Building Business Networks to Strengthen Refugee Economic and Social Integration

Sigrid Weber* Mae MacDonald† Adam Lichtenheld† Jessica Wolff† Alex Wendo‡
Annet Adong§ Clare Clingain¶ David Musiime¶ Andrew Zeitlin‡ Jens Hainmueller†

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Abstract

Can a targeted business intervention expand the networks of urban refugees and hosts in developing countries? And do expanded business networks foster their economic and social integration? We provide business grants and implement "networking groups" for refugee and host entrepreneurs to study the impact of business networks on business outcomes, psychological well-being, and social cohesion. We randomize 8,000 refugees and hosts from 10 nationalities into weekly networking groups in Nairobi and Kampala. The groups vary in their nationality composition and meeting setup to induce 'strong' and 'weak', and same and mixed nationality network ties. We find that the network intervention increases business ownership and collaborative behavior in business - as a core mechanism through which social networks operate. However, six months after the intervention, cash remains the critical component to increase business revenues and life satisfaction as the network intervention does not move these core outcomes beyond the impact of cash.

Note: Preliminary results from collaboration grant competition + midline

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*IE University Madrid
†Immigration Policy Lab, Stanford University
‡Georgetown University
§Makerere University
¶International Rescue Committee

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1 Introduction

More than half of the world's population of forcibly displaced people lives in urban areas (UNHCR and World Bank, 2021), predominantly in developing countries. These urban labor markets are characterized by micro-enterprises and self-employment as dominant forms of generating income (Gollin, 2008). Although refugees generally face significant obstacles to integrating into host country labor markets – typically performing worse than locals or other migrants (Brell, Dustmann and Preston, 2020; Connor, 2010; Ruiz and Vargas-Silva, 2018) – urban markets in developing countries are particularly challenging, because refugees lack the personal and professional networks to establish and sustain micro-enterprises or engage in entrepreneurial activities. The business environment relies heavily on interpersonal relationships and trust, and is characterized by various forms of informal exchange, meaning that economic activities are deeply embedded in – and shaped by – local networks that refugees and vulnerable hosts often struggle to access.

Business and social networks that provide information and facilitate collaboration can improve business success (Ashraf, Delfino and Glaeser, 2019; Asiedu et al., 2023; Blattman et al., 2016; Cai and Szeidl, 2018), facilitate labor market integration (Martén, Hainmueller and Hangartner, 2019) and enable self-reliance among displaced population (Humphrey, Krishnan and Krystalli, 2019). Networks can also help refugees confront and solve community problems (Masterson, 2024) and can forge social cohesion between displaced and host populations (Betts et al., 2023).

In collaboration with the International Rescue Committee (IRC), a global humanitarian and development organization, we investigate whether a large-scale field experiment with 8,000 participants designed to induce social networks is effective at improving livelihood outcomes and social cohesion for urban refugees and vulnerable hosts in Kampala, Uganda, and Nairobi, Kenya. We organize "networking groups" of refugee and host entrepreneurs that meet regularly to foster business networks. We experimentally vary the nationality composition and the meeting setup of these networking groups with the aim to induce

different network ties and learn about the relative effectiveness of building different kinds of networks on business success and social cohesion. All participants receive an unconditional business grant to kickstart their entrepeneurial activity.

Specifically, we aim to learn about the relative effectiveness of 'strong' vs 'weak' ties for the success of micro-businesses in urban centers (Granovetter, 1973; Gee et al., 2017; Deshpande and Khanna, 2021; Rajkumar et al., 2022) by varying whether participants meet intensively with a small group of 8 entrepreneurs or meet over 60 other entrepreneurs in rotating groups designed to allow for meaningful but less intensive interaction. As a second dimension, we vary whether respondents meet among their own nationality in homogeneous groups or meet various nationalities in heterogeneous groups. The aim is to evaluate whether co-nationality networks – that provide trust, solidarity, and knowledge of refugee/host-specific issues (Martén, Hainmueller and Hangartner, 2019; Patel and Vella, 2013; Åslund et al., 2011; Edin, Fredriksson and Åslund, 2003) – or ties to the host community and economically stronger nationalities – which may promote more investments into human capital and more upward mobility (Battisti, Peri and Romiti, 2022; Behtoui, 2008; Dagnelie, Mayda and Maystadt, 2019; Betts et al., 2023) – are more or less impactful at improving economic and social outcomes.

We benchmark the intervention (networking groups + business grant) to business grant-only recipients and a sample of participants that have not yet received cash. We collect baseline information on the socio-economic conditions and business success of all participants, and complement this information egocentric network data to trace back if and how the intervention reshapes networks. We follow up with all participants 6 and 11 months after the intervention to measure changes. In addition, we conduct qualitative interviews with a subsample and we invite all participants to submit an idea to collaborate in business and award 20 randomly selected winners with an additional grant. The collaboration proposal and survey measures of information circulation allow us to assess if networks facilitate business success through two core mechanisms: information exchange and collaborative behavior.

Our preliminary findings from the business collaboration competition and the midline suggests that the network+cash intervention succeeds at increasing the ownership of active businesses and at increasing collaborative behavior in businesses, but does not move economic performance, social cohesion, and psychological well-being beyond the impact of cash. Cash remains critical as recipients are more likely to have a business, have higher revenues, and are more satisfied in life than a control group that has not yet received cash. The increase in collaboration from the intervention is relatively uniform across different subgroups (across gender, city, refugee status).

With regards to the question of which network ties may be particularly effective, we find mixed results. Mixed nationality groups that intensively meet the same individuals do not increase collaborative behavior in businesses, potentially indicating that some shared identity is needed to build up meaningful business networks. Individuals in intensive interaction with co-nationals also tend to work more together, resulting in a higher business ownership. Further evidence comes from our behavioral collaboration competition: individuals connected through same-nationality network groups are more likely to behaviorally collaborate; that is they propose more and riskier joint business ideas to a funding competition. As a result, it appears that intensive, same-nationality interactions build up network ties more easily, increase collaboration, and hence more business ownership.

However, on the other hand, the benefit of mixed groups is that they increase trust in hosts (mixed extensive) and refugees (mixed intensive) and hence strengthen social cohesion in the midline. Mixed-nationality groups also notably increase the diversity of teams submitting collaboration ideas for funding. These mixed findings could imply that shared identities are critical to increase real-world cooperative behavior, but bringing individuals in touch with a more extensive and diverse network could overall raise the importance of collaborating in business. Hence, there might be a trade-off between facilitating collaboration, which is easier among co-nationals, and broadening the information environment of urban refugees and hosts and strengthening social cohesion.

2 Existing research on labor market interventions for refugees

Labor market interventions in *developing* countries - which provide vocational training, mentorship, wage subsidies, or job search assistance - often yield moderate impacts on employment, earnings, and other economic outcomes (McKenzie, 2017; Card, Kluve and Weber, 2018). Cash injections generally help but are not necessarily transformative. For refugees, cash interventions provide short-term humanitarian support – increasing psychological wellbeing (Siu, Sterck and Rodgers, 2023), reducing child labor and increasing school enrollment (Aygün et al., 2024) – but have more moderate effects on labor outcomes (Caria et al., 2024). Many additional programs to teach skills or match employees and employers do not consistently magnify the effects of cash in developing countries, especially relative to the costs of these programs (Blattman and Ralston, 2015; Bastagli et al., 2019; Banerjee, Karlan and Zinman, 2015).

An increasing number of studies investigate which interventions beyond cash might help *refugees* better integrate into labor markets in host countries. Lifting language barriers through language classes has proven effective in Denmark (Arendt et al., 2021) and Switzerland (Auer, 2018). Labor-intensive job search assistance for refugees in Germany (Battisti, Giesing and Laurentsyeva, 2019) and coaching in Sweden (Joona and Nekby, 2012) indicate success. Dahlberg et al. (2024) combine an intensive language training with supervised work practices for refugees in Sweden and find large positive effects on employment. However, the evaluated programs tend to be intensive in nature, requiring trained staff for language classes, one-on-one mentoring, and individualized support in job searches. Scalability in contexts with lower resources and more refugees relative to the host community may be challenging. Moreover, these studies focus on refugees in developed economies. It is unclear if results from Europe transfer to the different structural conditions of labor markets in low- and middle-income countries.

Although a number of studies show that improving the policy environment for refugees is important (e.g., Ibáñez et al., 2024; Peitz et al., 2023), few studies to date specifically

evaluate labor market interventions for refugees in developing countries. Focusing on the employer side, Loiacono and Silva-Vargas (2022) implement a randomized control trial (RCT) that matches firms in Uganda with skilled refugee workers for free for one week. Subsequently, firms in the treatment group hired three times more refugees than in the control group, but the effect was conditional on previous employer attitudes towards refugees and the match quality. Two notable studies have evaluated interventions that focus on the refugee side: Caria et al. (2024) compare a small, unconditional cash transfer to an information treatment to better signal skills to employers, and to a behavioral nudge to strengthen job search motivation for Syrian refugees in Jordan. They find that only cash meaningfully improved refugee employment, indicating that "light touch" interventions may not be sufficient to improve refugee's outcomes in developing contexts. Focusing on Nairobi and Kampala, Baseler et al. (2025) combine mentorship for refugees with a cash grant. While the mentorship model has positive effects beyond the cash for refugee men, it reduces the performance of refugee women. The study indicates that the human and social capital from mentorship has the potential to raise welfare, but further investigation is needed to fully unpack the heterogeneous effects of such interventions on refugees.

We aim to provide more systematic evidence on the question of if and how boosting social capital – through strengthened social networks – can improve economic and social outcomes for *urban refugees and hosts in developing countries*. A number of descriptive studies have already highlighted the importance of social networks for entrepreneurs, particularly in African economies (e.g., Berrou and Combarnous, 2011; Akoten and Otsuka, 2007; Brønd, 2018). For example, Cai and Szeidl (2018) organize business associations for Chinese managers for a year and find increases in firm revenues, information sharing, learning, and business partnerships as a result of expanded business networks. Self-help and microfinance groups are also often effective to increase personal efficacy and empowerment, but find mixed effects on livelihoods and poverty reduction (Brody et al., 2015; Datta, 2015; Deshpande and Khanna, 2021; Vasilaky and Leonard, 2018).

The motivation to focus on an intervention around social capital for refugees and hosts

in the urban space is three-fold. First, micro-entrepreneurship and self-employment are the dominant livelihood strategies in cities in developing countries (Gollin, 2008). The majority of urban hosts and refugees - even if they have access to formal work - engage in informal micro-enterprises (Clemens et al., 2018). To start and sustain small businesses, personal and professional networks are particularly important, especially since local markets in these contexts are characterized by small-scale and informal exchanges that rely on interpersonal relationships. Second, refugees specifically often lack the necessary social networks to find employment, identify market gaps, secure capital, and build up supply chains in their destination countries (Schuettler and Caron, 2020). Interventions focused on social networks may therefore be particularly effective at addressing refugee-specific barriers to economic and social integration (e.g., Masterson, 2024). Third, several interventions around social capital suggest that this might be a particularly beneficial strategy for vulnerable population groups, such as women, the poor or those lacking skills, because increased social capital also lifts psychological barriers and improves general well-being (e.g., positive effects for women and 'ultra poor' in Blattman et al., 2016; Asiedu et al., 2023).

3 Networks and urban refugee integration in developing countries

How can social networks improve outcomes for urban refugees and hosts in developing countries? We focus on two channels through which networks support refugee and host entrepreneurs in cities: information and collaboration.

3.1 Resolving information asymmetries

First, networks can resolve information asymmetries by providing refugee and host entrepreneurs with information about, and referrals to, suppliers, customers, and lenders that are critical in the urban context but harder to access for foreigners. Refugees may lack information because they have recently arrived in the city, their existing refugee network is disconnected from the labor market or limited to a small segment of it, they are

unfamiliar with the business environment (e.g. country-specific laws and regulations or knowledge of market gaps) or they are low-skilled and cannot apply for formal jobs. However, the information passed on through networks can also be relevant to hosts because they often move as internal migrants to the urban space for economic opportunities, requiring connections in a similar way as refugees. Many hosts also live in informal and poorer parts of the city and are hence embedded in communities removed from the profitable business environment or have small business networks. Informal information passed on through networks may fill more specific information gaps for individuals – on who is a trustworthy business partner, who is willing to work with them, and how to identify a business location or opportunity (e.g., Cai and Szeidl, 2018; Cantner, Conti and Meder, 2010) – than a general skills training or a generic information treatment about business or entrepreneurship.

