Not in My Backyard?

Welfare Gains and Social Challenges: The Impact of Refugees on the Host Population in Uganda

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Abstract

This study exploits a natural experiment of three sudden Congolese refugee inflows to causally investigate the impact of an increased exposure to refugee presence on the Ugandan host population. We focus on the effects on female employment, household welfare and social cohesion among the host population. Using a repeated cross-section (pre- and post-treatment) of Demographic and Health Survey (DHS) data covering the years 2001 to 2011, we find that a higher exposure to our treatment variable increases the probability that Ugandan women are active in the labour market. This effect is mainly driven by agricultural employment. We also find that a higher treatment exposure has a positive impact on household wealth and a beneficial effect on nutritional indicators of children below the age of five. Our qualitative investigation suggests that incoming refugees improved labour market opportunities for Ugandan women, for instance, by increasing demand (such as for agricultural produce) and new marketing channels. These effects translated into positive average welfare effects for the host population. Irrespective of these welfare gains, analysing different dimensions of social cohesion using Afrobarometer data covering the years 2000 to 2012, we found that a higher exposure to our treatment variable was negatively associated with social cohesion indicators: a larger refugee presence was associated, for instance, with a rise in perceived inequality, as well as with lower levels of general trust among the host population. While the underlying mechanisms necessitate future research and a more nuanced analysis, we note that economic gains do not necessarily benefit social cohesion.

Keywords: Female labour force participation, nutritional outcomes, refugees, forced displacement, DRC, Uganda, social cohesion, DHS, Afrobarometer

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Abbreviations

DHS	Demographic and Health Survey
Diff-in-Diff	difference-in-differences
DRC	Democratic Republic of Congo
FLP	female labour force participation
LRA	Lord's Resistance Army
NGO	non-governmental organisation
OPM	Office of the Prime Minister
PSU	primary sampling unit
SCI	Social Cohesion Index
UDHS	Uganda Demographic Health Survey
UNHCR	United Nations High Commissioner for Refugees

1   Introduction

An estimated 85 per cent of forcibly displaced people worldwide are being hosted in low- and middle income countries, usually neighbouring or in close proximity to countries at war. These host countries tend to be located in fragile contexts and face challenges of resource scarcity and development needs irrespective of inward migration (UNHCR [United Nations High Commissioner for Refugees], 2018b, 2018c). The number of protracted refugee situations – those lasting longer than five years – has increased over the past decades. This implies that the expected duration of hosting refugees, and "being hosted", is increasing and raising fundamental questions about the nature of living together in host countries, that is, questions relating to social cohesion within host societies. This is particularly so, given that the host populations' support towards refugees often declines over time, implying the potential for social conflict and violence (see, for instance, International Crisis Group, 2018; Sarzin, 2017). Uganda is a case in point (Kreibaum, 2016).

The aim of this paper is to analyse the impact of hosting refugees among Ugandan households following an episode of displacement from the Democratic Republic of Congo (DRC) after 2005, acknowledging that expected impacts go well beyond economic costs and benefits. As witnessed by contemporary debates about migration issues worldwide, it is crucial to take a multidimensional perspective on associated economic and societal changes (for example, Agblorti, 2011; Kuhnt, Rischke, David, & Lechtenfeld, 2017). Our choice of quantitative welfare outcomes is both driven and limited by the possibilities of exploiting different sources of secondary data that are uniquely suited to jointly painting a nuanced picture of the diverse impacts including labour market effects, household welfare and indicators of social cohesion.

We analysed labour market changes in terms of female labour force participation (FLP) and other welfare indicators using a repeated cross-section of Demographic and Health Surveys (DHS). FLP is of particular interest in Uganda, as women in general, and female-headed households in particular, are often found to be poorer than male-headed households while, *within* households, men tend to have the main control over productive resources. FLP is argued to increase female control over household resources, which in turn has been linked to better livelihoods, for instance in terms of household and children's food consumption and health (Duflo, 2003; Abu-Ghaida & Klasen, 2004). For the latter reason, we analysed household welfare in terms of nutritional outcomes among children – a standard indicator used in the field of development economics (see, for instance, Abu-Ghaida & Klasen, 2004) – in addition to household wealth, that is, the probability of households being poor. We studied the potential effects of hosting refugees on different measures of social cohesion using a repeated cross-section of the Ugandan Afrobarometer data.

The contextual focus of this study is a sudden and unexpected displacement episode from the DRC starting in the aftermath of the Second Congo War (1998-2003), one of Africa's deadliest conflicts in recent history (UNECA [United Nations Economic Commission for Africa], 2015). Unexpected by the local and international institutions, more than 100,000 refugees from the DRC arrived in Uganda in the years *following* the official peace agreement in summer 2003

(Kreibaum, 2016). They were mainly sent to three camps located in the Southwest of Uganda that were mostly vacant before that. Following Kreibaum (2016) we considered this sudden and unexpected inflow of Congolese refugees as a natural experiment that we exploited for the causal identification using a difference-in-differences (Diff-in-Diff) framework.

Uganda shares borders with conflict-torn countries, including South Sudan and the DRC. It has a long history as a host country for refugees and currently provides refuge to almost 1.4 million forcibly displaced people, primarily from South Sudan, the DRC, and Burundi (UNHCR, 2018a). The Northern part of Uganda has itself a recent history of civil war[1] that has resulted in internal and international displacement. While the Congolese refugees were initially received openly by the Ugandan population, the protraction of their situation led to an increasing reluctance among the hosts to support their presence. They were increasingly perceived as a burden on public services and as competition in the labour market (Kreibaum, 2016). Building upon the so-called self-reliance strategy from 1999 onwards, the Refugee Act of 2006-2009 gave refugees relative freedom of movement, and an equal access to primary education, healthcare, and other basic social services, as well as the right to work and own a business. In spite of their freedom to settle outside designated areas, the majority of refugees chose to stay in refugee settlements in order to continue receiving UNHCR (United Nations High Commissioner for Refugees) assistance. In these settlements, until recently,[2] they were allocated pieces of agricultural land and materials to build shelters and grow food. The aim of this strategy was to promote their self-reliance and overcome their dependence on humanitarian aid. Uganda has been praised by the international community for its refugee policy which had been described as being progressive (UNHCR, 2018a; Meyer, 2006).[3] The settlements are neither socially nor economically isolated. There is intensive and frequent interaction between different refugee groups and the host population, who are often neighbours and use the same public services, including hospitals and schools (see Betts, Bloom, Kaplan, & Omata, 2014).

We find that a higher refugee exposure increases female labour force participation among the Ugandan hosts. This effect is mainly driven by women working in the agricultural sector. Our findings suggest that these labour market changes translate into positive average welfare gains for the host population: A higher treatment exposure reduces the probability of households falling within the poorest wealth quintiles and has beneficial effects on the nutritional indicators of children below the age of five. In terms of impact channels, a complementary qualitative investigation based on field visits suggested that incoming refugees improved labour market

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1   The Lord Resistance Army insurgency started in the 1980s and was ongoing, particularly in the Ugandan North until the early 2000s resulting in large-scale displacements into the neighbouring countries.

2   The Ugandan refugee policy has been recently criticised, as an essential part of the Refugee Law – the land plots allocated to refugees – shrank substantially after 2011 due to land scarcity (personal interviews, 2018; UNHCR, 2018d; Shrinking land opens new challenge, 2017). Additionally, changing rainfall patterns due to climate change have deteriorated harvest outcomes. These factors endanger the self-reliance approach of the Ugandan government, which implies that new strategies need to be developed and rolled-out to facilitate the economic participation of refugees and to avoid secondary conflicts.

3   It is important to note that, particularly in recent years, several actors have started to criticise this self-reliance model employed in Uganda as being driven by the interest of donor and host institutions rather than necessarily benefitting the vulnerable refugee population (for example, Meyer, 2006).

opportunities for Ugandan women, for instance, by increasing demand (such as for agricultural produce) and by creating new marketing channels. In terms of social cohesion indicators, we found that a higher refugee exposure is associated with more perceived inequality and with changes in articulated identities. While the interpretation of these changes is not straightforward, we also find a higher refugee exposure to be associated with a reduction in general levels of trust that the host population holds towards other people. We do interpret this latter finding as pointing to a reduction in social cohesion that needs to be taken seriously. Given that the host and refugee population is reported to frequently interact this result does not seem to be driven by a lack of contact between groups but rather points to other dynamics that are at play.

Our contribution to the literature is three-fold: First, by exploiting a natural experiment, we add to the scarce quantitative literature on the causal effects of displacement-related migration on host populations in a low-income-country context. Second, extending the analysis of **individual** labour market outcomes by indicators of **household** welfare and **societal** cohesion, we provide a much more comprehensive impact analysis than existing studies. Third, establishing that average individual and household-level welfare gains do not necessarily translate positively into indicators of social cohesion points to an important mismatch that is a highly relevant area of future research and policy action.

This paper is organised as follows: Section 2 describes the theoretical framework related to our outcomes of interest. In Section 3, we provide details on our data and operationalisation. Section 4 provides a more in-depth background of displacement-related migration in Uganda in order to motivate our identification strategy and methodology in Section 5. We present our results in Section 6 and conduct various robustness checks in Section 7. Section 8 discusses potential impact channels that may drive our empirical results, before Section 9 offers our conclusions.

