency can bridge traditional social ties, applying Putnam's theory (1995, 2000) to Kenya's informal settlements leads us to predict the strengthening of co-residency in an informal settlement's social capital formation.

Coleman's (1990, 1991) idea that primordial ties, such as ethnic groups, will erode while socially constructive, purposive social organizations will rise and Putnam's (2000) view that the network density determines successful collective action leads us to expect (a) weak ethnic group ties in forming ROSCAs, (b) strong "co-residency in a same informal settlement" ties among informal settlement residents, and (c) stronger "co-residency in a same informal settlement" ties than ethnic ties. Therefore, the following testable hypotheses on individual preferences regarding others' ethnicity (Hypothesis 1), residency in the same informal settlement (Hypothesis 2) as member of their ROSCA, and the comparison between them (Hypotheses 3) are generated:

Hypothesis 1: Urban informal settlement residents in Kenya will be indifferent toward someone outside of their ethnic group as a ROSCA member compared to their co-ethnics.

Hypothesis 2: Urban informal settlement residents in Kenya will be less likely to consider someone outside of their informal settlement as a ROSCA member than someone from their informal settlement.

Hypothesis 3: Kenya's urban informal settlement residents' reluctance to consider someone outside of their informal settlement as a ROSCA member will be greater than their reluctance toward someone outside of their ethnic group.

However, not all theories of social capital expect weak ethnic ties among urban informal settlement residents.¹ For example, Bourdieu (1997) views the persistence of social capital to be determined by the instrumental role of social capital. Traditional and family-based social ties can be strengthened when they are more useful to people, which suggests that rapid urban migration and the consequent disconnect between migrants and their family members in SSAs would lead to a greater need for individuals to connect to their social ties for access to resources and opportunities. Therefore, social capital based on such close social ties, such as ethnic groups, will not only be sustained, but also strengthened. Applying Bourdieu's (1997) concept to ethnic ties among informal settlement residents in Kenya would generate a contrasting prediction to Hypothesis 1, which is presented in Hypothesis 1A:

Hypothesis 1A: Urban informal settlement residents in Kenya will be less likely to consider someone outside of their ethnic group as a ROSCA member than one of their co-ethnics.

Research Design

To test these hypotheses, I estimated the extent to which the respondents living in Kenya's urban informal settlements are reluctant to form a ROSCA with someone from outside their ethnic group or informal settlement by using list experiments. In contrast to traditional survey research methods, where sensitive questions are asked directly and respondents may not want to reveal their true views or actions out of fear that their response will be perceived negatively by others, list experiments use indirect survey techniques for sensitive issues. They can mitigate social desirability bias in measuring sensitive views or actions (Blair, Imai, and Lyall, 2014). In political science literature, list experiments have been employed to induce responses to sensitive questions regarding ethnic and racial issues when asking about them directly might be perceived as too sensitive or presuming one's prejudice (Kuklinski et al., 1997). Other studies use list experiments to investigate what could be perceived as illegal or unacceptable behavior, such as whether people have accepted vote-buying offers (Gonzalez-Ocantos et al., 2012; Kramon, 2016) or supported militant groups (Blair, Imai, and Lyall, 2014).

In Sub-Saharan Africa, questions about ethnic preferences could be perceived as sensitive, and people's answers are likely to be affected by social desirability bias (Carlson, 2015). This concern is applicable in Kenya, where intergroup biases, such as tribalism, have been blamed for the electoral violence that has affected much of the country. As tribalism and

¹ Beyond informal savings groups, extant literature has also examined how ethnic heterogeneity affects social capital. For example, some studies find a negative correlation between ethnic diversity and social capital in the United States (Alesina and La Ferrara, 2000; Rupasingha, Goetz, and Freshwater, 2006; Putnam, 2007), while others find a positive correlation (Wang and Ganapati, 2018).

regional favoritism are politically salient, survey respondents in Kenya are unlikely to reveal directly whether they tend to show preference toward co-ethnics or people in their social networks, such as neighbors. Postelectoral ethnic violence has occurred more frequently in informal settlements than in formal areas, suggesting sensitivity toward what may appear as ethnic favoritism or in-group as opposed to out-group biases among informal settlement residents. Moreover, respondents could feel uncomfortable answering questions regarding their savings, income, and assets, further justifying the use of list experiments. The fact that informal settlement residents are sensitive to these questions was discovered from focus group interviews conducted in the Mukuru kwa Ruben settlement before the survey was launched to aid in experiment design.²