3.2 Facilitating collaborative behavior

Second, networks can promote collaboration between individuals. While many refugees and hosts run small-scale individual businesses with low profit margins – such as hawking products on the street – fewer engage in business collaborations that allow them to pool resources, avoid redundancies, and potentially scale up their businesses. Collaborative behavior can take different forms such as sharing capital input and other resources (e.g. jointly using equipment and machinery with high acquisition costs or co-renting a physical space), risk-sharing (e.g., pooling profits to even out demand shocks), or co-promotion (e.g., referrals and word-of-mouth marketing). For instance, referral systems are a prevalent form of collaboration between African traders and manufacturers (Fafchamps and Minten, 1999, 2001). Joint business models and co-marketing can bring collaborative advantages by setting up businesses that are bigger in scale and potentially more resilient. Cooperation can also improve the bargaining power of disadvantaged or marginalized groups, allowing them to demand better retail prices and broker deals (Staatz, 1983; Jha, Rao and Woolcock, 2007).

3.3 Economic, social, and psychological improvements

We hence expect that expanding social networks can improve *economic outcomes* by allowing micro-entrepreneurs to make more informed decisions about their business activities, navigate local market and regulatory dynamics, and access key sources of support; and by inducing collaborative practices (e.g. business creation, business profits) that reduce slack and enable micro-entrepreneurs to better utilize factors of production (Walker et al., 2024). Following the large literature on inter-personal contact and prejudice reduction (e.g., Larson and Lewis, 2025; Burns, Corno and La Ferrara, 2015; Paluck, 2010; Rosenzweig and Zhou, 2021), we expect that social networks improve *social cohesion* (e.g. trust in other groups) by learning from other nationalities and collaboratively engage with each other. Lastly, we expect improvements in *psychological well-being* (e.g. life satisfaction, self-efficacy) for refugees and hosts with expanded networks as several studies suggest that collaboration empowers individuals (Brody et al., 2015; Datta, 2015) and increased information allows individuals to solve personal problems.

3.4 Differential impact of different network ties

In addition to evaluating the impact of building network ties generally, we explore *what kinds* of network ties may be particularly beneficial for refugees and hosts by differentiating between 'strong' and 'weak' ties (Granovetter, 1973), and heterogeneous and homogeneous nationality ties.

3.4.1 Strong vs weak ties

Strong ties refer to close connections between friends or long-term business partners that are characterized by frequent interactions and trust. In network analytics, strong ties refer to triadic closures.[1] The advantage of strong ties lies in the bonding within an individual's close-knit network that provides enough trust to enter high-risk collaborations but also

[1] Triadic closure refers to a constellation in which individual A is connected to B and C who are also connected. A, B, and C hence form a triangle.

permits individuals to credibly commit and sanction each other due to their frequent interactions and interconnectedness. Because bonding often occurs between similar individuals (e.g. friends and family members), the literature from developed countries identifies strong ties as less beneficial for job searching and identifying business opportunities because less diverse information is exchanged within the network (e.g., Rajkumar et al., 2022). At the margin, strong ties can be more valuable to get jobs that have already been identified or to close business deals (Gee et al., 2017).

The classic assumption remains that *weak ties* are more powerful in business settings. Weak ties are relationships between acquaintances and ad-hoc business partners that are less close, less frequent, and less connected to emotional intensity or trust. Weak ties facilitate bridging: they can connect an individual to another person, business, or organization to which this individual would otherwise not be disconnected. In network analytics, weak ties are identified through (local) bridges.[2] The "strength of weak ties" (Granovetter, 1973) lies in the dissemination of diverse information from beyond one's immediate social circle.

We highlight that strong and weak ties may operate differently under the different structural conditions of developing economies (see summary in Table 1). First, micro-entrepreneurs in developing countries face a substantial *mismatch between need for and demand for micro-enterprises*. For instance, a refugee with low skills may need to engage in hawking of products on the streets to earn a livelihood, but there is little demand for the products this entrepreneur can offer. Lack of demand and indivisibility in capital inputs creates a pervasive problem of slack in developing country settings, or the chronic under-utilization of capital and labor (Walker et al., 2024). In our context, there are fewer formal jobs being offered and fewer opportunities to identify financing options to grow a more sustainable business. While more information on market gaps and opportunities may still be critical, it could be the case that the competition for these opportunities is so high

[2] A bridge refers to a constellation in which person A is connected to another person C only through B and if B would be removed from the network this would separate A and B or significantly lengthen the path connecting A and C.

that strong ties are needed to get a good price from a supplier, to get somebody to vouch for you, to attract customers, or to close a deal. This speaks to the strength of strong ties at the margin and the fact that individual strong ties matter more in countries with greater income inequality (Gee et al., 2017). For instance, Loiacono and Silva Vargas (2019) report that over 67% of Ugandan firms request an introductory letter produced by the local council to attest to the trustworthiness of applicants – a letter that only 4% of refugees provide for their job applications. Here, a trusted connection to an authority through friendship or kinship ties could be more powerful.

Second, urban markets in developing countries are characterized by a high degree of *informality*, meaning that work and business opportunities emerge in decentralized and local markets rather than through an open, accessible system. This may question the external validity of research findings from developed countries, such as those on the strength of weak ties in social media networks (Rajkumar et al., 2022). For instance, Breza, Kaur and Krishnaswamy (2019) find that workers in localized markets in India and Kenya follow social norms to prevent downward pressure on wages and sanction those who accept wage cuts. This shows that workers and business owners in these contexts are not anonymous to one another and rely on their social capital. They live in close-knit communities and are dependent on each other through job referrals and informal insurance - an environment in which strong ties may be more critical than weak ties. In the intervention, we test empirically whether stronger or weaker ties are more critical by inducing intensive and less intensive interactions between entrepeneurs.

Table 1: Advantages of strong/weak ties for urban entrepeneurs in developing contexts

	Strong ties	Weak ties
Key mechanism	Bonding	Bridging
Network constellation	Triadic closure	(Local) bridges
Advantage	Overcome limited opportunities through brokerage, enforcement, referrals and trust	Overcome low-information environment through diverse connections
Intervention	Intensive interaction	Extensive interaction

3.4.2 Same vs mixed nationality ties

Urban markets in developing countries are structured by social identities - such as nationality, kinship, and gender -, which may determine who gets access to a specific job or business opportunity. This is is particularly relevant for refugees that have to navigate their lives among hosts, co-nationals and other nationalities but hosts in diverse metropolises also interact with various nationalities and self-select into identity-based networks.

There is a broader debate in the literature on whether economic ties to the host community or to co-national networks are more critical for economic outcomes. On the one hand, co-nationality networks can be important due to the pre-existing trust between co-ethnics or co-nationals that facilitates information sharing and collaboration (Martén, Hainmueller and Hangartner, 2019; Åslund et al., 2011; Edin, Fredriksson and Åslund, 2003); going back to the classic literature on "enclave economies" (Wilson and Portes, 1980). Refugees connected to their co-nationals may also receive more targeted and more relevant information from their peers than from hosts (e.g., on how to deal with nationality-specific police harassment). On the other hand, these networks between co-nationals may reduce long-term investment in human capital, create segmented markets, and result in refugees and migrants connecting each other to low-wage jobs with little protection (Battisti, Peri and Romiti, 2022; Dagnelie, Mayda and Maystadt, 2019; Roth et al., 2012). Connections to host communities could prevent this downward mobility and could grant access to more profitable networks. In addition, the large literature on contact suggests benefits from interactions between hosts and refugees for overall social cohesion (e.g., Mousa, 2020; Weiss, 2021; Scacco and Warren, 2018).

Beyond the discussion on whether to connect refugees to hosts or to their co-nationals, multi-cultural cities in developing countries also open up the question whether connections to other migrant and refugee nationalities, beyond the refugee-host binary, could be beneficial. In our contexts, for instance, it not only remains open whether a Congolese refugee should be connected to other Congolese or to Kenyan/Ugandan hosts but also whether connections to Somalis or Burundians living in Kenya/Uganda could be beneficial. Mi-

grants and refugees tend to fare worse on urban markets in developing countries than hosts (e.g., Ruiz and Vargas-Silva, 2018) – and may hence not be valuable business partners – but these heterogeneous connections to other nationalities could become beneficial if a) these nationalities are better integrated into the local market and can serve as valuable creditors, investors or business partners or b) they could provide more diverse information that does not circulate within a single-nationality network. In the intervention, we aim to address these open questions by introducing entrepreneur in mixed or single-nationality groups. Table 2 summarize the main dimensions of interest in the intervention.

Table 2: Dimensions of interest

	Interaction intensity $\rightarrow$	
Nationality composition $\downarrow$	**Extensive** interaction - *mixed* nationalities	**Intensive** interaction - *mixed* nationalities
	Extensive interaction - *same* nationality	**Intensive** interaction - *same* nationality

4 Context and experimental design

4.1 Context

The two experimental sites of this RCT are Nairobi in Kenya and Kampala in Uganda. Both capital centers are urban metropolises in East Africa with a long history of hosting refugees, in particular from neighboring countries such as the Democratic Republic of the Congo (DRC), Sudan, Somalia, and Ethiopia. Uganda is currently the largest refugee-hosting country in Sub-Saharan Africa and Uganda's refugee policy is considered one of the most open and liberal in the world, with an emphasis on enabling the self-reliance of refugees. Refugees are generally free to move and have the right to work, which leads many refugees to the capital with the aim of earning money through self-employment and entrepreneurial activities.

In contrast, the policy environment in Kenya is more restrictive. A recent liberalising law, the Refugee Act of 2021, is expected to improve the employment rights and move-

ment rights of refugees, but it remains to be implemented. Only a subset of refugees is authorized to leave Kenya's refugee camps and reside in urban areas, such as Nairobi. Refugees in Nairobi are legally able to work in the formal sector if they obtain a work permit, but this often remains unattainable and they instead engage in informal work, self-employment, or micro-enterprises. In both urban contexts, self-employment in the informal sector is the most common form of work for both refugees and members of the host community.

4.2 Study sample

We conduct an intervention in collaboration with the IRC to boost livelihoods for urban refugees and vulnerable hosts in both cities, recruiting 4,000 individuals in each city into the program. Using an open and public recruitment through posters, social media, and communication with community leaders, IRC recruited 11,568 aspiring micro-entrepreneurs in Kampala and Nairobi. The population includes refugees and host community members, men and women, and entrepreneurs that are already active business owners and those without a business. From the registration pool, the researchers identified 10,417 eligible participants that 1) are between 18 and 45 years, 2) speak English, Luganda (in Kampala) or Swahili (in Nairobi)[3], 3) can provide a refugee ID, proof of registration, or a national ID card to establish their urban resident or refugee status, and 4) are able to commit to 2 hrs of weekly sessions. From this pool, 8,005 study participants were randomly selected into the study, we obtained written consent from the participants and interviewed them in person before the program start (4,035 in Nairobi and 3,970 in Kampala). Figure A1 in Appendix A provides details on the recruitment and survey process.

4.3 Intervention

The study participants were then randomized into four intervention arms (cash+network) and two control groups (see Figure 1). Individuals in our sample were randomly assigned

[3]This requirement is necessary to ensure meaningful interactions during the intervention.

to receive a cash grant, to receive a cash grant and attend networking groups, or to a control arm.

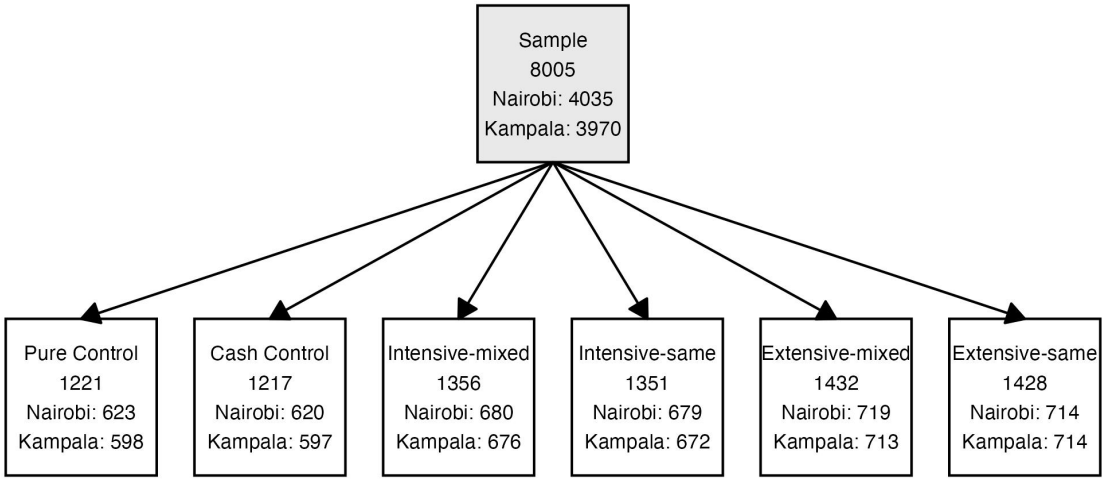


Figure 1: Breakdown of sample into control, cash, and the four cash+network groups

Cash Control All treated individuals in the sample received a cash grant of around USD 435.[4] IRC communicated that the grant is intended for business purposes but the transfer was unconditional and there was no spending oversight. The grant was paid out for all treated individuals in week 7 of the 11-week program with the intention that the participants can plan how to invest the money between program launch and cash transfer.