2 Theoretical framework

Empirical evidence on the impact of migration on host countries and communities has traditionally focused on voluntary migration flows (for instance, Borjas, 1995, 2003; Glitz, 2012; Ottaviano & Peri, 2008). Their findings illustrate potential mechanisms that might also apply to forced migration, yet, it is important to note critical differences: Studies on voluntary migration largely focus on high-income receiving countries, while low-income countries host the vast majority of refugees (see again Borjas, 1995, 2003; Glitz, 2012; Ottaviano & Peri, 2008). Further, the multidimensional motivations behind migration choices are expected to differ across migrant groups. While voluntary migrants are often assumed to seek better economic opportunities, forced migrants are assumed to be primarily fleeing from oppression, war or conflict without dominating economic motivations (Cassidy, 2004). While there is some evidence on the effects of refugee protection crises on forcefully relocated populations themselves, the literature trying to quantify the impact of forced migration on the host economy and population has only increased recently. Possible effects are complex, ranging from price increases for goods and services over competition for jobs and natural resources to economic opportunities, positive demand shocks, and beneficial social spillovers (see, among others, Balkan & Tumen, 2016; Ruiz & Vargas-Silva, 2016; Taylor et al., 2016; Tumen, 2016; Fallah, Krafft, & Wahba, 2018; Hong & McLaren, 2016).

2.1 Labour market and other economic effects

We still know little about the outcomes of labour market effects on host populations, particularly in low-income countries (for recent exceptions, see Balkan & Tumen, 2016; Del Carpio & Wagner, 2015; Ruiz & Vargas-Silva, 2015, 2016). It has been acknowledged that the presence of refugees can be both economically harmful and beneficial to the host population and depends, for instance, on labour market policies and on the timeframe under consideration (refer, for instance, to Kreibaum, 2016; Ruiz & Vargas-Silva, 2015). According to theoretical considerations and previous literature focussing on "voluntary" migration, the arrival of significant numbers of migrants often presents an initial burden on the local environment and resources as well as increasing competition in low-income segments of the labour market (for example, Borjas, 2003; Braun & Mahmoud, 2014; Foged & Peri, 2015). However, host populations can simultaneously benefit from the provision of cheap labour to local producers and from an increased demand for goods and services, which can change the mix of goods and services required, and the technologies used to produce or provide them (Dustmann, Glitz, & Frattini, 2009). This is in line with anecdotal evidence from western Tanzania that suggests changing opportunities of a displacement-related migration over time: After an initial burden on infrastructure and local markets, the local host population was able to benefit from the business interaction and increased demand for agricultural products (Whitaker, 1999). In other words, over time, supply-side effects were able to catch up with demand-side effects. Recent studies investigating the short-term effects of the Syrian displacement crisis on hosting communities, particularly on the local job market, have presented ambiguous results ranging from a positive impact to adverse (though often small) effects, particularly for informal and low-skilled native workers, including previous migrant workers (Tumen, 2016; Bagir, 2018;

Ceritoglu, Yunculer, Torun, & Tumen, 2017; Del Carpio & Wagner, 2015; El-Mallakh & Wahba, 2018; Fallah et al., 2018). Apart from labour supply effects, several studies find migration-induced increases in demand stimulating economic activity (Cengiz & Tekguc, 2018; Akgündüz, van den Berg, & Hassink, 2018).

There are a number of descriptive studies that demonstrate the economic interaction between refugee and host population in several African countries (for instance, Werker, 2007; Alloush, Taylor, Gupta, Valdes, & Gonzalez-Estrada, 2017). For the case of Uganda, Betts et al. (2014) describe diverse "refugee economies" within Ugandan refugee settlements, where intense economic interactions take place both among refugees themselves and between Ugandans and refugees. Their qualitative evidence suggests that refugees coming to Uganda from the DRC mainly work in agriculture, either on their own plot of land received upon arrival or as agricultural wage labourers.

Another set of recent studies has aimed to identify causal economic effects of hosting refugees for populations in low- and middle-income countries. Evidence from Kenya shows that, in the long run, the presence of forced migrants increases economic activities (approximated by nightlight data) in refugee hosting areas (Alix-Garcia, Walker, Bartlett, Onder, & Sanghi, 2018). The authors find that proximity to a large refugee camp increased consumption, and generated more low-skilled jobs and wage labour for the host population. Also, their results suggest that the mechanism worked through an increased agricultural and livestock production incentivised by increased demand from refugees. This is supported by Taylor et al. (2016), who use a simulation approach and data on Congolese refugees in Rwanda and noticed that refugee presence increased host populations real income through market interactions. Using the same Ugandan setting as our study, Kreibaum (2016) found that the sudden influx of Congolese refugees into Uganda increased real consumption of the host population at the district-level. Further, she documented that Ugandans living close to refugee settlements benefitted from increased public service provision within refugee camps that they were also able to access. Using the influx of Burundian and Rwandan refugees into Tanzania as a natural experiment, Maystadt and Duranton (2014) detected a positive long-term impact of refugee influx on the local population's real per capita consumption even after the return to their country of origin. As a main driver for the observed persistent change in welfare, they referred to reduced transportation costs through road investments. Relying on similar data, Maystadt and Verwimp (2014) found heterogeneous effects of the large refugee presence on the Tanzanian host population: While overall consumption increased, this effect was less pronounced for paid labourers and most pronounced for agricultural self-employed households (that is, for those selling their surplus on the market). They explained this by increased competition among agricultural workers while the self-employed agricultural households benefitted from the provision of cheap labour. This is consistent with the study by Alix-Garcia and Saah (2009) and that by Ruiz and Vargas-Silva (2016). Investigating the effect of variations in refugee population in Tanzania, Alix-Garcia and Saah (2009) became aware that prices for agricultural goods increased for areas located closer to refugee camps. They presented suggestive evidence that this benefitted the rural population who were predominantly net-producing households, that is, people active in agricultural production, for whom they found positive welfare effects versus negative wealth effects for those living in urban areas. In their setting, food aid as a

supply-side effect seemed to affect prices only in the short run. In addition, Ruiz and Vargas-Silva (2016) noticed that an increased presence of refugees positively impacted the incomes of Tanzanian farmers (owning land) engaged in agriculture or livestock production. Their results further suggested that particularly agricultural employees (not owning land) were negatively affected through the increase of cheap low-skilled labour. They did not find evidence for a general increase in the likelihood of self-employment, though they did find that those previously employed as temporary workers showed a tendency towards increased self-employment after the refugee influx. In general, natives had an advantage in establishing new businesses due to their local knowledge and access to networks.

Research investigating the effects of internal displacement on host communities helps to further understand labour market effects of population movements that are more similar to each other and, hence, are closer substitutes in the job market. This is relevant to our study since incoming refugees from the DRC partly shared the same ethnic background as their Ugandan hosts. Investigating a population shock to local labour markets through internal displacement in Colombia, Calderón and Ibáñez (2009) found a negative effect on wages, particularly for low-skilled informal workers. It is important to note, here, that internal displacement in Colombia is characterised by people scattered throughout the country while, in our study, refugees are largely localised within the respective refugee settlements. Furthermore, the similarity of internally displaced people with the receiving population is expected to ease the substitutability of labourers. In the same country, Bozzoli, Brück and Wald (2012b) observed that internal displacement led to increased self-employment. According to Calderón and Ibáñez (2009), Morales (2018) found that in the short run the Colombian host communities were negatively impacted by depressed wages. However, in the longer run, these effects were largely dispersed, though a small negative effect persisted for low-skilled, female workers.

In sum, previous empirical research speaks of ambiguous and heterogeneous treatment effects among different groups of the host population that are, moreover, time-sensitive in nature. Results from rigorous evaluations were inconclusive regarding the multitude of effects of voluntary and forced migration on the host community and depend on the profile of the local economy (examples are: Borjas, 1995, 2003; Card, 2001; Ottaviano & Peri, 2008; Glitz, 2012; Clemens, 2013; Braun & Mahmoud, 2014).

Women in low-income, rural settings are usually involved in agricultural activities. At the same time, their formal access to land-owning rights and their role in handling cash crops (such as coffee, high-value fresh fruits, and vegetables) is often restricted and in the hands of the male head of the household (see Fischer & Qaim, 2012). Studies on the gender-specific impact of migration are very limited and mostly focus on high-income countries (such as Furtado, 2015; Cortés & Tessada, 2011). Fransen, Ruiz and Vargas-Silva (2017) identified that the presence of refugees in Tanzania had a differential impact on tasks and time allocation for male and female members of host communities. Depending on women's skill levels, they established that higher-skilled women experienced an increase in outside employment due to a higher supply of unskilled refugee workers taking over household chores. In contrast, less-skilled women suffered from increased competition over natural resources, leading to the need to dedicate more time to daily household tasks (such as firewood collection), which caused a reduction in outside employment.

Building on these insights, we expected the hosting of refugees in Uganda with its liberal refugee policies in terms of access to productive assets and labour markets[4] to have, on average, a positive economic effect in the medium to longer-run, particularly for Ugandans who were engaged in agricultural self-employment.