Enumeration Area

The enumeration area of this study included four informal settlements (Riara, Mukuru Kwa Ruben, Mukuru Kwa Njenga, and Viwandani) from Nairobi county, all of which are part of an umbrella “Mukuru” informal settlement located in Nairobi’s industrial zone, and one informal settlement (Kiandutu) from Kiambu county, neighboring Nairobi. As one of Nairobi’s largest informal settlements out of 150 settlements, Mukuru is an important informal settlement to study. Additionally, the informal settlements, Mukuru Kwa Ruben, Mukuru Kwa Njenga, and Viwandani, included in this study were declared a Special Planning Area by the Nairobi County Executive Committee, and therefore were selected as an enumeration area for this study due to their importance. Riara, also called “School Equipment Production Unit” (SEPU) of the Ministry of Education, is located on a parcel of public land in Mukuru Kwa Njenga that is part of the Special Planning Area. Because of Riara’s distinct purpose, however, this study treats Riara as a separate enumeration area from the rest of Mukuru Kwa Njenga. The Mukuru informal settlement goes back to 1958, when farm laborers of the land owned by white settlers started occupying the land as the white settlers left. Due to the area’s proximity to an industrial area, urban laborers looking for temporary housings migrated into Mukuru (Corburn et al., 2017). Riara’s settlement, however, began in the 1990s (Nyambuga, Vianello, and Wairutu, 2015). The Special Planning Area’s population is approximately 300,000, according to the 2017 estimate (Corburn et al., 2017).

Kiandutu is one of the largest informal settlements in Thika town of Kiambu county with a population over 13,000, according to a 2013 estimate (Mbilo and Ngau, 2013). Kiandutu was included in this study’s enumeration area as a comparison to Mukuru from Nairobi county. Kiandutu’s settlement began in 1969, when the white settlers owning the land surrendered it to their farm workers, who then created a cooperative society. The government bought the land from the cooperative society, but some farmers, believing that the compensation was too small, refused to leave the land, causing tension between the government and its residents. In 2007, Kiandutu was categorized as a slum (informal settlement) by the National Rainbow Coalition (NARC) (Mbilo and Ngau, 2013).

²Two focus group interviews were conducted on June 18, 2016 at the Ruben Centre in Mukuru kwa Ruben settlement, each of which consisted of seven male and eight female respondents. The interviews were conducted in Swahili and led by an experienced focus-group facilitator. The purpose of the interviews was to build hypotheses and inform the survey and experimental design. Participants said that informal settlements residents are not likely to reveal information truthfully about their income, savings, assets, and financial behaviors, and they are likely to “under-report” their assets, incomes, and savings in order to avoid letting others know they can be a source of help in case of financial distress.

Sampling

Field research to collect data took place in August 2016. A multi-stage, stratified random sampling was used, and the data were collected through person-to-person interviews. We used each of five informal settlements as a stratum in a stratified random sampling. In the first stage of sampling, within each informal settlement using the settlement's master frame that included all structures (types of buildings in informal settlements where multiple households live), the structures to be interviewed were randomly selected and interviewers were sent to the preselected structure.³ In the second stage of the sampling, each surveyor followed a random walk and skip pattern to randomly select households to interview. At each sampled household, a household roster was created to include all members of the household, age 18 or above, who were present at the time of interview. In the last stage of sampling, one person was randomly selected as a survey respondent from the household roster.⁴ A total of 3,547 respondents from Kenya's five urban informal settlements (Riara, Mukuru Kwa Ruben, Mukuru Kwa Njenga, and Viwandani, and Kiandutu) were interviewed. The margin of error of this survey in five informal settlements was approximately ± 1.645 percent at the 95 percent confidence level.

List Experiments

Two list experiments were embedded in a public opinion survey.⁵ The experiments provided respondents with a list of items or actions, and the respondents are asked to count the number of items with which they agree or disagree, rather than to select a certain item directly. The inclusion of items on the list was randomized between a treatment and control group. The list of items for a control group only included nonsensitive items, while the treatment list included a sensitive item, which was added to the same nonsensitive items listed in the control condition. The average impact of the treatment, or the sensitive information provided, on respondents' actions or views was then estimated by a simple difference-of-means between the counted numbers from the control and treatment conditions. This estimate showed an unbiased estimate of the proportion of study population selecting the sensitive item if two conditions hold: (a) if respondents count all items including the sensitive item truthfully, and (b) if adding a sensitive item to the list does not affect how respondents evaluate and count the other nonsensitive items (Blair, Imai, and Lyall, 2014; Glynn, 2013.)