Networking arms In addition to the same cash grant, individuals assigned to the networking arms were invited to a weekly networking program in which they met other program participants for eleven weeks. All networking groups were gender-specific[5] and participants were invited to groups within their area of the city.[6] During the networking sessions, the groups went through a curriculum focused on identifying opportunities to

[4]This reflects UGX 1,550,000 in Kampala and KSH 60,000 in Nairobi. All participants additionally received a transport stipend (UGX 20,000/ KSH 400 per meeting) to offset inner-city travel to the intervention. Mothers with children between 0-3 years received a childcare stipend (UGX 5,000/ KSH 200 per child). These additional payments were made in full in week 3.

[5]In the intervention, women only met with other women and men only met with other men to reduce participation barriers for nationalities with more traditional gender norms (e.g. facilitate participation of Muslim women or Somali women).

[6]To reduce travel time and create conditions in which participants may want to continue meeting, we divided Nairobi into six catchment areas (Eastlands, Eastleigh, Kawangware, Kitengela, Ongata Rongai, Thika Road) and Kampala into five catchment areas (Central, Kawempe, Makindye, Nakawa, Rubaga).

network in the city, to map out suppliers, lenders and capital in the city, and to collaborate with each other. The curriculum and intervention was carefully tested in two pilot rounds. The groups were guided by trained community facilitators that encouraged the groups to discuss how to support each other with problems in their business. Each week, after the substantive discussions, there was dedicated time for free conversation and interaction between participants. Details on the curriculum can be found in Appendix B.2. The networking groups differ in their group composition in two ways (also see group visualization in Figure A3):

- **Interaction intensity**: Half of the individuals in the networking arms meet weekly with the same group of eight participants with the intention to build up intense interactions and potential strong ties that promote trust and collaboration ("intensive interaction"). The other participants meet a total of 60 other participants in rotating weekly sessions of 20 individuals. Because the individual interaction between two participants in this arm is less frequent but the participants meet more new network ties, the intention is to build up a wider information network and weak ties ("extensive interaction"). This variation in the interaction intensity allows us to explore if and how strong or weak ties may help urban entrepreneurs in cities like Nairobi and Kampala (e.g., Granovetter, 1973; Gee et al., 2017).

- **Nationality composition**: Half of the individuals in the networking arms were assigned to meet co-nationals in homogeneous nationality groups ("same nationality"). The other half met participants across the ten nationalities in our sample ("mixed nationality"). The aim here is to explore if co-nationality networks, known to provide trust and solidarity (e.g., Martén, Hainmueller and Hangartner, 2019; Patel and Vella, 2013) or cross-nationality ties to hosts and other nationalities, that may promote upward mobility and investments (e.g, Battisti, Giesing and Laurentsyeva, 2019; Behtoui, 2008), improve business and social outcomes for refugees and hosts.

Pure Control The control arm receives the same cash grant as the cash and networking arms after the last data collection and the end of the study period (ca. 18 months after

program launch). IRC has informed them after the baseline survey when they will receive the grant and has remained in touch with individuals assigned to this treatment arm to remind them about upcoming data collections or invite them to the collaboration lottery.

4.4 Experimental assignment

We used an algorithmic approach to randomly assign RCT participants into treatment arms and simultaneously group them into gender- and area-specific homogeneous and heterogenous network groups. Separately for each city, a greedy algorithm randomized which type of feasible groups was to be filled first, and randomly filled this group with participants, before moving on to identify the next group to be filled and repeat the process with the ungrouped participants. A pseudo-algorithm is provided in Figure A4. We generated 10,000 draws based on this algorithmic process in each city and then limited the possible randomization to those achieving sufficient women and refugee representation in the networking arms and a minimum balance of refugees and hosts and business owners in the treatment arms.[7] The final treatment assignment is selected in a simple random choice from the set of feasible randomizations.

Given the conditional nature of our random assignment, we use entropy balancing to construct a set of matching weights that additionally ensure balance in the means of core baseline outcomes and covariates between the treatment arms and the control group (Hainmueller, 2012). Table 3 shows that the algorithmic randomization and entropy balancing results in balance of baseline covariates and core economic and social outcomes across the treatment groups.[8]

4.5 Data and surveys

We conduct three in-person surveys with the study participants: a baseline just before the program start, a midline six months after, and an endline 11 months after the program

[7] The full criteria for limiting the universe of randomizations can be found in appendix C.

[8] In Table A1 in the appendix, we demonstrate that the weighting improves balance across treatment arms compared to the unweighted assignment.

Table 3: Randomization balance

Indicator	pure-control	cash-control	mixed-fixed	mixed-rotating	same-fixed	same-rotating	p-value
Gender	0.502	0.502	0.502	0.502	0.502	0.502	1.000
Refugee	0.542	0.542	0.542	0.542	0.542	0.542	1.000
Age	31.312	31.546	31.400	30.962	31.206	30.779	0.054
Children	0.481	0.502	0.489	0.491	0.477	0.546	0.005
Secondary education	0.546	0.568	0.534	0.523	0.543	0.529	0.230
Biz training	0.374	0.380	0.380	0.355	0.350	0.391	0.206
Unemployed	0.183	0.182	0.176	0.176	0.162	0.176	0.743
Biz ownership	0.500	0.500	0.500	0.500	0.500	0.500	1.000
Biz revenue	100.336	109.552	98.944	98.366	104.972	94.179	0.555
Life satisfaction	0.720	0.720	0.720	0.720	0.719	0.720	1.000
Self-efficacy	0.000	0.024	0.048	0.043	0.049	0.057	0.692
Trust in host	0.000	0.077	0.079	0.032	0.020	0.051	0.230
Trust in refugee	0.000	0.006	-0.006	0.033	0.021	-0.007	0.883
Interaction	0.619	0.625	0.637	0.592	0.636	0.638	0.118
Network size	4.235	4.235	4.235	4.235	4.235	4.235	1.000
Network diversity	0.238	0.225	0.229	0.221	0.234	0.235	0.544
Biz knowledge	0.000	-0.045	-0.017	-0.042	-0.016	-0.018	0.958
Biz collaboration	0.000	0.029	0.039	0.008	0.039	-0.033	0.412

Weighted balance of covariates and primary outcomes in baseline surveys. Weighted means within treatment groups are displayed. Column 8 shows p-values from joint F-tests that means are equal across all treatment groups.

launch. Surveys were conducted by an independent research organization that reminded respondents that their individual answers would not be shared with IRC and they can opt out of the surveys without consequences for the provision of services. The surveys took place in the main program languages and a number of common refugee languages.[9]

The IRC collected data that we also use: demographics from the registration, attendance records during the networking sessions[10], an internal post-grant distribution monitoring, a physical business verification of all grant recipients, and a survey of community facilitators. We additionally conducted around 35 qualitative interviews in each cities before the intervention and a year after.

4.5.1 Collaboration grant lottery

To learn if the intervention changes how and with whom participants collaborate in their businesses, we invited all study participants to a collaboration grant lottery two months after the intervention. This provides an additional behavioral measure of willingness to

[9] In Kampala, the survey tool was translated into English, Swahili, Luganda, Somali, French, Amharic, Arabic and Tigrinya. In Nairobi, the survey tool was translated into English, Swahili, Somali and Oromo. In both cities, enumerators used other local languages to explain translations if needed.

[10] On average, respondents assigned to the network groups attended 8.34 of 11 sessions. The median attendance was 9.09 sessions.

collaborate, in addition to the measure of collaboration in the main survey. All study participants are informed over the phone and in text messages that they can apply in teams of 3-8 group members from the program or from their own network for an additional collaboration grant by IRC. The group members must outline a joint collaborative business idea that benefits all businesses in the proposal. The application form asks to describe the idea, specify how the money will be used, and how the team members plan to work together. Within a minimum and maximum amount set by IRC, team members propose how much money they will contribute and IRC commits to doubling this sum. 2,120 teams applied through a paper or an online form for the collaboration grant and filled in all elements of the form. Of these, 10 winning teams in each city were selected in a lottery and IRC monitored how the winners implement the proposed activity. Through the submitted forms, we learn who applies for the lottery, how much risk the collaboration involves, what the gender and nationality diversity of the submitting team is, and what the quality of the business idea is.

4.5.2 Outcomes

We are interested in the impact of the intervention across four core outcome domains. To monitor the *economic performance*, we record business ownership, revenues, profits, productive assets, the customer base and diversity, hours spent in business, and non-entrepreneurial income. For all monetary outcomes, we report real values for July 2024 in USD and winsorized at 1st and 99th percentile within survey rounds. If a respondent does not own a business, outcomes are set to 0. We do not otherwise impute missing values for outcomes.

To capture the *psychological well-being*, we record the life satisfaction and self-efficacy of respondents. To understand changes in *social cohesion*, we record trust in the host nationalities, trust in refugee nationalities, interactions with outgroups, and support for progressive refugee policies. For individual questions in Likert scales or categories, we split around the median response. For multi-question indices, we construct the indices

and standardize with the control group mean and standard deviation.

Lastly, we record changes in the *business networks* of respondents but we only record this outcome domain at baseline and endline in an egocentric network. We identify the network size or degree centrality, the network diversity, the clustering coefficient as a measure of triadic closures and bridges in business networks.

To complement our outcome analysis, we investigate our two core mechanisms through which networks impact business outcomes: information and collaboration. In the main surveys, we capture *information* through the reported knowledge of business practices and reported referrals to business opportunities. Additionally, the collaboration competition provides an indication of the viability of the business proposal. *Collaboration* is predominantly measured through the collaboration competition that provides an indicator of submission, depth of collaboration and diversity of the collaboration team but we complement this with a measure in the survey of self-reported collaborative behavior. The outcome measures are summarized in Table A5.

4.6 Sample description

4.6.1 Baseline summary statistics

The sample consists of 57.45% refugees with Somalis and Congolese as the most common refugee nationalities in Kampala and Congolese and Ethiopian refugees in Nairobi (see details in A2). Table 4 presents summary statistics for the study population at baseline. More than half of the sample reports owning a business at baseline. Business ownership is highest among hosts and in Nairobi. Women own businesses that bring in a lower business revenue and that hold lower business assets. Women in the sample also tend to live in bigger households with more young children and have the lowest school completion rate in the sample. Vulnerabilities between hosts and refugees are similar as they score similar on a self-reliance index (Refugee Self-reliance initiative, 2020) and hosts even report having more problems paying rent in the city. At baseline, the average respondent has around four business contacts, with hosts and men having wider networks. The business networks

of refugees are notably more diverse.[11]

Table 4: Baseline summary statistics

Indicator	All	Kampala	Nairobi	Refugees	Hosts	Women	Men
Age	31.3	31.4	31.2	30.8	32	31.7	30.8
	(7.1)	(7.1)	(7)	(7.3)	(6.7)	(7)	(7.1)
Household size	4.6	4.7	4.6	4.7	4.6	5.1	4.1
	(2.6)	(2.7)	(2.6)	(2.7)	(2.5)	(2.4)	(2.7)
Has children under 5 (%)	50.3	45	55.4	44.3	58.3	58.7	39.4
	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)
Secondary school completed (%)	53.1	54.3	51.8	54.7	50.9	44.7	63.9
	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)
Self-reported disabled (%)	3.8	4.4	3.3	3.8	4	4.5	3
	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
Years in the city	11.1	9.2	12.9	7.4	16	11.7	10.3
	(102.2)	(103.3)	(96.4)	(60)	(116.8)	(104.3)	(98.7)
Rent problems in last 3 months (%)	66.2	61.5	70.8	59.3	75.5	68.1	63.8
	(0.5)	(0.5)	(0.5)	(0.5)	(0.4)	(0.5)	(0.5)
Self-reliance index	3.2	3	3.3	3.1	3.2	3.1	3.2
	(0.6)	(0.6)	(0.6)	(0.7)	(0.6)	(0.6)	(0.7)
Owns business (%)	52.5	47.3	57.5	48.1	58.3	56.9	46.7
	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)
Business revenue (USD/ 30 days)	106	109	103	107.1	104.5	92.5	123.4
	(226.3)	(258.7)	(188.9)	(229.6)	(221.7)	(191.2)	(263.9)
Business assets (USD)	81.3	95.1	67.7	70.6	95.7	55.4	114.8
	(234.7)	(271.9)	(190.3)	(225.3)	(246.2)	(170.6)	(294.6)
Business network size	4.2	4.5	3.9	3.7	5	4.1	4.3
	(4)	(4.2)	(3.7)	(3.8)	(4.1)	(4)	(4)
Nationality diversity of network	0.2	0.2	0.2	0.3	0.1	0.2	0.3
	(0.3)	(0.3)	(0.3)	(0.3)	(0.2)	(0.3)	(0.3)
Observations	8005	3970	4035	4599	3406	4517	3488

Means and percentages at baseline. Standard deviations in parentheses.