2.2   Social cohesion

Apart from the economic impact of hosting refugees, it was expected that the arrival of new people would affect the social cohesion within local communities and host societies more generally. This is relevant since it frames interactions between different groups of society and may influence the peaceful functioning of communities (for instance, Kuhnt et al., 2017).

A lack of social cohesion in the context of refugee hosting countries is assumed to have the potential for fuelling social tension and secondary conflicts, for example, by increasing a feeling of insecurity, unfair privileges and increased labour competition (see International Crisis Group, 2018). Empirical evidence on the impact of refugees on social cohesion is however, still scarce, particularly in low- and middle-income countries. Initial qualitative and quantitative descriptive evidence (Agblorti, 2011; Landau, 2002; Kuhnt et al., 2017) suggests there is a relationship.

Possible effects of migration that might impact social cohesion are multifaceted and linked, for instance, to changes in the socioeconomic structure, including the diversity of host communities (for a review, see Kuhnt et al., 2017). Inward migration often increases the diversity within host communities, for instance in terms of native languages, beliefs and cultural norms. A variety of studies have investigated the effects of diversity on a society, although results are ambivalent (for a review, see Kuhnt et al., 2017). Overall, new people trigger changes in in-group and out-group dynamics: existing group boundaries and group memberships, for instance, can shift, even with different waves of "otherwise similar" migrant groups coming in. Landau (2002) reports that the host population in Tanzania felt closer adherence to their national virtue and identity in reaction to the arrival of refugees, while it simultaneously did not strengthen the citizen's relationship or trust towards their nation state. Particularly, if people feel threatened (for instance, by low-wage competition in the labour market or by other belief or value systems) in-group solidarity (that is, solidarity from people sharing a similar belief system or salient characteristics) might increase, which is often simultaneously associated with out-group distrust or hostility (intergroup threat theory) (Stephan, Ybarra, & Morrison, 2009; Hargreaves & Zizzo, 2009). At the same time, the contact theory suggests that increasing the number of people from other groups fosters the possibility of interaction between members of different groups, which can in turn decrease prejudices (Wagner, Christ, Pettigrew, Stellmacher, & Wolf, 2006; Schlueter & Scheepers, 2010). Here again, the short-run impact is likely to differ from longer-term effects (see Putnam, 2007). General levels of trust – one indicator of social cohesion – are negatively affected by psychological hardship and discrimination (Alesina & La

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4   These have recently been subject to changes due to scarcity of gazetted governmental land (personal interviews, 2018; Shrinking land opens new challenge, 2017).

Ferrara, 2002; Simpson, 2018; Lavallée & Roubaud, 2018). At the same time, a number of studies that mostly use "lab-in-the-field" experiments to investigate the effect of civil wars or conflict on social cohesion in low-income countries find that the personal experience of violence increases the level of pro-social behaviour within communities (for example, Gilligan, Pasquale, & Samii, 2014; Voors et al., 2012; Blattman, 2009; Stage & Uwera, 2018). A low socioeconomic status of individuals is another aspect that can hinder their capability to be active members of society, and can decrease general levels of trust (Vergolini, 2011). Poverty and inequality more generally have been shown to be detrimental to social cohesion (for instance, Kawachi & Kennedy, 1997; Alesina & La Ferrara, 2000; Costa & Kahn, 2003).

Applied to Uganda, the expected effect of refugees on social cohesion remains ambiguous: The freedom of movement of refugees within the country and the de facto integrative settlements where refugee and host population live as neighbours and use the same public institutions (such as schools and health centres) provide ample possibilities for meaningful interactions (contact theory). At the same time, however, the spatial integration increases their visibility and this might increase threat perceptions among host community members. While it is possible that the protracted nature of the refugee situation in Uganda may lead to growing resentment over time (Harrell-Bond, 1986, 2002), it is equally possible that barriers to social interaction and economic integration (such as language) will fade over time (Whitaker, 2001).

3 Data and operationalisation

3.1 Refugee stock and inflow

We used UNHCR data collected and provided by Kreibaum (2016) that included information on the yearly stock and arrival of refugee groups in the Ugandan settlements. Following our identification strategy (see Section 5) we focused on the inflow of refugees in three settlements that experienced a sudden increase of refugees from the DRC starting in 2005 up to the year 2009: Nakivale, Kyangwali and Kyaka II. Previous to this influx, the settlements had mostly been vacant. We have the GPS coordinates of each refugee settlement, which we used to calculate distances between the households (using the GPS information of the respective primary sampling unit (PSU)) and the three settlements.

3.2 Female employment and household welfare

We used three survey waves of the Ugandan Demographic Health Survey (UDHS) (years 2000/2001, 2006, 2011) to analyse indicators of female employment and household welfare. This data was collected by the Uganda Bureau of Statistics in collaboration with the Ministry of Health. The UDHS is a nationally representative survey of households, including women in the age range 15-49, and children born to these women. It provides information on female employment as well as on a variety of health and household indicators of wellbeing. The data is collected as repeated cross-sectional data. Our sample included both married and single women, which left us with a sample of 18,682 individuals.

Five districts in the north of Uganda were heavily affected by violent conflicts of the Lord's Resistance Army (LRA) until 2006. As a consequence, economic activities in that area were disrupted and undermined by violence, as well as characterised by the inability of people to freely interact in the market (Refugee Law Project, 2014). They also became dependent on food aid and were not able to be self-sustainable due to the inability to engage in farming or participate in economic activities. Instead of allowing them to flee to other districts in Uganda, the government began in 1996 to force people to move to so-called "protected villages", mainly located in the sub-region Lango and Acholi in Northern Uganda (Bozzoli et al., 2012a). In short, as the economic development of these Northern areas is presumably very different from other regions in Uganda, we excluded these conflict-affected districts from our analysis. In a similar line, we dropped the capital district Kampala, as the majority of refugees located in Kampala were not registered officially and hence could not be accounted for (Kreibaum, 2016). Furthermore, there were presumably a lot of economic opportunities in large urban centres, thus crowding out effects may not have been so strong as to affect the livelihood of the majority of the population. In sum, our analyses explored how large numbers of refugee inflows affected the economic activities and welfare of the host population in less densely populated areas.

Overall, we were left with 46 districts and 701 PSUs in our sample and the refugee settlements were located in three of the districts. In the subsequent sections of this paper, we will refer to PSUs as 'clusters'.

3.3 Social cohesion

Social cohesion is a multidimensional concept that lacks a clear-cut definition and established practice regarding its measurement. Researchers have developed and applied different measures and created multidimensional indices proxying different aspects of social cohesion. This makes a comparison across empirical studies difficult. Measures often overlap in the variables used, which commonly include personal and institutional trust, civic or political engagement, and memberships in associations. The data used for these measurements mainly came from secondary multi-purpose surveys, such as the Afro- and Arab-barometer, the European and World Value Survey or the Gallup World Poll. We adhere to the Social Cohesion Index (SCI) developed by Langer, Steward, Smedts, and Demarest (2016). It considers three relationships commonly hypothesised for determining the degree of social cohesion within a society: "bonding" (relationships within groups of a society); "bridging" (relationships across groups within a society); and "linking" (relationship between individuals and state institutions). The SCI is operationalised by considering individual perceptions in three dimensions: inequality, trust, and group identities. These components are not independent but mutually related (see Figure 1).

The first component, perceived inequalities, refers to both horizontal inequalities experienced (to other members of the same group) and to vertical inequalities experienced (between groups). Particularly in multi-ethnic societies such as Uganda, inequalities between ethnic groups (or, for instance, across religious lines) can lead to violence and conflict (Langer et al., 2016). According to the authors, relevant inequalities include those of political, cultural, social or economic nature. Highly unequal societies are hypothesised to be less socially cohesive.

The second component describes the extent of trust in institutions as well as among people in general terms. Several studies have used trust as an important measure of the "glue" within the society (such as Knack & Keefer, 1997; Zak & Knack, 2001). Low levels of trust and social cohesion in societies are associated with a larger likelihood of conflict and, following a two-way relationship, conflicts also destroy trust (Langer et al., 2016).

The third component of this index is the strength of people's adherence to their national in relation to their group (here ethnic) identity. In particular, in settings with diverse ethnicities and artificially created national boundaries, this indicator is deemed important. The authors argue that closer adherence to a group identity can trigger conflict between groups while national identities can also be used to differentiate oneself from other nationalities, for instance, from a refugee population. The relationship between a sense of national belonging and social cohesion between refugees and the host population is thus a bit unclear. While the feeling of belonging to one's nation is considered a characteristic of cohesive societies, increasing the sense of belonging to the in-group could also reflect the perception of intrusion by the out-group. Langer et al. (2016) have applied the SCI to several African countries using repeated cross-sectional data from the Afrobarometer.

Following their example, we use five Ugandan Afrobarometer waves (years 2000, 2002, 2005, 2008, 2012). This public attitude survey is a nationally representative repeated cross-sectional dataset with geo-referenced PSUs and includes detailed information on different dimensions of social cohesion. Each wave contains approximately 2,400 interviews, which left us with a pooled sample of 11,902 observations and 1,199 unique PSUs where each PSU typically contained 8 households. All respondents were randomly selected adult citizens. After excluding the five Northern conflict-affected districts and the Kampala region (as conflict and densely populated areas are likely to affect social interactions and communities' perceptions, as well as with an aim to establish comparability to the UDHS dataset), we were left with 57 districts in 4 regions of Uganda.