In this study, two list experiments were designed to examine the extent to which the urban poor will rely on their close social networks when forming a ROSCA. One experiment sought to understand whether and to what extent respondents show hesitation to include someone from outside of their ethnic group in their ROSCA. Another experiment sought to understand whether respondents living in the informal settlement areas are hesitant to include someone from outside of their informal settlement in their

³I thank Muungano Wa Wanavijiji and Slum Dwellers International for the household mapping and master frame creation for each settlement.

⁴All survey instruments, including experiments, were programmed in a survey software and loaded on a tablet computer. A survey enumerator read all descriptions, questions, and answer choices to respondents as they appeared on the tablet screen and entered the responses directly into a tablet computer.

⁵The survey included questions on socioeconomic status, living conditions, access to services and infrastructure, sources of income, vulnerability to and coping strategies for shocks, saving and financial behaviors, access to financial services, and financial behavior, such as risk mitigation. Only 48 percent of our sample's respondents from the five informal settlements responded that they have a bank account, whereas 36 percent of the respondents indicated that they save through participating in informal savings groups.

ROSCA. In the former, an individual *from outside of the respondent's ethnic group* was the sensitive item among the list of individuals with different attributes, while in the latter, a person *from outside of the respondent's informal settlement area* was the sensitive item among the member attributes in the list. For both list experiments, each respondent was randomly presented with either a control condition with four nonsensitive items or a treatment condition with four nonsensitive items and one sensitive item.⁶

The list experiment on co-ethnicity asked the respondents to count how many of the listed individuals they wanted to participate in their ROSCA. The exact wording of the question read, "I will read a short description of four individuals. Please tell me how many of them you would consider having in your *Chama* group." *Chama* is a common term referring to an informal savings group or ROSCA in Kenya. The control condition had four types of nonsensitive items describing individuals, including a person with formal employment, a person with a criminal record, a person of a different gender, and a landowner. The treatment condition had five types of individuals, which included the four control items and the sensitive item, a person from a different ethnic group (tribe).

Similarly, the list experiment on informal settlement co-residents asked the respondents to count how many of the listed individuals they would like to participate in their informal savings group. The control condition had four nonsensitive items describing types of individuals: a person of a different gender, a person without formal employment, a person from one's church, and a person living in one's informal settlement. The treatment condition added one additional type of individual to the same list, namely, a person living outside of the respondent's informal settlement. Unlike ethnic preferences, extant literature has not identified whether a person prefers co-residents to those living elsewhere as sensitive information subject to social desirability bias. However, asking about those who are not co-residents could generate another in-group/out-group distinction that might raise discrimination concerns similar to ethnicity distinctions. Furthermore, informal settlements are very densely populated and feature tight social networks. Hence, informal settlement residents may not want to reveal their openness to an "outsider."

Results

Balance Between Control and Treatment Conditions

Table 1 shows the balance tests between control and treatment groups for both experiments using pretreatment covariates. Achieving a balance between the control and treatment conditions was important to ensure that the randomization of treatment assignment removed any systematic difference between the two groups. Panel A shows that, for all pretreatment variables presented in the table, balance was achieved in the list experiment where a non-co-ethnic member was the sensitive item. Panel B shows that in all but one (*Saving method (ROSCA)*) of the pretreatment variables, the balance between the treatment and control conditions was achieved in the second list experiment where a non-co-resident was the sensitive item.⁷ The results suggest that overall randomization ensured the balance of pretreatment variables between treatment and control conditions in both experiments.

Table 2 shows the extent of floor and ceiling effects, which can be problematic for list experiment designs (Glynn, 2013; Kramon, 2016). Floor and ceiling effects occur when none

⁶The randomization was preprogrammed into software.

⁷In an additional empirical analysis of the list experiment with the non-co-resident as the sensitive item, *Saving method (ROSCA)* was controlled for as a robustness check. The list estimate and statistical significance remained almost identical.