4.6.2 Profiles of businesses and study participants

The most common business setup in our sample is that individuals hawk products (ca. 19.7% of businesses at baseline). Other common business sectors are clothing and shoe shops (15.7%) and grocery and food vending (12.6% of businesses at baseline). As further background on the types of businesses and participants in the program, and to exemplify the focus of this intervention on business networks, we discuss three exemplary participants.[12] Figure 2 displays the respondent's business network at baseline while Ta-

[11] At the first intervention session, treatment respondents are asked if they know somebody in the room. 17.4% of the treatment group report knowing at least one person already.

[12] From our randomly selected sample of qualitative respondents, we select cases with a small and homogeneous network (a), a medium-sized network with two key suppliers (b), and a larger, heterogeneous network (c).

ble 5 provides excerpts from the qualitative interviews on how the example respondents identified first business opportunities in the city.

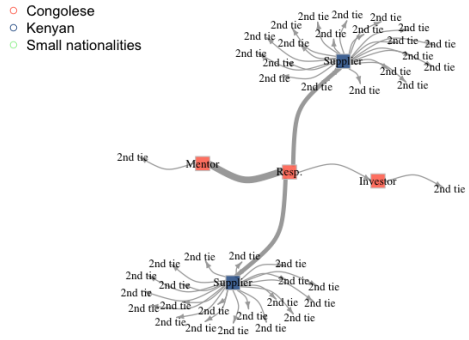
From the largest refugee nationality, Person A fled from the DRC and already had some relatives and friends in the city. The Congolese men is strongly rooted in a Congolese church community but identified initially business ties across nationalities, starting off with a Somali supplier. By now, 10.5 years after moving to Nairobi, the Congolese men hawks phone accessories and has a small network focused on two larger suppliers that also supply many other hawkers in Nairobi. In contrast, Person B from the Ugandan host community moved from a village to Kampala about 5 years ago and struggled from a lack of contacts. He could not keep a job for multiple years until he was referred to a shoe business owner that first employed and later shared equipment with him. He gathered capital to start his own shoe business but his network remains small, interconnected, and exclusively within the Ugandan community. Lastly, Person C from South Sudan arrived with her family in Uganda over 9.5 years ago and largely navigated the initial challenges through the church and a refugee community in Lubaga that gave her starting capital, supported her search for a place to stay and her attempt to sell prepared food. Interestingly, Person C – while being deeply embedded in the refugee community – claims that her current more profitable soap business was only possible through her ties to the host community. Her larger network of suppliers and mentors is diverse across host community and other nationalities.

The examples demonstrate the scale and types of business activities that the study participants engage in while showing that the refugees and the hosts vary significantly in the social networks they draw on to run their business activities.

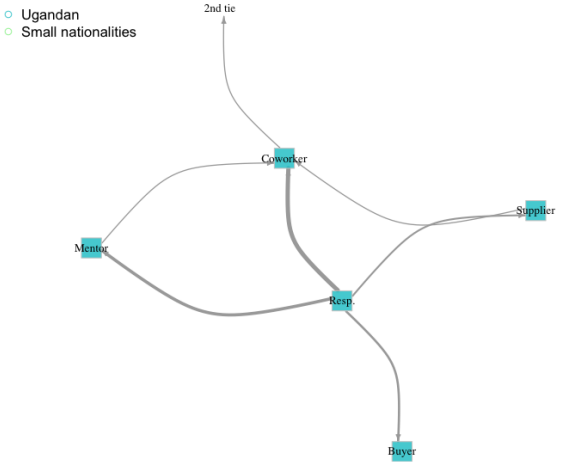
4.7 Model Specification

Following our pre-analysis plan (AEA RCT Registry: 13265), we estimate intent-to-treat effects in an ANCOVA specification of the form:

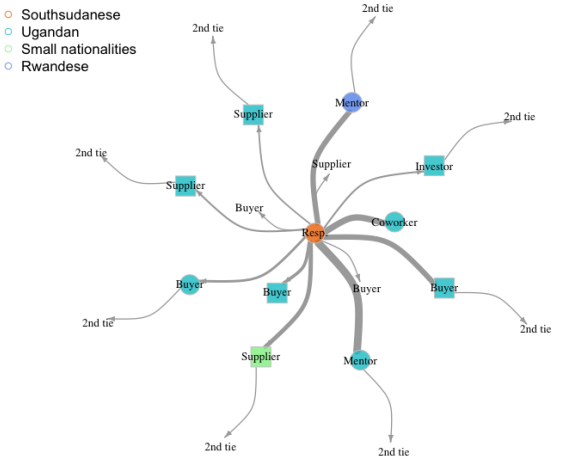
$$y_{it} = \beta_t D_i + \gamma X_i + \delta y_{i0} + \eta_t + \theta_b + \epsilon_{it} \quad (1)$$



(a) Congolese man in Thika Road, Nairobi



(b) Ugandan man in Rubaga, Kampala



(c) Southsudanese woman in Rubaga, Kampala

Figure 2: Business networks of three study participants and qualitative interviewees. Women are denoted in circles, men in squares. Intensity of interaction displayed by linewidth

(a) Congolese men (40 years) that hawks fabrics and phone accessories in Thika Road, Nairobi	"Here, there were people who had come before us, you know, in a family, you would get to hear so and so has gone there. [. . .] Here in Kenya, the connection that I made and turned out to be important to me was with a Somali guy who was selling Ankara materials in Eastleigh. When I didn't have money, he would give me the Ankara materials on credit, I go and sell them and bring him the money. That is the person we connected and he helped me in life."
(b) Ugandan man (26 years) with a shoe shop in Rubaga, Kampala	"So he [his father] convinced me to come to Kampala, that he would find me a job and even pay for my further studies. But he did not take me back to school neither did he give me the job he had promised. I was here just seated and doing nothing. He would sometimes give me money for meals but other times he would not. [. . .] I did not know any other person apart from my dad and my half-brother. [. . .] Another time I was walking around then I met a friend of my dad's. [. . .] This guy asked what I could do and I told him that I could make shoes and I had studied it from class. [. . .]. He told me to approach this friend of his that makes shoes so that we could talk on how to work together. He directed me there and the following day I met with the guy. This guy put me to a test of how I make the shoes [...] and asked me to work with him. After some months, my mother sold coffee from the village and sent me UGX 180,000 shillings. Having got this money, I bought the materials and started working from home. I would cut the materials, apply glue to them, then go to his [former boss] place for the sewing machine to put finishing on my shoes. But I would also rent his machine at UGX 7000 shillings every day. Now here I have started my own business."
(c) Southsudanese women (35 years) with a soap shop in Rubaga, Kampala	"We didn't know anybody in the city. [...] We got to know the church in Nsambya, where a priest picked us to pay for our schooling. [. . .] At school, I was still quite young and didn't form strong connections until my uncle disappeared. That was when my eyes opened. When he disappeared [. . .], I had to step up and speak to my teacher. This teacher took me in just like her own daughter and helped me a lot. [. . .] My connection now is mainly with the refugee community in this area. [. . .] I began selling bananas, moving around every day to make enough money for food. [. . .] As my business grew, I created a small place where customers could come to buy on order. Eventually, I transitioned to selling liquid soap. [. . .] I learned it from a friend who was Ugandan. We were together at school, and then we lost touch for a long time. When I met her again in town, I found her in a liquid soap shop, selling bathing soaps. When I saw it, I thought, 'Wow, this is great.' She even had her own machine. She makes bath soap and handles the packaging - everything. So, I got motivated by her. I told her, 'I really want you to teach me.' She is the one who taught me this skill. All these things I'm acquiring are through Ugandans, not even my countrymen."

Table 5: Qualitative interview excerpts on first business ties

where y_{it} is an outcome for individual i at time t indexing survey rounds (midline, endline). D_i is a vector of treatment dummies with one indicator for each arm, and t is the corresponding vector of (time-period-specific) treatment effects. X_i is a vector of baseline controls chosen through double lasso regression. y_{i0} denotes baseline outcomes. t are survey round fixed effects, θ_b describes treatment-zone fixed effects and ϵ_{it} is an error term. We use robust standard errors clustered on the individual level and weight observations using entropy balancing. When outcomes are weakly greater than zero and unbounded from above, we use the analogous Poisson Quasi-Maximum Likelihood Estimate for Equation 1.

5 Preliminary results

We present preliminary results from the midline (6 months after intervention) and the collaboration grant lottery (2 months after intervention). At midline, we reached 92.82% of the study participants (93.5% in Kampala and 92.12% in Nairobi).[13] The analysis section is structured by first discussing movements on core outcomes, by then assessing if the intervention successfully moved network ties, and then providing details on the two core mechanisms - information and collaboration.

5.1 Outcomes: How does the intervention shape business and social outcomes?

We use midline data, collected 6 months after the intervention, and our pre-specified model, to test how the business grant and the network groups have affected economic, psychological, and social outcomes. Figure 3 displays the effect estimates for two tests for our nine primary outcomes: First, we compare the business grant recipients to the pure control group (see left side, yellow estimates). Then we compare the cash+network group to the business grant recipients to establish the added value of the network intervention

[13] 567 respondents were interviewed over the phone rather than in person as they were outside of the cities. Attrition is balanced in Kampala but in Nairobi, the pure control group awaiting their grant was more likely to participate. See details on attrition in A4. We account for differential attrition after endline data has been collected.

(right side, blue estimates).

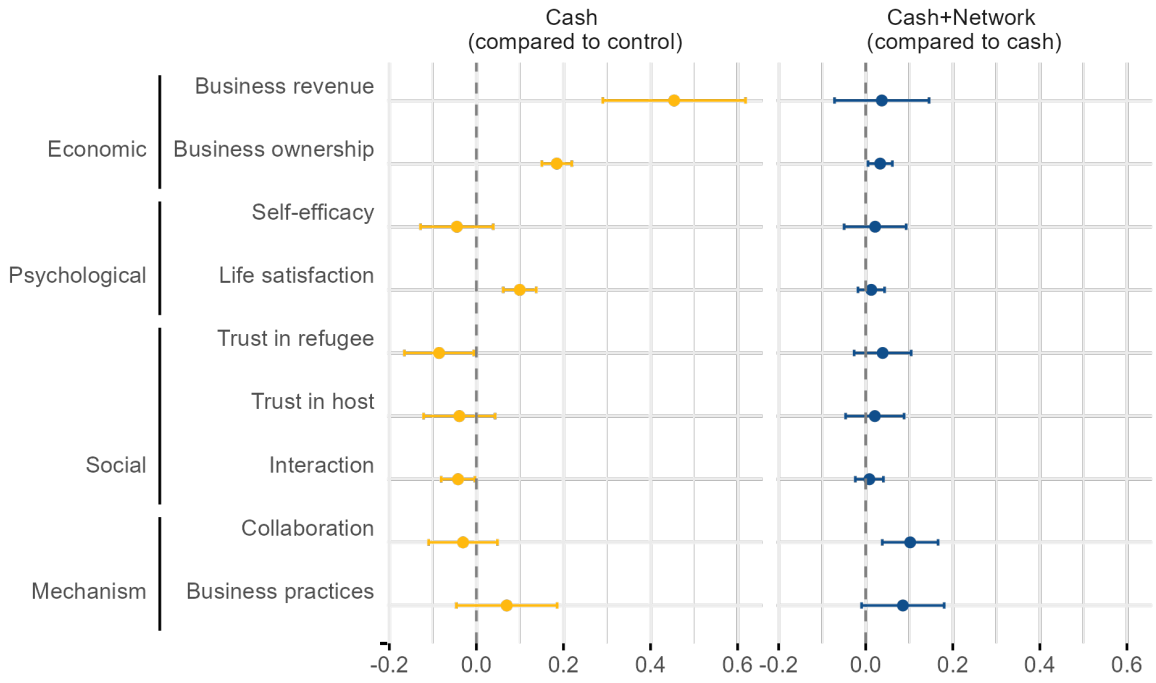


Figure 3: Coefficient plot for the effect of cash (vs control) and cash+network (vs cash) on primary outcomes. Based on weighted ANCOVA with baseline controls selected through double-lasso and survey round and treatment zone FEs. For business revenues, we use a Poisson Quasi-Maximum Likelihood estimate. Full numeric results in Table A7 and Table A6.