Using the Afrobarometer dataset, we then followed Langer et al. (2016) in their specific measures of the three components of the SCI (refer to Figure 1).

Figure 1: SCI components as proposed by Langer et al. (2016) and proxied by Afrobarometer data

„In general, how do you rate your living conditions compared to those of other Ugandans?"

"How often are __ [Respondent's Ethnic Group] treated unfairly by the government?"

INEQUALITY

IDENTITY

"Let us suppose that you had to choose between being a Ugandan and being a ___ [Respondent's Ethnic Group]. Which of the following best expresses your feelings?"

TRUST

Institutional Trust: „How much do you trust each of the following?" (police, electoral commission, courts)

Interpersonal Trust: „How much do you generally trust other people?"

Source: Authors

All components were perception-based. Inequality was proxied using two variables aimed at capturing perceived equality among Ugandan hosts. The first measured economic equality and was set equal to 1 if the own living conditions were perceived to be the same compared to other Ugandans. The second component aimed at measuring equal treatment of important subgroups, here the ethnic group, within the larger population. This variable equalled 1 if the respondent stated that his or her ethnic group was never treated unfairly by the government. Both components were combined into an equality index by taking their joint mean value where negative values referred to a reduction in perceived equality. This index was available for the years 2005 to 2012. Identity was measured by a variable capturing the degree to which the respondent felt closer to the national compared to his/her ethnic identity. It equalled 1 if the respondent felt more or exclusively Ugandan rather than adhering to his/her ethnic group. This variable was available as of 2005 and up to 2012.[5] The third SCI component was composed of two different sets of variables: The first measured trust towards various different state institutions. Here, we included trust towards the police, courts, the electoral commission, the president, and the parliament. All these variables were available from 2002 to 2012. All variables equalled 1 if trust levels were high ("trusts a lot"). They were combined into a joint

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5   The variables referring to ethnic identities (identity variable as well as the second component of the equality index) can only be used from the year 2005 onwards as only then was a comparable definition of the respondent's ethnic group used by Afrobarometer in Uganda.

index by taking their mean values. In addition, we investigated interpersonal trust by using a variable measuring generalised trust levels towards other people. This variable was set to 1 if the respondent stated that most people could be trusted. We had information on this variable for the years 2000, 2005, and 2012.

4   Setting the scene: refugee settlements and distributional policies in Uganda

Where refugees are concerned, the Ugandan government follows a self-reliance strategy (Meyer, 2006). Upon arrival and registration at transition camps at the Ugandan border, refugees receive emergency aid for up to two weeks. They are subsequently allocated to settlements according to the capacity of the respective camp and potential family bonds (personal interviews,[6] 2018). Here, they receive a plot of land for farming activities and material assistance in the form of shelter, food rations, basic farming tools, as well as access to public services, such as schools and health clinics. The main economic activity both for the refugee and host population is farming and livestock production: Over 80 per cent of the rural Ugandan population is employed in the agricultural sector (Sebba, 2006; CAP [Consolidated Appeals Process], 2006). Congolese refugees are also mainly active in agriculture, cultivating their own land or as agricultural workers, and only a minority own small businesses (Betts, 2013; UNHCR, 2014). Food assistance is phased out five years after arrival as the refugees should have become self-reliant by then, for instance, from farming their land and selling agricultural surplus[7] (Dryden-Peterson & Hovil, 2004; Sebba, 2006). Furthermore, the government tries to build integrated public services that are accessed by Ugandans as well as by the refugee population (Meyer, 2006; Kreibaum, 2016). In the Refugee Act of 2006-2009, the Ugandan government officially established freedom of movement for all refugees and it allowed them to choose between living in one of the settlements (where they would receive all the organised assistance) or moving independently to urban centres (where they would forego such assistance) and self-settle there.

The Second Congo War, which commenced after a coup in 1998, initiated a protracted displacement crisis, forcing millions of people to leave their homes, particularly in the east of the DRC. A peace agreement in 2003 officially ended that war. But particularly in the Eastern Congolese provinces, Kivu and Ituri, an independent conflict among militia continued and escalated in the following years, resulting in large displacement-related migration across and within the DRC borders. In this paper, we focus on these displacement waves of Congolese fleeing to Uganda. Refugees from the DRC were largely sent to three settlements within the South-Western region of Uganda: Kyaka II, Nakivale and Kyangwali, whereas other settlements received only a negligible number of refugees and, hence, are disregarded in this

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6   Open-format, explorative conversational interviews were conducted during field visits in Nakivale settlement. Refugee and host population interviews were conducted over a period of two weeks.

7   Since 2011/2012, the Ugandan government has had difficulties in providing agricultural land to all newly arriving refugees due to the lack of sufficient governmental-owned farm land. The scarcity has also given rise to land conflicts between host and refugee populations (refer to Bagenda, Naggaga, & Smith, 2003).

context.[8] All three settlements are located in the South-West of Uganda in relative remote and rural places in proximity to the DRC border (see Figure 2). They were established in the early 1960s for Burundi and Rwandese refugees, of whom most resettled into their country of origin in the 1990s (Bagenda et al., 2003; UNHCR, 1995).

As can be seen from Figure 3, the first major wave of DRC refugees came in 2005 and were mainly sent to the refugee settlement Kyaka II, followed by two additional waves in 2008 and 2009, where refugees were sent to the settlements Nakivale and Kyangwali. Nakivale is the largest settlement with more than 100,000 refugees, followed by Kyangwali with more than 40,000 and Kyaka II with almost 30,000 inhabitants. In all settlements, Congolese refugees represent the majority (UNHCR, 2016a). In 2009 – after the last large peak influx of refugees from the DRC – the percentage of refugees of the total district population stood at 42 per cent for Kyangwali, 39 per cent for Kyaka II, and 135 per cent for Nakivale settlement (Kreibaum, 2016). As argued in Kreibaum (2016), both the Ugandan government as well as aid agencies were unprepared for the sudden arrival of thousands of refugees. We argue that the unanticipated, sudden and localised nature of this episode provides a tool to isolate the effect of the refugee inflows from other factors.[9]

Irrespective of their freedom to move out of the settlements, an estimated 88 per cent of the Congolese refugees in Uganda chose to live in settlements and only 12 per cent to live in Kampala (UNHCR, 2014). Betts et al. (2014) document the intense economic interaction between host and refugee population. In spite of the remote locations of the refugee settlements, they are closely integrated into the local economies. Through trading in particular, the settlements are integrated into the wider economic system, and refugee and host populations regularly interact across national, religious or ethnic lines (Betts et al., 2014).

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8   During our period of investigation, Oruchinga (located in the same district as Nakivale) and Rwamwanja settlement had both only experienced total inflows of approximately 1,500 DRC refugees and Rhino Camp a total of 500 refugees from the DRC. Other settlements located in other regions of the country had received even lower numbers.

9   There were no other major refugee inflows from other countries of origin into the three settlements during the period of investigation. South Sudanese refugees arrived in settlements located in the Northern districts of Uganda. Our results are robust to excluding these districts.

Figure 2:   Presence of UNHCR refugees in Uganda as of July 2016
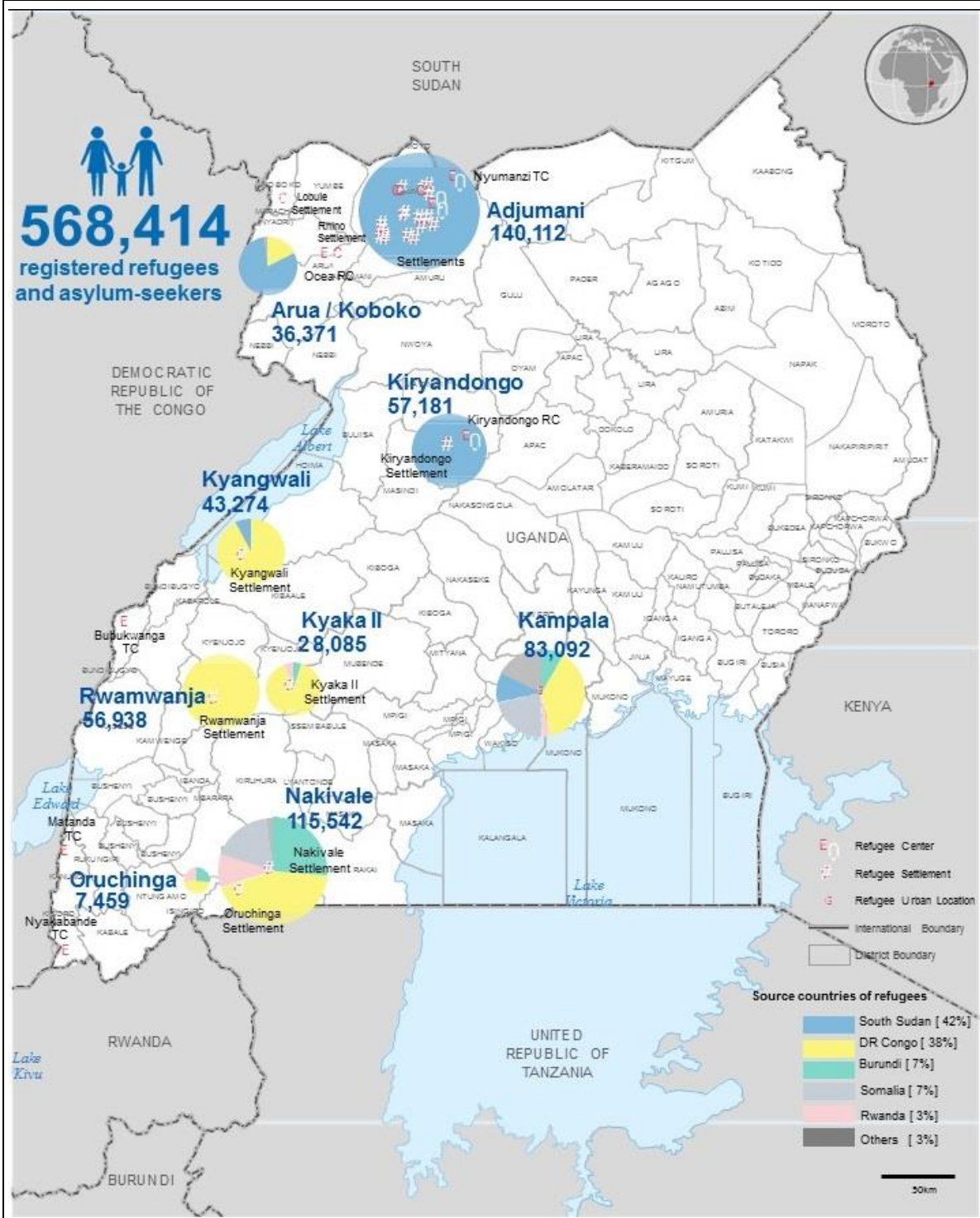
Note: Rwamwanja settlement was opened in 2012.