TABLE 1
Balance Tests

A: Balance Test with Non-Co-Ethnic as a Sensitive Item								
Variable	Control			Treatment			Difference-of-Means	
	Observation	Mean	SD	Observation	Mean	SD	Difference	SE
Age	1,782	28.69	9.68	1,765	28.36	9.22	0.33	(0.32)
Gender	1,782	0.42	0.49	1,765	0.40	0.49	0.02	(0.02)
Own bank account	1,782	0.49	0.50	1,765	0.47	0.50	0.02	(0.02)
Took out loan	1,782	0.25	0.43	1,765	0.25	0.44	0	(0.01)
ROSCA membership	1,761	0.38	0.48	1,749	0.36	0.48	0.02	(0.02)
Saving method (ROSCA)	1,782	0.02	0.14	1,765	0.02	0.13	0	(0.00)

B: Balance Test with Non-Co-Resident of Informal Settlement as a Sensitive Item								
Variable	Control			Treatment			Difference-of-Means	
	Observation	Mean	SD	Observation	Mean	SD	Difference	SE
Age	1,749	28.56	9.47	1,798	28.55	9.44	0.01	(0.32)
Gender	1,749	0.41	0.49	1,798	0.40	0.49	0.01	(0.02)
Own bank account	1,749	0.48	0.50	1,798	0.48	0.50	0	(0.02)
Took out loan	1,749	0.25	0.44	1,798	0.25	0.43	0	(0.01)
ROSCA membership	1,733	0.36	0.48	1,777	0.37	0.48	-0.01	(0.02)
Saving method (ROSCA)	1,749	0.01	0.12	1,798	0.02	0.14	-0.01**	(0.00)

NOTE: Standard errors in parentheses; Age: The respondent's age; Gender: male = 0; female = 1; Own bank account: whether the respondent owns a bank account (1 = yes; 0 = no); Took out loan: whether the respondent has ever taken out a loan (1 = yes, 0 = no); ROSCA membership: whether the respondent is currently a member of a ROSCA (1 = yes, 0 = no); Saving method (ROSCA): whether the respondent chooses a ROSCA among the 12 methods presented as the best method to prevent spending a large sum of money; *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

of the items are applicable to most participants or all of them are applicable to most participants, respectively. These effects are concerning, if present, because the respondents assigned to a treatment condition could find that their response to the sensitive item directly identified their answer choice. For example, if a respondent in the treatment group chose none of the items, then the respondent's denial of the sensitive item would be identified. Similarly, if a respondent thought that all of the nonsensitive items were applicable along with the sensitive item, it would identify that the respondent chose the sensitive item as an answer.

Panel A shows the extent of floor and ceiling effects in the list experiment that included non-co-ethnic as a sensitive item. Less than 11 percent of the participants in the control group selected none of the four individuals on the list to be considered for membership in their ROSCAs, which indicates the extent of the floor effects. Ceiling effects were much less concerning, as only 2.33 percent of the control group respondents found all four of

TABLE 2
The Distribution of the List Experiment

A: Non-Co-Ethnic as a Sensitive Item				
Response	Control		Treatment	
	Frequency	Percentage	Frequency	Percentage
0	195	10.90	183	10.37
1	890	49.94	772	43.74
2	401	22.50	358	20.28
3	254	14.25	239	13.54
4	42	2.36	166	9.41
5			47	2.66
Total	1,782		1,765	

B: Non-Co-Resident of Informal Settlement as a Sensitive Item				
Response	Control		Treatment	
	Frequency	Percentage	Frequency	Percentage
0	111	6.35	130	7.23
1	823	47.06	722	40.16
2	479	27.39	494	27.47
3	215	12.29	272	15.13
4	121	6.92	120	6.67
5			60	3.34
Total	1,749		1,798	

the items to be applicable, while less than 3 percent of the treatment group respondents answered that all five items were applicable.

Panel B shows the extent of floor and ceiling effects in the list experiment that included non-co-residents as a sensitive item. Somewhat lower floor effects but higher ceiling effects were present in this experiment compared to the prior experiment. Approximately 6.35 percent of participants in the control group selected none of the four individuals on the list to be considered for membership in their ROSCAs (floor effects). In terms of ceiling effects, 6.92 percent of the control group respondents selected all four of the individuals, while approximately 3.34 percent of the treatment group respondents selected all five individuals.

The Effects of Social Ties on Informal Savings Group Formation

Table 3 presents the main results from the list experiment. In Panel A, someone outside the respondent's ethnic group is a sensitive item. The table presents the difference-of-means estimate for the counts in the control and treatment groups, showing the proportion of the study population who would consider a non-co-ethnic as a member of one's ROSCA. The results suggest that approximately 28.7 percent of the respondents would consider a non-co-ethnic as a member of their ROSCA, leaving 71.3 percent who would not consider a member across ethnic lines.