Two core findings emerge: First, in line with the literature, cash is effective at increasing economic outcomes. On average, cash recipients are 18.5 percentage points more likely to have a business. The business grant also increases monthly real business revenues by ca. $97.84 (real) and increases the life satisfaction of respondents by 0.099 on a standardized scale – although cash recipients exhibit a reduced trust in other refugee nationalities by -0.86 and interact less with other nationalities by -0.042 on a standardized scale. Cash hence has the anticipated positive effects on economic outcomes but may be detrimental to social cohesion.

Second, we find that the network groups increase self-reported collaborative behavior in businesses beyond the impact of cash by 0.10 on a standardized scale. Collaborations - e.g., sharing tools or co-marketing - is one core mechanisms through which we hypothesize that networks can support entrepreneurs. In addition, the network intervention increases

business ownership by 3.3 percentage points. Beyond these effects, the intervention does not move core economic, psychological or social outcomes.

Several explanations may explain why we successfully induce collaborative behavior and more business ownership but this does not translate into improved economic outcomes: It may simply take longer than 6 months for these outcomes to move after the expansion of participants' networks. Another explanation might be that the cash effects on business ownership are quite sizable, with 72% of the cash group (compared to 54% of the control group) reporting owning a business at midline, and we experience a ceiling effect that the network cannot move much more than this. Lastly, the intervention may help building up networks but the structural conditions for refugees and vulnerable hosts in Nairobi and Kampala remain detrimental for their success and the intervention fails to lift these larger barriers.

In Table 6, we then break down the networking effect by the different network ties we induce and compare effects to the business grant recipients. We find that the positive impact of the network intervention on business ownership is driven by same-nationality groups that intensively meet, indicating that individuals may have started business together in these small-group settings that allow intimacy and connection. We then also find that all network groups with the exception of mixed-intensive groups increase collaborative practices. Lastly, the breakdown by intervention arms reveals that mixed nationality networks increase trust in hosts (mixed-extensive) and trust in refugees (mixed-intensive). Hence, there is a positive effect of heterogeneous networks on social cohesion but not of homogeneous networks. In short, mixed nationality arms increase trust compared to same nationality arms but reduce collaborative behavior.[14]

[14] A pooled test of mixed arms vs same nationality arms, not shown.

Table 6: Effect of treatment arms (compared to cash) on primary outcomes at midline

	Economic		Psychological		Social			Mechanisms	
	Biz ownership	Biz revenue	Life satisfaction	Self-efficacy	Trust in Hosts	Trust in Refugees	Interaction	Biz practices	Collaboration
Mixed Extensive	0.032	0.066	0.020	0.009	0.092*	0.083	0.011	0.085	0.085*
	(0.019)	(0.079)	(0.021)	(0.050)	(0.044)	(0.043)	(0.022)	(0.065)	(0.043)
Mixed Intensive	0.027	0.057	−0.013	0.000	−0.019	0.097*	0.002	0.116	0.045
	(0.018)	(0.066)	(0.020)	(0.046)	(0.043)	(0.042)	(0.021)	(0.060)	(0.041)
Same Extensive	0.034	−0.045	0.019	0.076	0.015	0.034	−0.003	0.083	0.159*
	(0.018)	(0.070)	(0.020)	(0.046)	(0.044)	(0.043)	(0.021)	(0.064)	(0.043)
Same Intensive	0.037*	0.062	0.023	0.002	0.010	−0.030	0.020	0.065	0.110*
	(0.017)	(0.071)	(0.019)	(0.044)	(0.042)	(0.041)	(0.020)	(0.059)	(0.040)
Num.Obs.	6275	6275	6269	6275	6273	6252	6262	2955	6262
RMSE	0.40	326.24	0.45	1.02	0.99	0.95	0.47	0.94	0.94
Std.Errors	HC1	HC1	HC1	HC1	HC1	HC1	HC1	HC1	HC1
FE: Zone	X	X	X	X	X	X	X	X	X
FE: Round	X	X	X	X	X	X	X	X	X
Cash mean	0.72	211.89	0.34	-0.03	-0.02	-0.08	0.62	0.03	-0.02

* p <0.05

Weighted ANCOVA with baseline controls selected through double-lasso. For business revenues, we usa a Poisson Quasim-Maximum Likelihood estimate.

We do not find that particular pre-registered subgroups - refugees vs hosts, men vs women, business owners vs non-owners at baseline, individuals with smaller or bigger networks, individuals living in the city for longer or shorter, and study participants from Nairobi or Kampala - benefit more or less from the intervention in terms of economic, social and psychological outcomes. The effects are generally very homogeneous.

5.2 Mechanism I: Does the intervention increase business networks?

At endline, we will collect full ego-centric business networks for each respondent and compare the size, composition, and configuration of these networks to the ego-centric networks collected at baseline. However, the midline already includes some indications on the success of the intervention in increasing networks of the treated respondents.

Specifically, we give respondents the task to check the contact lists in their phone and report back how many of their contacts they could contact to ask for business information (weak tie) and how many contacts they have they would trust their business or household with if they had to deal with an emergency for a day (strong ties). We also record the percentage of these contacts that share the nationality of the respondent. Table 7 provides this explorative, non-preregistered analysis. Using our main estimation approach, we find that individuals in the network arms report on averaye one more weak tie than individuals in the cash group. We do not find evidence that the intervention achieves to build up strong ties or shapes the nationality composition of participants' business networks. The finding that we increase weak ties can be traced back exclusively to same-nationality intensive groups that are the only groups reporting more ties than the cash group. Hence, only the most intense interaction with a shared nationality bond reliably induces new ties in the population.

5.3 Mechanism II: Does the intervention increase collaborative behavior?

Because our main survey measures for collaboration is self-reported, we also explore a behavioral measure of this mechanism. Two months after the networks program, we invited

Table 7: Effect of cash+network (compared to cash) on self-reported weak ties, strong ties, nationality composition

	Weak ties	Strong ties	% own nationality
Cash+Network	1.017*	0.108	−0.004
	(0.445)	(0.091)	(0.010)
Num.Obs.	5757	5757	4924
R2	0.007	0.012	0.084
RMSE	17.64	3.48	0.25
Std.Errors	HC1	HC1	HC1
FE: Zone	X	X	X
FE: Round	X	X	X
Cash	4.47	2.63	0.8

* p <0.05
Weighted ANCOVA with baseline controls selected through double-lasso.

all participants to a collaboration grant lottery. As noted in Section 4.5.1, this lottery gave Re:Build participants the opportunity to win an additional grant for a collaborative business project. We analyze whether respondents submit, the level of depth of the proposed collaboration, how diverse the submitting team is in terms of nationality, gender, and host/refugee status, and how viable the proposed business collaboration is, ranked by IRC staff using set criteria. For the submission and depth of the collaboration grant, we use an analogous model to Equation 1 but drop the baseline outcomes. For diversity and viability of the proposed collaboration, we model this in a two-part model (Belotti et al., 2015), modeling in the first stage whether diversity or viability are zero or not in a binomial model, and modeling the non-zero values of diversity or viability using Poisson Quasi-Maximum Likelihood.

We find that our intervention, on average, increased collaborative behavior compared to the cash and the control group. In Table 8, we compare submission rates for those in the cash+network arms and those in the cash arms to the pure control group. We see that both the intervention group and the cash recipients are more likely to submit applications to the lottery and to apply with higher-risk, deeper collaboration ideas compared to the control group. The magnitude of the effect is higher for the intervention than for cash;

individuals in the networking groups are 10 percentage points more likely to submit an application than those in the control group on average, whereas receiving the business grant increased submissions by 6.3 percentage points on average, compared to the pure control.[15] We do not find a clear effect of either the cash or the cash+network groups on the diversity and viability of the proposed projects.

Table 8: Effect of network intervention and cash on collaboration grant outcomes

	Submission	Depth	Diversity	Viability
Cash	0.063*	0.171*	0.056	−0.027
	(0.018)	(0.045)	(0.029)	(0.028)
Cash+Network	0.098*	0.263*	−0.005	−0.030
	(0.014)	(0.036)	(0.023)	(0.022)
Control mean	0.250	0.554	0.065	0.156
Num.Obs.	8005	8005	1944	2672
RMSE	0.47	1.18	0.12	0.22
Std.Errors	HC1	HC1	HC1	HC1

* p <0.05

Results for submission and diversity estimated with weighted ANCOVA with baseline controls selected through double-lasso. For diversity and viability, a weighted two-part model with covariates is estimated.

Breaking this down further, we see that the main driver of the positive effect of the intervention on collaboration is the groups meeting within the same nationality. Figure 4 contrasts the individual treatment arms with the cash arm and shows that the same nationality groups submit at a higher rate and propose more in-depth collaborations, while those in the mixed nationality groups do not. This is in line with findings in the literature that solidarity between co-nationals and co-ethnics can boost cooperation.

We do not find that any networking group increased the quality and viability of the proposed projects compared to the cash recipients. We do find, however, that the extensive groups submit less diverse teams, regardless of whether they are in groups with the same nationality as them or mixed nationalities. While speculative, this could mean that the study participants in these arms were more likely than the intensive groups to

[15] The difference between the cash and the cash+network arms is statistically significant (model/test not displayed here).

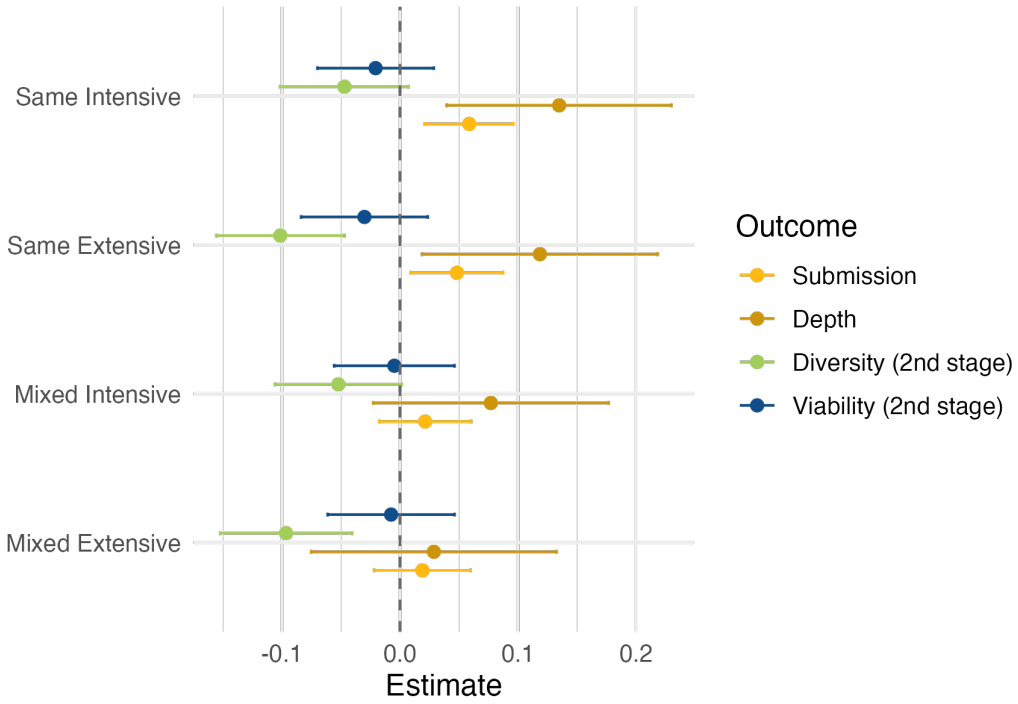


Figure 4: Coefficient plot for the effect of individual treatment arms on collaboration grant submission, depth, diversity and viability. Treatment arms compared to cash arms in ANCOVA with baseline controls and weights. Two-part models to estimate diversity and viability (2nd stage displayed). Numeric results in A8.

seek out collaborators from outside of Re:Build, with these collaborators then being more similar to them in terms of nationality, gender, or host/refugee status.[16] Alternatively, it could be that these participants had particular success in connecting to individuals that were similar to them in these large groups, such that they were more likely to submit with people who were of the same nationality, gender, or host/refugee status than those who did not take part in the intervention.