Source: UNHCR, 2016b

Figure 3:   Influx of Congolese refugees to three settlements

Source: Authors (UNHCR data)
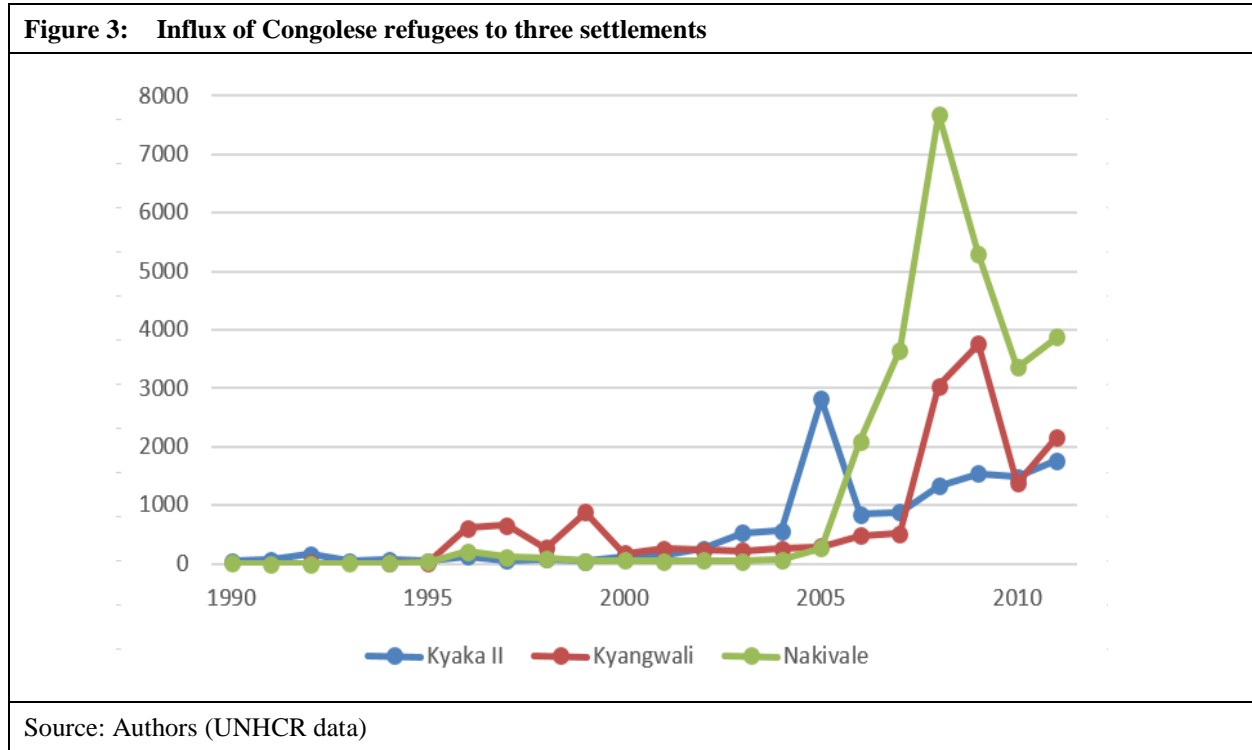
5   Identification strategy and methodology

Our datasets were uniquely suited to assess the causal impact of three series of refugee inflows between the years 2005 and 2009 on the Ugandan host population. This was because, first, both datasets comprising our dependent variables (DHS and Afrobarometer) contained waves that were carried out before the unexpected and large inflows of Congolese refugees started to take place in 2005 (see Section 4).

5.1   Exploiting a natural experiment

Our identification strategy relied on the unexpected size and nature of the refugee arrivals from the DRC to Ugandan settlements. While considerations related to economic potentials may have played a role when establishing these settlements in the 1960s, as documented by various sources (such as Mushemeza, 1993), the initial set-up of the location of the settlements in the 1960s was reportedly mainly based on the need to find large rural areas not invaded by tsetse flies, a carrier of the so-called sleeping sickness. Hence, all three settlements had already been set up decades before this study's displacement period which implies a pre-established infrastructure to provide basic services to refugees as well as some adaptation to receiving foreigners by neighbouring communities.

We argue that the location of settlements is (sufficiently) exogenous to the economic activities and social structures at the time of the Congolese refugee inflows under investigation. When

the official peace agreement was signed in 2003, local and international institutions did not expect another spike of violence and subsequent displacements of Congolese populations. As described by Kreibaum (2016), particularly the large number of people arriving within such a short period of time was unexpected. Another concern to our identification strategy was that, despite being forcibly displaced, a refugee's decision to locate to a certain area might be associated with the economic opportunities available at the destination. However, there is a growing body of literature supporting our notion that forced migration from armed conflicts – the context in which Congolese refugees arrived in Uganda – is not primarily driven by economic considerations (Lozano-Gracia, Piras, Ibánez, & Hewings, 2010; Czaika & Kis-Katos, 2009). Additionally, the allocation of refugees across settlements is said to be randomly decided by the Ugandan authorities upon their arrival in transition camps at the border according to the settlements' capacities (personal interviews, 2018). Hence, the refugees themselves did not have the option of choosing their settlement location. We further argue that, in the context of Uganda, the concern about refugees locating themselves to more dynamic and economically active regions after their initial settlement is negligible (Bonfiglio, 2010; Dryden-Peterson & Hovil, 2004).

Overall, these conditions underlined the setting as a suitable natural experiment, where the intensity of refugee presence was unrelated to potential determinants of our dependent variables (Gerber & Green, 2011).

5.2 Treatment indicator: intensity of refugee exposure

By using the information on the yearly inflow data per settlement in combination with geo-referenced distances to the respective households, we were able to construct a treatment indicator measuring the intensity of refugee exposure that had been previously implemented in other studies (Baez, 2011; Maystadt & Duranton, 2014; Maystadt & Verwimp, 2014). This treatment index measured the scope of the inflows as it was expected to be experienced by each respondent in a given cluster c (geo-referenced PSU). This was done by creating a distance variable to each refugee settlement that was weighted by the newly arrived refugee population in the respective settlement. Here, the location of the clusters throughout Uganda enabled us to exploit a large heterogeneity in our sample in terms of the distance of respondents to the refugee settlements. More specifically, we calculated the treatment indicator as follows:

$$\textit{Refugee exposure index (RI)}_{(c),\,t} = log\left(\sum_{s=1}^{3} \frac{P_s}{D_{s,c}^{\alpha}} + 1\right) \qquad (1)$$

where s took the values of 1 to 3 for the different refugee settlements. P referred to the peak refugee *inflows* into each settlement in the years 2005 (Kyaka II settlement), 2008 (Nakivale settlement) and 2009 (Kyangwali settlement), respectively. D referred to the distance between a given cluster c and each settlement. Following Maystadt and Duranton (2014), α was set to 1 and

Figure 4:   Range of values for the treatment indicator for DHS and Afrobarometer data