As for the list experiment using the non-co-resident as a sensitive item, shown in Panel B, the estimate suggests that only 17.5 percent of informal settlement residents would consider (hence, 82.5 percent would not consider) someone living outside of their informal settlement as a member of their ROSCA. Comparing the two experimental

TABLE 3
List Estimates

A: Non-Co-Ethnic as a Sensitive Item		
Control Mean	Treatment Mean	Difference of Means Estimate (T – C)
1.471 N = 1,782	1.759 N = 1,765	0.287*** (0.037)
B: Non-Co-Resident as a Sensitive Item		
Control Mean	Treatment Mean	Difference of Means Estimate (T – C)
1.663 N = 1,749	1.839 N = 1,798	0.175*** (0.037)
C: Non-Co-Ethnic as a Sensitive Item by Treatment Assignments of Previous Experiment		
Variables	Estimate	
Current T	0.314*** (0.053)	
Former T	0.044 (0.052)	
Current T × Former T	-0.052 (0.074)	
Constant	1.448*** (0.038)	

NOTE: N = 3,547; standard error in parentheses; *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$.

results shows that the informal settlement residents were generally quite reluctant to allow people outside of their close, informal networks to become members of their ROSCAs. Successful saving outcomes depend on all members committing consistent contributions to the collective savings. Notably, the urban informal settlement residents in Kenya seemed more opposed to people outside of their informal settlement than to those outside their ethnic group when considering them as potential members of their ROSCAs.

The results confirmed Hypotheses 1A, 2, and 3 among the sample of five informal settlements in Kenya, while Hypothesis 1 was not confirmed. Overall, among the informal settlement residents of five informal settlements in Kenya, both social ties, co-ethnicity and co-residency, were important in increasing financial social capital in the form of informal savings institutions. Residency in the same informal settlement, which can be viewed as a purposive, socially constructed social organization (Coleman, 1990, 1991) with a dense network (Putnam, 1995, 2000), was found to be a stronger basis of financial social capital than ethnic group. Although co-residency was found to be a strong basis of ROSCA formation and a stronger basis than co-ethnicity, as expected in Hypotheses 2 and 3, co-ethnicity was still found to be a strong social tie around which a ROSCA is formed, which was inconsistent with Hypothesis 1 but consistent with Hypothesis 1A.

Robustness Checks

The internal validity of the results from each experiment could be violated if one experiment is affected by the other. Although randomization was conducted for each of the two experiments independently and accurately (see supplementary Appendix Table 2 for the list experiments design check), there remained a possibility that the second experiment could be influenced by the respondent's experience of the first experiment

because respondents from informal settlements received both experiments. For example, if respondents received the four-item interview (control) for the first experiment and then the five-item interview (treatment) for the second experiment or vice versa, the respondent may have felt primed to answer a certain way in the second experiment. To address this concern, I checked whether the results for the second experiment were conditional on the assigned condition of the first experiment.⁸ Note that the experiment with residence outside of the respondent's informal settlement as a sensitive item was conducted before the experiment with differing ethnicity was conducted.

Panel C of Table 3 presents the results from the robustness check, a regression on the number of items respondents selected in the second experiment (with ethnicity as the sensitive item) with the treatment assignment (*Current T* denotes the treatment condition if 1 and the control condition if 0), a treatment assignment of the previous experiment (*Former T* denotes the treatment condition if 1 and the control condition if 0), and their interaction terms as independent variables. The coefficient for the variable *Former T*, 0.044, is statistically insignificant, suggesting that the estimated average number of items selected in the controlled condition in the current experiment remained the same, regardless of the treatment assignment of the previous experiment. Similarly, the coefficient for the interaction term *Current T* × *Former T*, -0.052, is statistically insignificant, indicating that the estimated average number of items selected in the treatment condition in the current experiment remained the same, regardless of the treatment assignment of the previous experiment. Therefore, I conclude that the results for the second experiment are not affected by the treatment assignment of the first experiment.

Discussion

Formal Versus Informal Settlements

Although this article has focused only on the sample of five informal settlements' residents in Kenya, the experiment on ethnicity as a variable in potential membership in one's ROSCA was also conducted for people living in formal settlements. For the details of the sampling method for a formal settlement sample and the experimental results, see supplementary Appendix Table 3. The results show that informal settlement residents are much more reluctant to consider allowing a non-co-ethnic in their ROSCA than those living in formal settlements are. While approximately 29 percent of informal settlement residents would consider a non-co-ethnic as a member of their ROSCA, approximately 50 percent of those living in formal settlements would consider a non-co-ethnic as a member of their ROSCA. Comparing the list experiment results between informal and formal settlement samples shows the informal settlement residents' stronger reliance on primordial ethnic ties when forming a ROSCA than formal settlement residents. This confirms the argument that the poor and vulnerable population relies on traditional social ties.