Lastly, we explore whether the intervention changes submission behavior to this grant opportunity differently for different groups. While we do not find major differences in the effectiveness of this intervention for women vs men or across the two studied cities, we do find that the intervention is significantly more effective at increasing the submission rate and collaboration depth for host community members. Figure 5 shows predicted probabilities for submitting a collaboration proposal for refugees and hosts in the cash and

[16]Indeed, we find that participants in the two extensive groups are less likely to submit an application with another program participant than individuals in the intensive treatment arms (Table A10).

the cash+network groups.

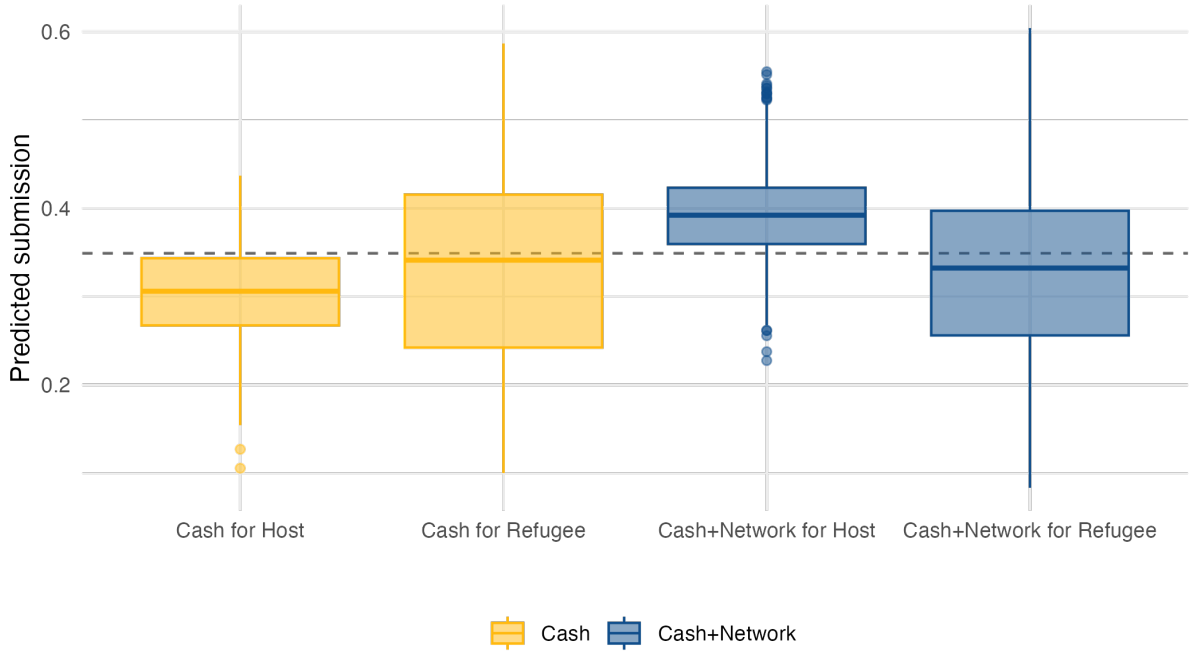


Figure 5: Predicted probability of submitting a collaboration proposal for refugees and hosts in the cash and the cash+network group based on ANCOVA with baseline controls and weights. Numeric results in A9.

5.4 Mechanism III: Does the intervention increase information circulation?

In our main pre-registered analysis, we do not find that the intervention increases the use of business practices that indicate a better information circulation (e.g. bookkeeping or negotiating prices with providers). In the midline survey, we also include a more behavioral measure to identify if the network information increases information flows - a critical hypothesized mechanism. We ask our respondents to participate in a three-question quiz during the survey: Over 91% of the respondents can explain the rationale for buying wholesale to the enumerator, very few participants can indicate the exact hours that employees are legally allowed to work in Kenya and Uganda (only 4%), many can give a good estimate however (68%), and 42% of the sample can explain how to get a business permit in the city. We create a knowledge index from these four indicators and standardize this index.

We then analyze if the network intervention increases performance compared to cash:

Table 9 provides the numeric findings. Indeed, individuals respond correctly to more quiz questions during the survey if they have previously participated in the network intervention. Importantly, none of these questions were explicitly trained through the facilitator in the network groups. Additionally, the cash alone has no positive effects on this outcome.

Table 9: Effect of cash+network (compared to cash) on knowledge quiz performance

	Knowledge quiz performance
Cash+Network	0.073*
	(0.027)
Num.Obs.	5750
R2	0.064
RMSE	0.73
Std.Errors	HC1
FE: Zone	X
FE: Round	X

* p <0.05
Weighted ANCOVA with baseline controls selected through double-lasso.

6 Discussion

We implement a network intervention with urban refugees and hosts in Nairobi and Kampala to answer the questions 1) whether a targeted business intervention can expand business networks and induce more collaboration and information sharing, 2) whether this leads to an improvement in the economic, social, and psychological well-being, and 3) which networks may be particularly important to do so.

Our preliminary findings from a collaboration grant competition and from our midline data collection suggests that the encouragement to network and connect with to other entrepreneurs successfully establishes more collaborative business practices among RCT participants - that is they are more likely to submit joint business ideas and more high-risk collaborations for additional funding, they report higher collaborations in their business (e.g. closing joint business deals or co-marketing), and they also have more information

on the business environment (e.g., getting permits). However, six months after the intervention this does not translate into any economic, social or psychological improvements in the well-being of vulnerable business entrepreneurs in Nairobi and Kampala beyond the business grants they received. Unconditional business grants remain a more critical form of support as cash payments increase business ownership, revenues and life satisfaction.

Regarding the question which network ties may be particularly important - intensive vs extensive interactions and within the own nationality or across nationalities - we find mixed results. On the one hand, entrepreneurs seem to choose from the network ties available to them and may focus on collaboration with their co-nationals as our findings from the business collaboration lottery suggest: individuals that meet their co-nationals in the intervention are more likely to submit joint and more high risk business ideas; and individuals meeting many different entrepreneurs in the mixed extensive arms self-select into less diverse collaborative teams. On the other hand, the exposure to other nationalities in business networks remains relevant as there are indications that this increases social cohesion and trust in other refugees. Our findings hence resonate with recent work in India showing a key tradeoff between deep and wide contact (Chakraborty et al., 2024). The broader impact of this trade-off between facilitating collaboration – which is easier among co-nationals – and broadening the information flow and exposure of refugee and host entrepreneurs on economic improvements is yet unclear.

This study sets out to contribute to the literature on social networks, labor market interventions in developing countries, and for refugees, by systematically assessing if and how social capital shapes business outcomes and social integration.

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Supplementary Information: Building Business Networks to Strengthen Refugee Economic and Social Integration

Sigrid Weber, Mae MacDonald, Adam Lichtenheld, Jessica Wolff, Alex Wendo, Annet Adong, Clare Clingain, David Musiime, Andrew Zeitlin, Jens Hainmueller

A Recruitment and sampling

In Kampala and Nairobi, a total of 11,568 aspiring micro-entrepreneurs registered their interest in the business program by IRC by visiting the local IRC offices and providing registration details. 1,151 registrants had to be excluded as ineligible, predominantly due to lacking ability to speak one of the program languages - a requirement to have meaningful interactions during the conversation - or due to double-registrations within a household - as each household was only eligible to receive one grant.

An initial sample of 8,100 (4,050 in each city) was then randomly selected and attempted to contact for a baseline survey. The outreach to selected participants took place over the phone (with phone numbers provided at registration) and in-person (attempting to identify respondents in the community). 8.4% of the originally selected sample had to be replaced. Replacements came from the list of previously unselected registered micro-entrepreneurs, registrations that took place after the registration deadline, and some targeted outreach in the community. Each originally selected respondent that could not be reached was replaced by a respondent from the same gender, same area in the city, and same nationality. The three main reasons for replacements were: respondents could not be reached over the phone or in at least 3 physical attempts to find them in the community; respondents relocated or resettled outside of Nairobi or Kampala; and respondents could not complete the survey due to lacking language skills needed for the program. Interviews took place in person. In the end, a total of 8,005 study participants were randomised together with other program participants that are not studied into the treatment arms and program. Figure A2 displays the nationality breakdown of the final sample in both cities.

The participants randomized into the network treatment arms met for 10 substantive weeks and received the business grant at the same time as the cash group. We subsequently conducted a collaboration lottery, invited respondents to a midline survey, and an endline survey. At midline, we successfully surveyed 92.82% of the study population. The pure control group receives the cash grant after the endline.