Source: Authors (DHS and Afrobarometer data)
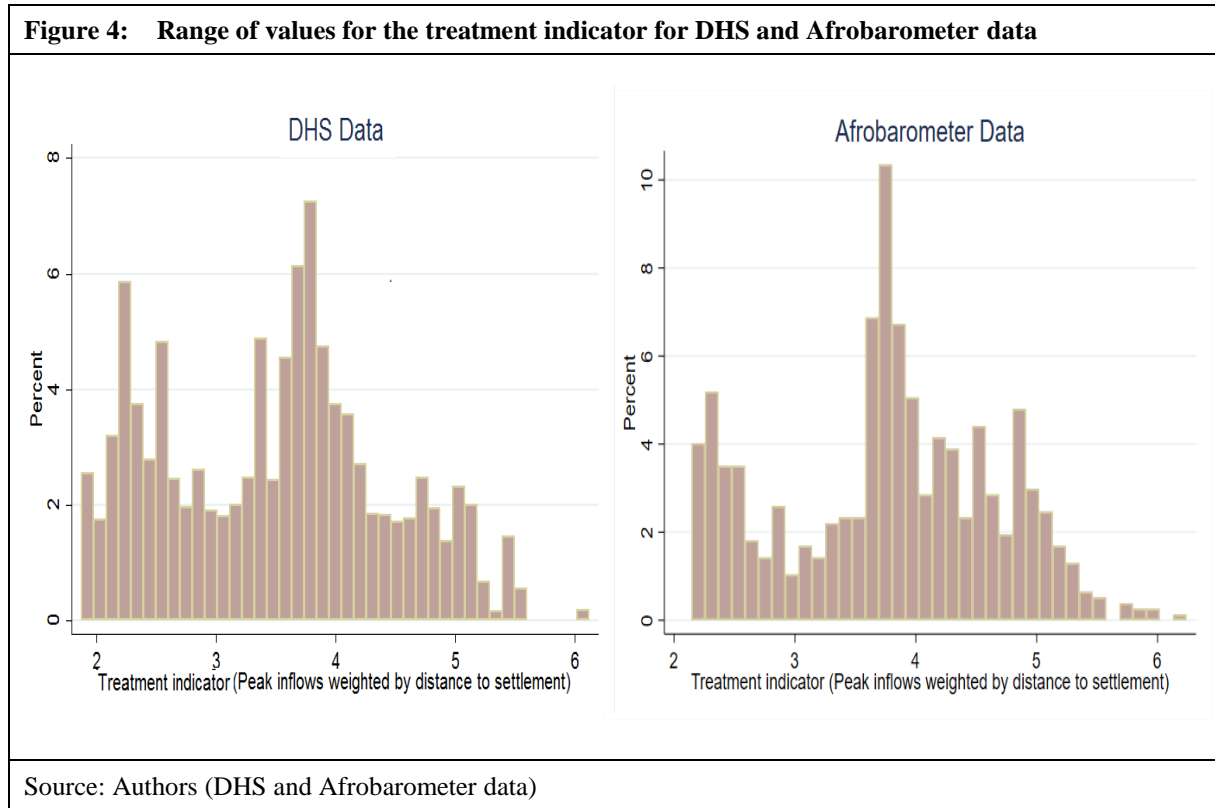
the resulting ratio was transformed into a logarithm (and 1 was added to deal with 0 values in pre-shock periods) to reduce the importance of some highly refugee-exposed villages.[10]

The resulting treatment indicator was continuous, was set to 0 in pre-shock years, and was constructed for different treatment periods to adequately capture different timings of the inflows into the settlements as shown in Figure 3. This specification assigned higher values of exposure to respondents living closer to the refugee settlements and lower values to those living farther away. At the same time, it increased with the number of refugees arriving in a given location though it was time-invariant with respect to the size of the refugee presence (referring always to the peak amount of a given camp). We used different functional forms of this treatment indicator in the robustness section (see Section 7).

As shown in Figure 4, there was a substantial range in our treatment indicator. Similarly, Appendix Figure A1 displays substantial variation in distance from the cluster location to the refugee settlements. The average distance to all three settlements for the DHS dataset is 85 km and 77 km for the Afrobarometer data.

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10 This treatment indicator is similar to a continuous treatment effect in a difference-in-differences estimation (Wooldridge, 2002).

Rather than focusing on a binary treatment variable, this approach exploited variation in the treatment *intensity* of different locations and thus allowed us to analyse the difference between "high refugee intensity" and "low refugee intensity" areas.

5.3   Methodology: following a difference-in-differences approach

We argue that the structure of our data (see Section 3) and the course of this displacement episode that is our treatment (see Section 4) allowed us to exploit a difference-in-differences approach with a continuous treatment variable to identify causal effects (Wooldridge, 2002). That is, we were able to distinguish the impact of the refugee influx from initial differences between households or districts (assuming – as we did here – that there were no substantial changes to **structural differences** across locations between our baseline waves and the first treatment years).[11]

Two assumptions need to be valid in order for the identification strategy to hold: first, the **common trend** assumption, which is crucial for any Diff-in-Diff design. It stipulates that the treatment group would have developed in parallel to the control group in the absence of the treatment. This parallel trend can be conditional on observed differences between the control and treatment group. Such differences illustrate the need for a second assumption of **bias stability** that requires unobserved confounding to be time-invariant and additive (for instance, Lechner, 2010).

Put in terms of our study, the common trend assumption states that, in the absence of the refugee arrival, "high refugee intense" versus "low refugee intense" areas would have developed in similar paths in terms of the outcome variable (such as women's employment). While – by definition – this assumption cannot formally be tested (since we cannot observe the counterfactual), it was nevertheless possible to examine the plausibility of these assumptions.

To investigate a "conditional comparability" between our treatment and control group, we split our sample into "high" and "low refugee intensity" districts. High refugee intensity districts were defined as districts where roughly all PSUs were ranked at least in the 75th percentile (or higher) of the refugee exposure index.[12] We then used the earliest available round of the DHS data of Uganda in 1995, prior to the Congolese refugee inflow, to test whether districts that had a high versus a low refugee exposure were different in terms of pre-treatment characteristics. As can be seen in Appendix Table A1, the two groups appear to be statistically different in terms of individual and district characteristics. This underscored the necessity to control for

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11 With respect to the Afrobarometer dataset, we still took the wave conducted in year 2005 as the pre-treatment period for all three settlements. Even though Kyaka II had already received refugees in the year 2005, it was very unlikely that the effects of these had already been captured by the 2005 Afrobarometer wave (conducted from April-May 2005). The same argument applied to the survey round conducted in 2008 (July-October 2008), which was taken as the pre-treatment period for the Kyangwali and Nakivale settlement even though Nakivale received its first refugee wave in that year. We conducted robustness checks for alternative treatment periods, which did not significantly affect the reported outcomes.

12 The comparison group "low refugee intensity" contained districts where PSUs were ranked below the 75th percentile of the refugee exposure index.

differences in pre-conditions of the treatment and control group, as usually done in a Diff-in-Diff framework.[13]

In order to check the plausibility of the common trend assumption, we added a second survey wave that pre-dated the high refugee inflow, namely data from the year 2000. We then ran a placebo model using a binary indicator for whether the district would have a high treatment intensity in the future and regressed this indicator and all control variables on our employment outcome variable of interest, women's employment. In this placebo test, a significant coefficient of this binary indicator would suggest that households highly exposed to the refugee inflows (the treatment group) in the future would be following a different trend, even before the refugees arrived in Uganda. In other words, Appendix Table A2 presents the results of the placebo test that investigated whether differences in employment could be explained by refugee inflows, even when refugees were not yet present. However, we did not find that the future status of a high refugee intense district significantly affected any of the female employment outcomes (Appendix Table A2). Hence, the results supported the assumption of common trends in the absence of refugees which meant that our treatment indicator seemed to yield the causal effect of the refugee inflows. Appendix Figure A2 provides visual evidence that the trend of both treatment (high refugee intensity districts) and control group (low refugee intensity districts) developed in a parallel way before the first arrival of refugees in 2005. Due to data constraints, we were not able to test the common trend assumptions for the social cohesion indicators and hence, refrain from causal inference.

5.4   Empirical specification

Our main outcome variables related to female employment, household welfare, and measures of social cohesion. We estimated, for instance, the impact of refugee inflows on women's labour force participation and type of occupation (professional/sales and services/agricultural sector) controlling for sociodemographic characteristics and other factors. The exposure to refugee presence (see subsection 5.2) was our treatment variable and we performed a difference-in-differences analysis on pre- and post-shock data along the following line:

$$W_{i\,(c),\,t} = \beta_0 + \beta_1 \textit{ refugee exposure index }_{c,\,t} + \gamma\,X'_{i,\,t} + \beta_2\,m_{c,\,t} + \delta_d + \delta_t + \epsilon_{c,\,t} \qquad (2)$$

where $W_{i(c),\,t}$ measured our outcome variables: This included our various female employment outcomes, such as a dummy indicating that a woman i, living in cluster c, was working during the time period t. With respect to the regressions on social cohesion indicators, $W_{i(c),\,t}$ measured, for instance, the perceived feeling of equality within the host community or alternatively levels of institutional or interpersonal trust. The main coefficient of interest was β_1, our treatment

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13 Not all variables included in the baseline specification could be tested here (for example, distance to border) since they appeared for the first time in the 2000 round when GPS data became available.

variable that approximates the relative exposure to the refugee inflow experienced in each cluster *c* at a given time. [14],[15]