Behavioral and Policy Implications

The respondents' significant dependence on social networks formed by co-ethnics, especially those living in the same informal settlement, is concerning because people in

⁸I thank the anonymous reviewer for suggesting this robustness check.

the same informal settlement are often affected by the same shocks or risks. This shared exposure and impact reduce their ability to help each other when in need. In terms of behavioral implications, a bonding capital across one's informal settlement, as Putnam (2000) would argue, would help urban informal settlement residents increase access to resources and opportunities by lowering the risk shared disaster experience among people in their social capital group. As for policy implications, the results from this study point to reducing the barriers to formal institutions among informal settlement residents. The lack of access to formal savings and credit institutions contributes to the poor and vulnerable population's dependence on informal institutions, regardless of higher default risks and vulnerability to shared disaster impact among members in their social capital group.

External Validity

Experimental research often faces the issue of external validity, which also applies to this study. As this study was based on a sample from five Kenyan urban informal settlements, one should not interpret the results to be representative of the urban poor across all SSAs, nor of the residents of all informal settlements in Kenya. However, given that rapid urbanization has resulted in an increasing population living in informal settlements across SSAs beyond Kenya and all informal settlements share similar population density, resource access, opportunity, and infrastructure challenges, I expect the importance of co-residence in social network formation is likely to be found in other SSAs beyond Kenya. Scaling up this study to apply to informal settlements across SSAs will be a fruitful research area to help us better understand the generalizability of the results from this study.

Conclusions

The mainstream theories of social capital (Bordeau, 1997; Coleman, 1990, 1991; Putnam, 1995, 2000) have discussed the importance of various social ties in achieving successful social capital outcomes. However, the literature on informal savings groups or ROSCAs has rarely applied these theories directly. In particular, the urban poor's ROSCA participation behaviors have been largely neglected when compared to the rural poor's behaviors, despite ROSCAs being critical saving and credit sources among both urban and rural poor in SSAs. This study has examined how social ties, particularly co-ethnicity and co-residency, affect financial social capital formation among Kenya's urban poor who use ROSCAs as a measure of social capital.

To this end, this study has conducted two list experiments in five informal settlements in Nairobi and Kiambu counties in Kenya. Findings from the list experiments have shown that the majority of the informal settlement residents were reluctant to form a ROSCA across ethnic and residential lines. First, the finding that 71.3 percent of respondents of this study were estimated to be unwilling to include nonethnics in their ROSCAs implies that ethnic group is still an important social network influencing the urban poor in Kenya, despite the ethnic diversity in urban areas. Second, the finding that 82.5 percent of respondents were estimated to be unwilling to include people outside their informal settlement in their ROSCAs reinforces other studies' findings that recognize that ROSCAs are normally formed among people living in the same area (Anderson, Baland, and Moene, 2009). This finding is also consistent with Coleman's (1990, 1991) implications, which predict that as the family-based social structure weakens due to urban migration, a purposive,

socially constructed social organization rises. It also somewhat aligns with Putnam's (2000) prediction of a rising need for bridging capital across traditional ties such as ethnic groups.

This study contributes to the literature on social capital and informal savings groups by uniquely showing that both primordial, bonding social capital and socially constructed, purposive, bridging social capital are influential among the urban poor in Kenya. That is, both primordial social ties (ethnic groups) and socially constructed social ties (living in a same informal settlement), using Coleman's terms (1990, 1991), and bonding (ethnic groups) and bridging (living in a same informal settlement), using Putnam's terms (2000), are important in establishing social capital for Kenya's urban informal settlement residents. Although informal settlement residents are found to rely on their co-residents more than their ethnic group when forming a ROSCA, ethnic ties still persist among Kenya's urban informal settlement residents.

One limitation of this study is that it has not identified why the urban poor prefer close social networks in forming informal savings groups. Does this imply a higher trust in people within their social network versus those without? Or, does it indicate that dense social networks allow effective sanctioning of those in the group because of more information within the network? A close examination of the reasons for the urban poor's preference toward close social ties will be a fruitful area of future research.

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Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Table A1. Descriptive Statistics of Key Pretreatment Variables

Table A2. Experimental Design

Table A3. List Estimate: Non Co-Ethnic as Member of One's ROSCA