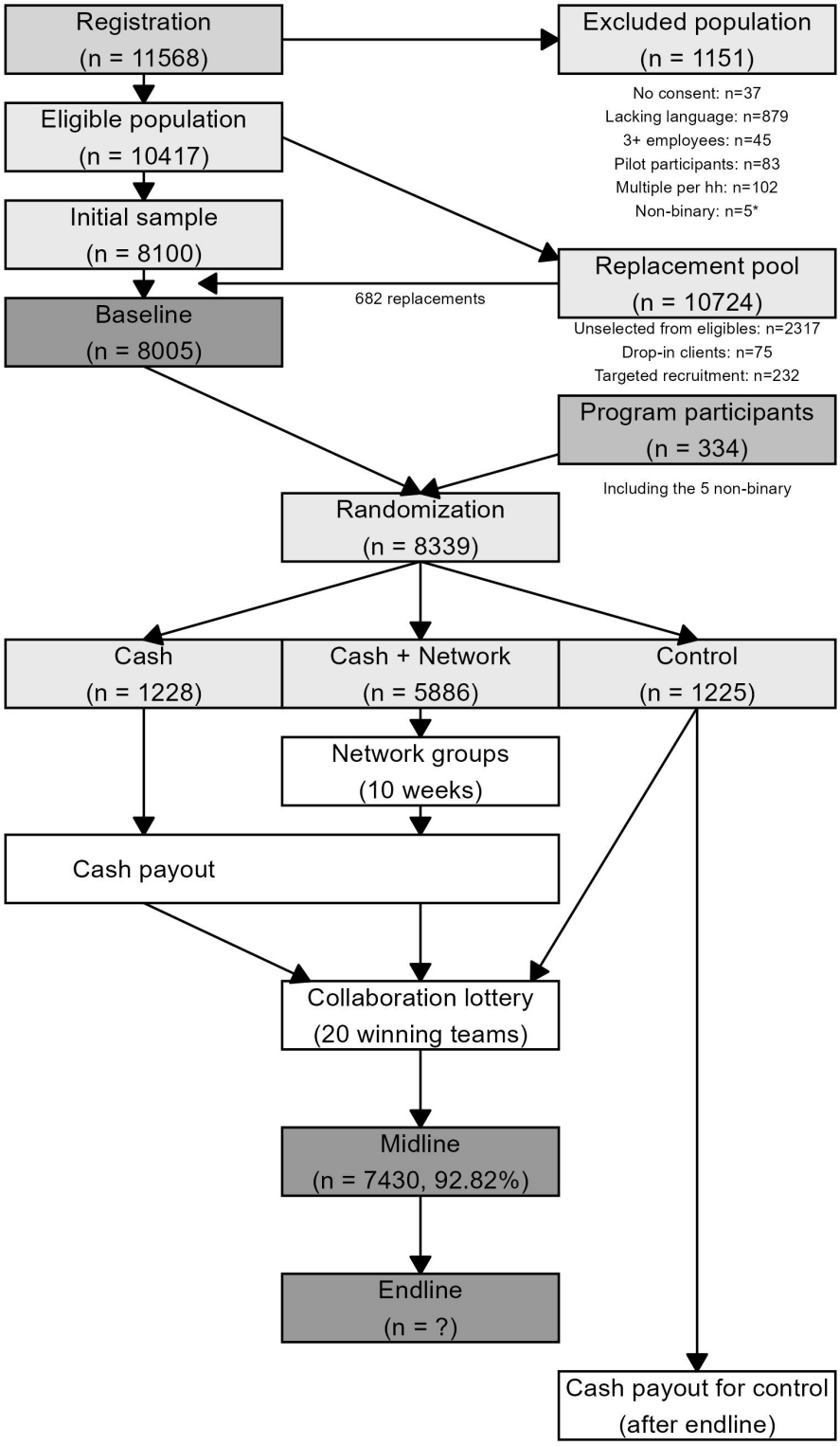

Figure A1: Process of recruitment and surveying of respondents

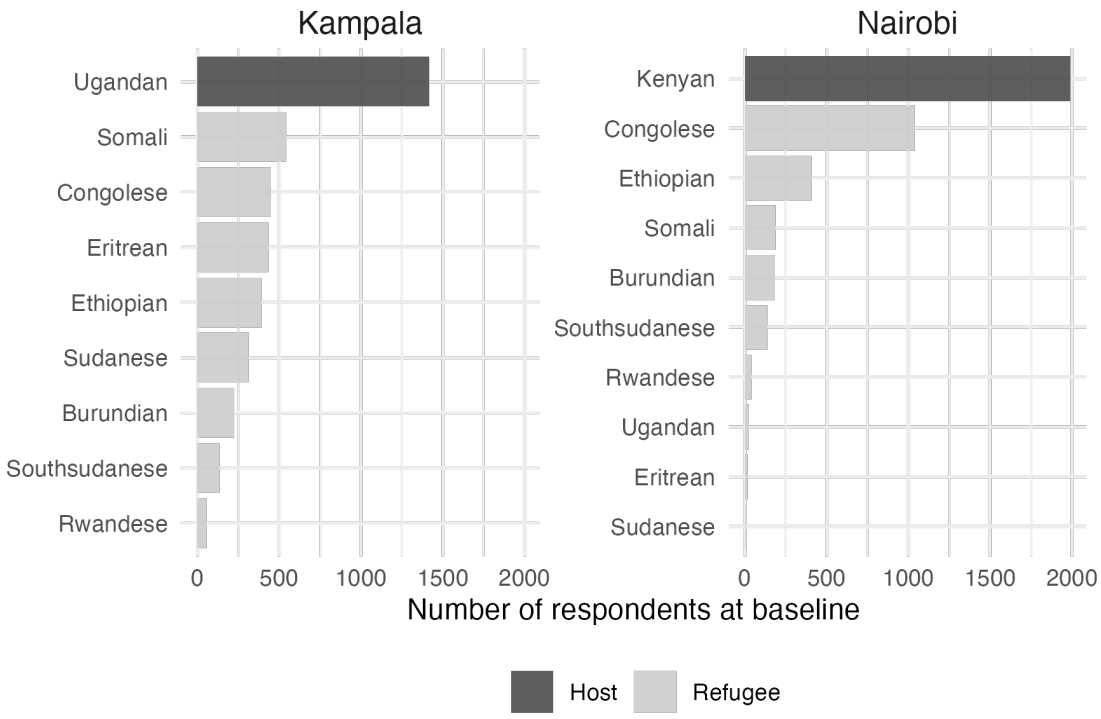

Figure A2: Nationality breakdown of the study participants

B Implementation design

B.1 Visualization of group setup

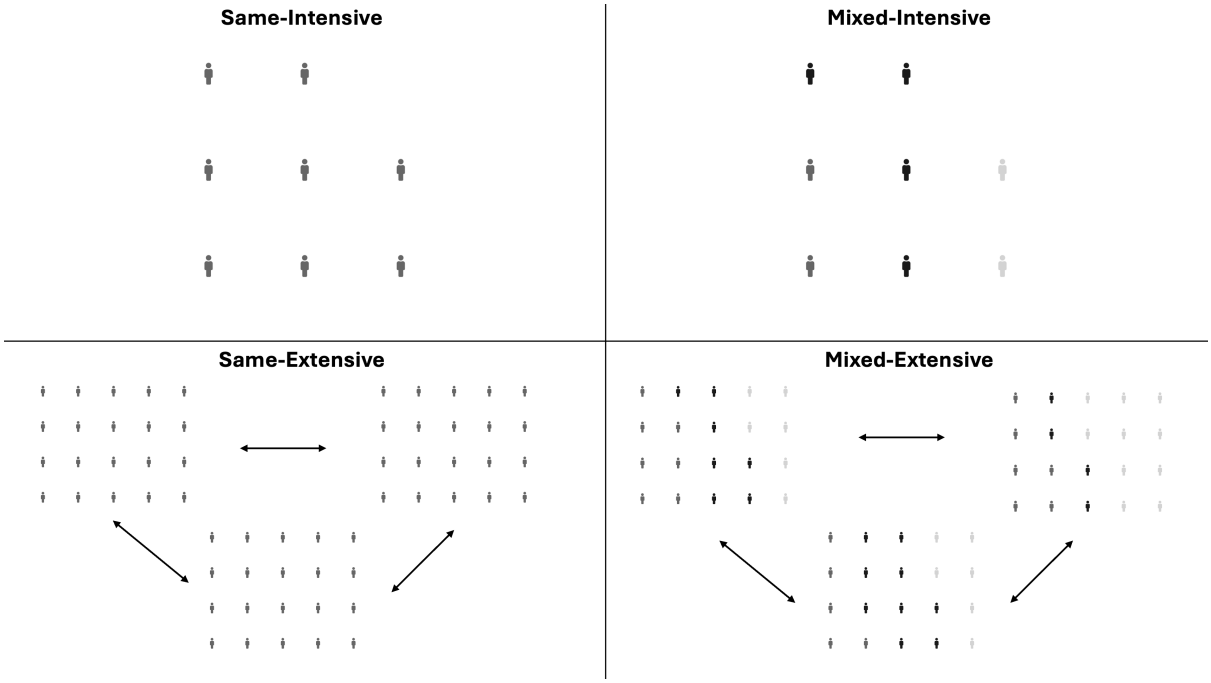

Figure A3: Visualization of networking groups

B.2 Session schedule

All networking groups were facilitated by trained community facilitators that always matched the gender of the group and were from a nationality that allowed to overcome potential language barriers (e.g. Rwandese facilitator with the ability to speak French for a group of Congolese women). The intensive groups met with one facilitator while up to three facilitators supported the extensive groups. The networking groups involved group discussions, interactive exercises and information exchanges rather than a taught syllabus. The program followed the central claim "Your network is your net worth.". For example, two weeks were dedicated to visiting the businesses of fellow participants in the training (in the intensive treatment arm) and to participating in a business fair that showcases group members' businesses (in the extensive treatment arm). The sessions followed the following curriculum:

0. Program launch
1. Value of networking
2. Business set-up and growth
3. Suppliers, lenders, and capital
4. Customers and marketing
5. Business fair (extensive groups)/Business visit (intensive groups)
6. Business grant and savings
7. Problem-solving in business
8. Business fair (extensive groups)/Business visit (intensive groups)
9. Stress management
10. What's next?

C Randomization and balance

C.1 Randomization process

Figure A4 provides the steps in which the greedy algorithm filled intervention groups per city. As an example, the algorithm may randomly select that an extensive-same nationality group is to be filled first in Nairobi. The algorithm then lists all feasible groups of 60 or more people of the same nationality, gender, from the same catchment are of the city. From this list of feasible groups, the algorithm picks at random a group of Somali women in Eastleigh. Then, the algorithm picks 60 participants to fill this group from the available

Somali women in Eastleigh and removes them from the stock before moving on to select the next type of group to be filled. This continues until the sample is allocated to treatment arms.

For each city (Nairobi/Kampala)...:

1. Randomize the order in which the groups are filled
2. Iterate through the groups:
   (a) Using all (remaining) respondents, make a list of all groups that can (still) be theoretically formed to meet the grouping criteria.
   (b) Randomly select one of the theoretically possible groups.
      i. Randomly select participants for this group conditionally on fitting the group criteria
      ii. Remove the grouped individuals in 2.a.i from the list of available participants
   (c) Return to 2 and repeat until all 194 groups are filled
3. Repeat steps 1 + 2 for 10,000 times in each city
4. Reduce draws according to truncation criteria
5. Randomly select one sample from the remaining draws

Figure A4: Outline of the greedy algorithm to fill intervention groups

We repeated this process to fill groups and randomize the sample into treatment arms 10,000 times in each city. We then limited the draws to 798 draws in Uganda and 1,248 draws in Nairobi based on the following criteria:

- Sample size: The draw must achieve the sample size of 4,000 in each city.
- Gender: The draw must have 40-60% women in the treatment arms.
- Refugee: The draw must have at least 35-75% refugees in the treatment arms.
- Treatment compliance: All mixed nationality groups must have at least two nationalities. No more than 12 mixed-nationality groups should have a dominant group that makes up more than 75% of the group.
- Covariate balance: The sum of the absolute difference between all treatment groups and the control group should be less than 0.45 and less than 0.5 for pairwise comparisons between pooled arms. Covariates for this balance criterion are refugee-host status, gender, household size, and business ownership.

C.2 Balance

Table A1: Unweighted randomization balance

Indicator	pure-control	cash-control	mixed-fixed	mixed-rotating	same-fixed	same-rotating	p-value
Gender	0.502	0.501	0.487	0.583	0.581	0.710	0.000
Refugee	0.542	0.529	0.651	0.668	0.593	0.457	0.000
Age	31.312	31.665	31.399	31.047	31.459	31.119	0.230
Children	0.481	0.505	0.470	0.500	0.491	0.565	0.000
Secondary education	0.546	0.567	0.537	0.505	0.536	0.501	0.005
Biz training	0.374	0.381	0.382	0.351	0.348	0.365	0.275
Unemployed	0.183	0.175	0.195	0.189	0.167	0.174	0.390
Biz ownership	0.500	0.523	0.515	0.524	0.548	0.533	0.251
Biz revenue	100.336	115.089	108.073	112.753	109.233	91.098	0.060
Life satisfaction	0.720	0.696	0.711	0.716	0.700	0.740	0.135
Self-efficacy	0.000	0.024	0.040	0.049	0.032	0.106	0.120
Trust in host	0.000	0.071	0.082	0.043	0.023	0.016	0.228
Trust in refugee	0.000	0.002	-0.002	0.010	0.006	-0.045	0.725
Interaction	0.619	0.624	0.647	0.598	0.636	0.622	0.138
Network size	4.235	4.392	4.203	4.280	4.202	4.090	0.525
Network diversity	0.238	0.227	0.253	0.255	0.251	0.202	0.000
Biz knowledge	0.000	-0.043	-0.017	0.008	-0.042	-0.053	0.808
Biz collaboration	0.000	0.027	0.018	-0.023	0.009	-0.054	0.309

Unweighted balance of covariates and primary outcomes in baseline surveys. Column 8 shows p-values from joint F-tests that means are equal across all treatment groups.

Table A2: Nationality balance across treatment arms

Nationality	pure-control	cash-control	mixed-fixed	mixed-rotating	same-fixed	same-rotating	p-value
Kenyan	0.256	0.256	0.256	0.256	0.256	0.256	1.000
Ugandan	0.206	0.210	0.204	0.205	0.201	0.201	0.993
Congolese	0.149	0.139	0.176	0.138	0.162	0.335	0.000
Ethiopian	0.098	0.102	0.106	0.147	0.101	0.000	0.000
Burundian	0.070	0.066	0.048	0.043	0.076	0.000	0.000
Eritrean	0.059	0.045	0.052	0.053	0.050	0.065	0.248
Somali	0.055	0.054	0.085	0.091	0.070	0.115	0.000
Sudanese	0.047	0.063	0.036	0.033	0.022	0.027	0.000
Southsudanese	0.043	0.048	0.024	0.018	0.056	0.000	0.000
Rwandese	0.016	0.017	0.014	0.015	0.006	0.000	0.000

Weighted balance of nationalities in baseline surveys. Weighted nationality means within treatment groups are displayed. Column 7 shows p-values from joint F-tests that means are equal across all treatment groups.