Table 1:	Descriptive statistics DHS and UNHCR 2000-2011, comparing characteristics in districts above versus below the median of the refugee exposure index			
	(1)	(2)	(3)	(4)
Variables	**Full sample**	**Above median refugee index**	**Below median of the refugee index**	**T-statistic**
Log($RI_{c,t+1}$)	2.37	2.85***	2.20***	-21.71
	(1.805)	(2.095)	(1.664)	
Individual and household characteristics				
Female employment	0.75	0.77***	0.74***	-3.83
	(0.432)	(0.420)	(0.436)	
Type of occupation				
Not working	0.20	0.19	0.20	1.04
	(0.399)	(0.395)	(0.400)	
Professional	0.05	0.06	0.05	-1.04
	(0.224)	(0.230)	(0.222)	
Sales and services	0.14	0.11***	0.15***	7.10
	(0.344)	(0.309)	(0.355)	
Agricultural work	0.61	0.64***	0.60***	-5.38
	(0.488)	(0.479)	(0.490)	
Agricultural self-employed	0.49	0.55***	0.47***	-8.54
	(0.500)	(0.498)	(0.499)	
Agricultural work for family	0.22	0.20***	0.22***	3.59
	(0.412)	(0.397)	(0.417)	
Agricultural work for others	0.05	0.05	0.05	1.05
	(0.224)	(0.217)	(0.226)	
Female education (years)	4.91	5.09***	4.85***	-3.59
	(3.876)	(3.714)	(3.927)	
Female age (years)	28.03	27.94	28.06	0.73
	(9.399)	(9.285)	(9.437)	

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14 Because our treatment indicator β_1 is already interacted with the treatment period by construction (see subsection 5.2), the empirical specification appears to differ from standard Diff-in-Diff specifications that would explicitly include an interaction term (of the treatment indicator with time). This interaction was built-in here.

15 It is important to note that we applied the Diff-in-Diff methodology to a cross-sectional dataset at the PSU level. Hence, our continuous treatment indicator varied with changing PSUs included across waves. This limited our possibility to control for PSU fixed effects. This is equivalent to assuming that - within districts - there are no systematic differences in PSU characteristics across survey waves.

Table 1 (cont): Descriptive statistics DHS and UNHCR 2000-2011, comparing characteristics in districts above versus below the median of the refugee exposure index				
Female age^2 (years)	873.82	866.83	876.18	0.97
	(574.4)	(566.8)	(577.0)	
Married	0.65	0.63***	0.66***	3.53
	(0.478)	(0.484)	(0.475)	
Household size	6.36	6.16***	6.42***	5.02
	(3.067)	(2.883)	(3.124)	
Female household head	0.30	0.30	0.30	-0.34
	(0.459)	(0.460)	(0.459)	
Wealth poorest	0.19	0.09***	0.23***	20.28
	(0.396)	(0.292)	(0.420)	
Wealth poor	0.18	0.15***	0.19***	6.19
	(0.385)	(0.358)	(0.393)	
Wealth middle	0.19	0.26***	0.16***	-14.81
	(0.391)	(0.439)	(0.370)	
Wealth rich	0.20	0.25***	0.19***	-9.54
	(0.402)	(0.434)	(0.390)	
Wealth richest	0.23	0.24	0.23	-1.75
	(0.423)	(0.429)	(0.421)	
Husband's age	37.22	36.77***	37.37***	2.40
	(11.88)	(11.28)	(12.07)	
Husband's education	1.48	1.53***	1.47***	-2.15
	(1.429)	(1.561)	(1.381)	
District/cluster level characteristics				
Lagged (nighttime light)	-19.36	-18.90***	-19.51***	-5.10
	(7.052)	(6.252)	(7.296)	
Distance to water source	44360.41	44890.79	44181.99	-1.12
	(37658.9)	(22318.1)	(41564.9)	
Distance to DRC border (km)	184.66	110.33***	209.67***	54.38
	(116.7)	(62.32)	(120.1)	
Urban	0.19	0.15***	0.20***	8.82
	(0.391)	(0.352)	(0.403)	
N	18723	4713	14010	
Notes: Mean coefficients (standard deviations in parentheses). * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.				
Source: Authors				

The employment regressions adjusted for control variables include characteristics of both women and their husbands, such as age, age^2, and years of education, which are included in **X**'.

Other household controls include, for instance, the household size, the gender of the household head, his/her marital status and an asset index provided by DHS to proxy for household wealth. We further added a dummy indicating whether the household was located in an urban or rural region, cluster characteristics such as the distance to the DRC border, the distance to the next water source and lagged per capita nighttime light as a proxy for regional economic activities at the district level (Kreibaum, 2016; Henderson, Storeygard, & Weil, 2012). Since it can be argued that rainfall data are a better proxy for agricultural performance and productivity (Bundervoet, Maiyo, & Sanghi, 2015), we used this (lagged) indicator as an alternative to nighttime light in a further robustness check. In order to capture seasonal effects, which are particularly important for agricultural work, $m_{c,\,t}$ month of interview dummies were included at the cluster level in the employment-related regressions (Ruiz & Vargas-Silva, 2017a). Our baseline social cohesion regressions did not include any additional control variables as there was no established set of variables and any choice would have been arbitrary. As a robustness check, we controlled for individual characteristics, such as age and gender, as well as for whether the household was located in an urban or rural setting. This did not alter our results.[16]

The coefficient $\delta_{d,}$ represented district dummies to control for unobserved heterogeneity, and δ_t was a time dummy indicating the post-shock treatment periods and was likely to capture time-varying effects, common to all clusters. In all models, we used cluster-robust standard errors at the treatment level, which was the cluster (PSU) level in our case.

In line with much of the recent literature (Ruiz & Vargas-Silva, 2017a; Kreibaum, 2016, for example), we opted for a linear probability model instead of logit or probit models, due to advantages such as the ease of interpretability of the results. We did provide evidence in the robustness section that our results were robust to using non-linear models for our binary outcome variables (see Appendix Tables A3 and A4).

Descriptive statistics of the DHS and UNHCR are provided in Table 1 and a similar representation for the social cohesion outcomes can be found in Appendix Table A5, separated by values above the median of the refugee exposure index versus below the median of the refugee exposure index.

The unconditional comparison indicates that individuals and households were quite similar in terms of demographic characteristics, including age and gender of the household head, household wealth and proximity to a water source. However, differences occurred in our main variables of interest, namely female employment, working in sales and services, or being self-employed, as well as distance to the border with the DRC, which was slightly lower for high refugee-intense districts.[17] This was in line with the argumentation above, as refugee-hosting settlements were closer to the DRC border and mostly located in urban areas. Moreover, all these indicators were included in the regression analysis as controls. In addition, it could be observed that numbers of female employment, working in the agricultural sector and being

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16 Results can be provided on request.

17 It should be noted, though, that we excluded the capital Kampala from our analysis.

agricultural self-employed were slightly higher in districts with high refugee exposure. This correlation was later confirmed in our regression analysis.

6 Findings: the impact of hosting Congolese refugees

6.1 Effects on female employment

Table 2 reports the baseline results on the effect of the refugee exposure index on women's employment outcomes over the period 2001-2011 using linear probability models. Overall, a larger exposure to refugee inflows increased the likelihood of female employment (column 3). The effect of the coefficient on the treatment indicator (which can be interpreted as an elasticity) was around 0.058, while statistically significant.[18]

Economically, an increase by 100 refugees per settlement corresponded to a 0.02 percentage point (2.6 per cent) increase in the probability of women being employed. Given that the effect was non-linear, an increase by 1,000 refugees per settlement was associated with a 0.07 percentage point (9.3 per cent) increase in the likelihood of female employment.

Due to poor road networks and infrastructure in the region (Betts et al., 2014), we expected that our effects of the refugee settlements would be somewhat localised.[19] Looking at the spatial distribution of the refugee effect, women living in clusters with an average distance to all three settlements of between 85 and 100 km (the closest average distance to all three settlements was 84 km) were 0.09 percentage points more likely to be engaged in employment compared to the overall mean of women's employment. Women who lived within an average distance of between 100 and 120 km away from all three settlements, experienced an increase in the probability of working by 0.04 percentage points (again compared to the overall mean).

We hypothesised that this effect was driven by refugees causing greater economic activity, which might generate new work opportunities for women or, alternatively, a substitution for males who switch to better-paid jobs (see subsequent sections for more details).

The control variables largely produced the expected results: higher education increased the likelihood of female employment, as expected (see, for instance, Baah-Boateng, 2014). The binary variable measuring whether the household head was female positively affected the likelihood of female employment, consistent with the financial necessity to participate in the labour force. Women living in richer households were less likely to work, which corresponded to DHS reports (DHS [Demographic Health Survey], 2012). A possible reason was mentioned

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18 Since our treatment indicator, the refugee exposure index, is logged, we have non-linear effects.

19 Since our GPS coordinates measured the distance starting from the centroid of the refugee settlement, we could assume that the distance from a cluster to settlements was quite close to the borders of the settlements, given that the settlements had a considerable size of, for instance, 185 km² for the Nakivale settlement.

by Bbaale (2014) in the context of Uganda, arguing that richer women had a tendency to look longer for more decent jobs, and hence, to remain unemployed for longer periods compared to poorer women. Longer distances to a water source and living in urban regions decreased the likelihood of employment. The latter finding may indicate that labour market opportunities for women were particularly pronounced in the agricultural sector. With respect to distance to water sources, a study by Ruiz and Vargas-Silva (2017b) found similar results, as women who needed to invest more time to daily housework tasks, such as fetching water or collecting firewood, can dedicate less time to outside employment. Lagged nighttime light data – our indicator of regional economic activity – was not significant, and neither was distance to the DRC border. Yet, the latter was correlated to the refugee index as can be seen in Table 1.