D Compliance

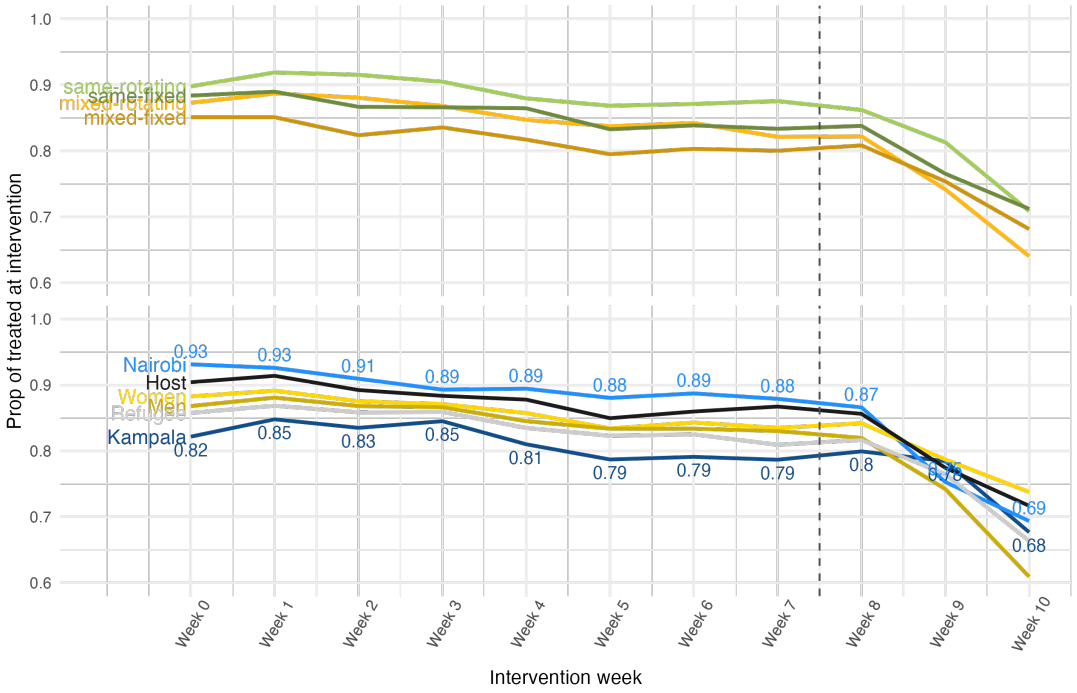

Figure A5: Weekly attendance rate at intervention for Nairobi and Kampala; including per treatment group, gender and refugee status. Vertical line is timing of business grant.

Table A3: Average grant and attendance compliance by treatment group

Treatment	Grant compliance	N no grant	Attend compliance	Kenya	Uganda	N null attendance
cash-control	0.97	37				
mixed-fixed	0.91	128	0.75	0.81	0.68	91
mixed-rotating	0.95	75	0.77	0.8	0.73	67
same-fixed	0.94	85	0.78	0.82	0.74	57
same-rotating	0.97	44	0.83	0.87	0.79	38

Proportion successfully receiving the grant, number of individuals not receiving grant, proportion attending 9 or more sessions in total, in Kenya, in Uganda, number of individuals not attending any session.

E Attrition

Table A4: Attrition analysis in full sample, and per city

	Full sample (surveyed)	Nairobi (surveyed)	Kampala (surveyed)
Cash Control	−0.009	−0.031*	0.014
	(0.010)	(0.014)	(0.013)
Mixed Fixed	−0.022*	−0.047*	0.004
	(0.010)	(0.015)	(0.013)
Mixed Rotating	−0.020*	−0.028*	−0.011
	(0.010)	(0.014)	(0.014)
Same Fixed	−0.032*	−0.054*	−0.009
	(0.010)	(0.015)	(0.014)
Same Rotating	−0.026*	−0.033*	−0.018
	(0.011)	(0.016)	(0.015)
Num.Obs.	8005	4035	3970
FE	City		
Std.Errors	HC1	HC1	HC1
AIC	15 878.8	8313.9	7547.8
RMSE	0.63	0.65	0.61

* p <0.05
Weighted OLS regression with city FEs (in full sample) and robust standard errors.

F Outcome operationalization

Table A5: Outcome operationalization

Domain	Outcome	Status	Description	Round
Economic	Ownership	Primary	Binary indicator whether respondent owns a business (1) or not (0)	1, 2, 3
	Revenue	Primary	Business revenues in the past 30 days across all businesses in USD, real (base: July 2024), winsorized at 1st and 99th percentile, set 0 for non-business owners	1, 2, 3
	Profits	Secondary	Business profits in the past 30 days across all businesses in USD, real (base: July 2024), winsorized at the 1st and 99th percentile	1, 2, 3
	Customer base	Secondary	Winsorized number of individual customers in the last 30 days across all businesses	1, 2, 3
	Productive assets	Secondary	Value of business assets across a fixed list in USD, real (base: July 2024), winsorized at the 1st and 99th percentile	1, 2, 3
	Business hours	Secondary	Hours spent in business in the past 30 days	1, 2, 3
	Non-business income	Secondary	Value of compensation received for any other employment or economic activity in the last 30 days in USD, real (base: July 2024), winsorized at the 1st and 99th percentile	1, 2, 3
	Customer diversity	Secondary	Proportion of customers of different nationalities reported in 6 brackets, numeric midpoint as indicator	1, 2, 3
Psychological	Life satisfaction	Primary	Question on life satisfaction on a Likert-Scale from 0 (worst possible life) to 10 (best possible life), dichotomized at median	1, 2, 3
	Self-efficacy	Primary	Index of 5 questions that capture self-efficacy on a scale from 1 (Strongly disagree) to 5 (Strongly agree), index of all non-missing values, standardized by the pure control group mean and standard deviation	1, 2, 3
Social	Trust in hosts	Primary	Trust in host nationalities in both cities on a scale from 1 (do not trust at all) to 5 (trust very much) in the surveys, standardized by the pure control group mean and standard deviation	1, 2, 3
	Trust in refugees	Primary	Average trust in Somalis, Congolese, Ethiopians, and South Sudanese on a scale from 1 (do not trust at all) to 5 (trust very much), standardized by the pure control group mean and standard deviation	1, 2, 3

	Outgroup interactions	Primary	Frequency of engagement in social activity together with another nationality on a scale from 1 (Never) to 7 (Several times a day), dichotomized at median	1, 2, 3
	Policy support	Secondary	Index of support for 3 different policies that indicate an expansion of rights for refugees for hosts, average over all non-missing values, standardized with pure control group mean and standard deviation	1, 2, 3
Network	Degree centrality	Primary	Number of direct connections that the respondent has in their business network in past 30 days, 1st degree contacts	1, 3
	Diversity	Primary	Nationality heterogeneity of direct ties in their egocentric network using a Gini-Simpson Index	1, 3
	Clustering coefficient	Secondary	Density of all direct business ties when the main respondent is removed from 0 (no possible ties between the business contacts of the respondent) to 1 (all possible ties between the business contacts of the respondent are realized)	1, 3
	Bridges	Secondary	Number of bridges in the respondent's 2-degree network	1, 3
Information	Business practices	Primary	Index of learned business practices constructed from 6 items, average over all non-missing values, standardized with the pure control group mean and standard deviation	1, 2, 3
	Information exchange	Secondary	Number of received and provided referrals about new business opportunities in the last 30 days (from 0 to 60)	1, 2, 3
	Viability	Secondary	IRC ranking of the viability of collaboration proposal from 0 to 12, rescaled from 0 to 1.	2'
Collaboration	Collaborative behavior	Primary	Index of 6 collaborative behaviors that the respondents have engaged in from 1 (never) to 5 (always), average over all non-missing values, standardized with the pure control group mean and standard deviation	1, 2, 3
	Submission	Primary	Binary indicator whether respondents are part of a collaboration submission (1) or not (0)	2'
	Depth	Primary	Categories of low collaboration (=1, buying goods, employment, joint training), medium collaboration (=2, co-marketing, joint acquisitions, rent sharing), or high-risk sharing and in-depth collaboration (=3, profit sharing, co-founding), non-submitters are 0.	2'
	Team diversity	Secondary	Diversity of the applying team in terms of nationality, gender, and refugee status as a a Gini-Simpson Index; non-submitters are 0.	2'

2' indicates that the outcome is collected outside of the regular surveys between baseline and midline.

G Numeric results for models in the main paper

Table A6: Effect of cash+network (compared to cash) on primary outcomes at midline

	Biz	Revenue	Satisfied	Efficacy	Trust (H)	Trust (R)	Interaction	Biz pract.	Collab
Cash+Network	0.033*	0.037	0.013	0.022	0.021	0.039	0.008	0.085	0.102*
	(0.014)	(0.055)	(0.016)	(0.036)	(0.034)	(0.033)	(0.016)	(0.048)	(0.033)
Num.Obs.	6275	6275	6269	6275	6273	6252	6262	2955	6262
RMSE	0.40	326.18	0.45	1.02	0.99	0.96	0.47	0.94	0.94
Std.Errors	HC1	HC1	HC1	HC1	HC1	HC1	HC1	HC1	HC1
FE: Zone	X	X	X	X	X	X	X	X	X
FE: Round	X	X	X	X	X	X	X	X	X
Cash mean	0.72	211.89	0.34	-0.03	-0.02	-0.08	0.62	0.03	-0.02

* p <0.05
Weighted ANCOVA with baseline controls selected through double-lasso. For business revenues, we use a Poisson Quasi-Maximum Likelihood estimate.

Table A7: Effect of cash (compared to control) on primary outcomes at midline

	Biz	Revenue	Satisfied	Efficacy	Trust (H)	Trust (R)	Interaction	Biz pract.	Collab
Cash	0.185*	0.454*	0.099*	−0.045	−0.039	−0.086*	−0.042*	0.070	−0.031
	(0.018)	(0.084)	(0.019)	(0.043)	(0.042)	(0.041)	(0.020)	(0.059)	(0.040)
Num.Obs.	2296	2296	2296	2296	2296	2289	2288	994	2288
RMSE	0.41	318.76	0.46	1.00	0.99	0.96	0.47	0.91	0.95
Std.Errors	HC1	HC1	HC1	HC1	HC1	HC1	HC1	HC1	HC1
FE: Zone	X	X	X	X	X	X	X	X	X
FE: Round	X	X	X	X	X	X	X	X	X
Control	0.54	126.58	0.31	0	0	0	0.66	0	0
Cash	0.72	211.89	0.34	-0.03	-0.02	-0.08	0.62	0.03	-0.02

* p <0.05
Weighted ANCOVA with baseline controls selected through double-lasso. For business revenues, we use a Poisson Quasi-Maximum Likelihood estimate.

Table A8: Effect of network arms compared to cash on collaboration grant outcomes

	Submission	Depth	Diversity	Viability
Mixed Extensive	0.019	0.029	−0.096*	−0.008
	(0.021)	(0.053)	(0.028)	(0.027)
Mixed Intensive	0.021	0.077	−0.052	−0.005
	(0.020)	(0.051)	(0.027)	(0.026)
Same Extensive	0.048*	0.118*	−0.101*	−0.030
	(0.020)	(0.051)	(0.028)	(0.027)
Same Intensive	0.059*	0.135*	−0.047	−0.021
	(0.019)	(0.049)	(0.028)	(0.025)
Control mean	0.250	0.554	0.065	0.156
Num.Obs.	6784	6784	1719	2369
RMSE	0.47	1.20	0.12	0.22
Std.Errors	HC1	HC1	HC1	HC1

* p <0.05

Results for submission and diversity estimated with weighted ANCOVA with baseline controls selected through double-lasso. For diversity and viability, a weighted two-part model with covariates is estimated. FE for catchment areas and covariates omitted.

Table A9: Effect of network intervention on collaboration grant submission compared to cash by refugee-host status

	Grant submission
Cash+Network	0.076*
	(0.023)
Refugee	0.220
	(0.120)
Cash+Network x Refugee	−0.068*
	(0.030)
Cash mean	0.322
Num.Obs.	6784
RMSE	0.47
Std.Errors	HC1

* p <0.05

Results for submission estimated with weighted ANCOVA with baseline controls selected through double-lasso. FE for catchment areas and covariates omitted.

H Additional results

Table A10: Effect of network intervention arms on submission together with another Re:BUiLD participant

	Grant submission with other Re:BUiLD participant
Mixed Extensive	0.053*
	(0.015)
Mixed Intensive	0.072*
	(0.014)
Same Extensive	0.050*
	(0.014)
Same Intensive	0.103*
	(0.014)
Cash mean	0.099
Num.Obs.	6784
RMSE	0.35
Std.Errors	HC1

* p <0.05

Results for submission estimated with weighted ANCOVA with baseline controls selected through double-lasso. FE for catchment areas and covariates omitted.