Table 2: The effect of refugees on women's employment, linear probability models, 2001-2011			
Variables	(1) No controls	(2) Individual level controls	(3) Individual and district level controls
$Log(RI_{c,t}+1)$	0.0610***	0.0611***	0.0580***
	(0.0115)	(0.0110)	(0.0112)
Individual level			
Female education (years)		0.00184*	0.00206**
		(0.000944)	(0.000944)
Female age		0.0479***	0.0481***
		(0.00227)	(0.00227)
Female age^2		-0.000618***	-0.000622***
		(3.55e-05)	(3.55e-05)
Married		0.0360***	0.0346***
		(0.00804)	(0.00805)
Household size		-0.00709***	-0.00785***
		(0.00104)	(0.00104)
Female household head		0.0273***	0.0289***
		(0.00751)	(0.00751)
Wealth poor		-0.0150	-0.0124
		(0.00979)	(0.00978)
Wealth middle		-0.0267***	-0.0215**
		(0.0102)	(0.0102)
Wealth richer		-0.0530***	-0.0416***
		(0.0107)	(0.0108)
Wealth richest		-0.0995***	-0.0668***
		(0.0121)	(0.0132)
Cluster/district level			
Lagged (nighttime light)			-0.000163
			(0.000812)

Table 2 (cont): The effect of refugees on women's employment, linear probability models, 2001-2011			
Distance to next water source (km)			-3.24e-07*
			(1.80e-07)
Km to DRC boarder			-0.000102
			(0.000173)
Urban			-0.0611***
			(0.0108)
Year=2006	0.210***	0.224***	0.216***
	(0.0509)	(0.0491)	(0.0496)
Year=2011	0.242***	0.234***	0.226***
	(0.0197)	(0.0190)	(0.0205)
Constant	0.545***	-0.246***	-0.197***
	(0.0579)	(0.0648)	(0.0731)
N	18,682	18,682	18,682
R-squared	0.08	0.16	0.17
Notes: Dependent variable: women's employment. Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1. District and month of interview dummies included in all specifications. Robust standard errors clustered at PSU level. Base category of wealth: poorest.			
Source: Authors			

The results of the multi-nominal logit regression (a jointly estimated model) in Table 3 reveal that our positive overall effects presented in the baseline results were primarily driven by women working in the agricultural sector. We distinguished between three different sectors, namely professional (such as teachers); sales and services; and the agricultural sector. The marginal effect implied that, on average, a 1 per cent increase in the treatment indicator was associated with a 10.2 percentage points higher probability of women working in the agricultural sector. Other employment categories, that is, sales and services, and professional work, which require higher levels of education or may be characterised by higher entry barriers compared to the agricultural sector, did not seem to be significantly affected by the refugee inflows in terms of female employment.

Since narratives from the settlements in Nakivale and Kyaka II hinted at an increase in self-reliance and self-employment activities among refugees and between refugees and host communities (Betts et al., 2014; personal interviews, 2018), we tested these impact channels by looking at women working in agricultural self-employment (generating a surplus that can be sold); working in agriculture for the family; and working in agriculture for others. The results in Table 4 suggested that women were less likely to be engaged in agricultural activities that focused exclusively on self- or family production. This could actually point to an improvement in women's situations, as for instance women who previously exclusively worked for their family now had some extra food to sell in self-employment. Lastly, as can be seen in column (3), the probability of women working for others was not affected by the sudden inflow of refugees, probably because only a small share of women (5 per cent) were represented in this category and because refugees themselves were a valuable source of agricultural labour if labour demand increased (including for the newly self-employed females), as in harvesting seasons.

The magnitude of the effect was not negligible, since women were 3 percentage points more likely to be self-employed in the agricultural sector, compared to the base category (not working and working in agriculture for the family or for others). If we compare the 90th percentile (clusters very closely located to the settlements) to the 50th percentile of the treatment variable, women were 2.5 percentage points more likely to work in this sector while keeping all other variables constant. The number of household members increased the probability of being engaged in agricultural family work while being negatively correlated with the probability of being self-employed or working for others. As women fill the role of primary caretakers of their family members in Uganda, and an increase in household members puts constraints on women's time, it is reasonable that they can dedicate less time to work outside or engage in self-employment activities.

The literature suggests potentially interesting heterogeneity in employment effects (see Section 2). We therefore tested for various interaction effects in Appendix Table A12, which provided evidence that our effects did not significantly vary by women's education or by the wealth status of households. Also, we could not find evidence that female-headed households were differently affected by the refugee numbers, as the respective coefficients in column (5) were not significant.[20]

Table 3: Type of women's occupation, multinomial (polytomous) logistic regression, 2001-2011			
Variables	**Professional/ technical/managerial**	**Sales and services**	**Agricultural sector**
$\text{Log}(RI_{c,t}+1)$	0.173	0.108	0.677***
	(0.220)	(0.188)	(0.161)
Individual level			
Female education (years)	0.300***	0.00225	-0.0569***
	(0.0156)	(0.00982)	(0.00874)
Female age	0.500***	0.406***	0.245***
	(0.0374)	(0.0235)	(0.0177)
Female age^2	-0.00650***	-0.00547***	-0.00299***
	(0.000589)	(0.000375)	(0.000285)
Married	0.306***	0.0455	0.234***
	(0.107)	(0.0825)	(0.0644)
Household size	-0.0986***	-0.0859***	-0.0271***
	(0.0156)	(0.0116)	(0.00881)
Female household head	0.540***	0.464***	0.0811
	(0.102)	(0.0720)	(0.0587)
Wealth poor	0.537**	0.206	0.0660
	(0.223)	(0.128)	(0.0961)

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20 Regression results are shown in Appendix Table A12, columns 3-5.

Table 3 (cont): Type of women's occupation, multinomial (polytomous) logistic regression, 2001-2011			
Wealth middle	0.416*	0.370***	-0.128
	(0.242)	(0.134)	(0.103)
Wealth richer	0.610**	0.572***	-0.315***
	(0.242)	(0.146)	(0.111)
Wealth richest	0.553**	0.864***	-0.823***
	(0.238)	(0.156)	(0.123)
Cluster/district level			
Lagged log (nighttime light)	-0.0297	0.0187	-0.00218
	(0.0185)	(0.0160)	(0.0162)
Distance to next water source (km)	2.54e-06	-1.81e-06	-1.40e-06
	(3.63e-06)	(2.99e-06)	(2.74e-06)
Km to DRC border	0.00413	-0.00175	-0.000375
	(0.00360)	(0.00293)	(0.00265)
Urban	-0.207	0.439***	-0.814***
	(0.146)	(0.117)	(0.131)
Year=2006	1.577	-0.0120	3.020***
	(0.959)	(0.805)	(0.714)
Year=2011	2.591***	0.115	2.333***
	(0.447)	(0.365)	(0.334)
Constant	-15.31***	-5.941***	-5.091***
	(1.377)	(1.146)	(0.979)
N	18,695	18,695	18,695
Pseudo R-squared	0.2494	0.2494	0.2494
Marginal effects:			
$Log(RI_{c,t}+1)$	-0.00753	-0.0031	0.102***
(z-value)	(0.00707)	(.01489)	(0.0207)
Notes: Base category (0): Not working. Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1. District, year and month of interview dummies included. Robust standard errors clustered at PSU level.			
Source: Authors			

Table 4: Women working in agriculture: self-employed/work for the family/others, linear probability model, 2001- 2011			
	(1)	(2)	(3)
Variables	**Agriculture self-employed**	**Agricultural work for family**	**Agricultural work for others**
Log(RI$_{c,t}$+1)	0.136***	-0.127***	-0.0125
	(0.0154)	(0.0146)	(0.00856)
Individual level			
Female education (years)	0.00122	0.00315**	-0.00414***
	(0.00150)	(0.00142)	(0.000941)
Female age	0.0457***	-0.0499***	0.00466**
	(0.00318)	(0.00301)	(0.00187)
Female age^2	-0.000568***	0.000648***	-8.25e-05***
	(4.99e-05)	(4.69e-05)	(2.90e-05)
Married	0.204***	-0.125***	-0.0713***
	(0.0116)	(0.0107)	(0.00714)
Household size	-0.00870***	0.0123***	-0.00303***
	(0.00151)	(0.00144)	(0.000893)
Female household head	0.0533***	-0.0473***	-0.00344
	(0.0104)	(0.00993)	(0.00610)
Wealth poor	-0.0145	0.0206	-0.00642
	(0.0135)	(0.0127)	(0.00722)
Wealth middle	-0.00922	0.0326**	-0.0219***
	(0.0141)	(0.0134)	(0.00738)
Wealth richer	0.00692	0.0146	-0.0207***
	(0.0148)	(0.0141)	(0.00799)
Wealth richest	-0.0506***	0.00602	0.0268**
	(0.0188)	(0.0178)	(0.0118)
Cluster/district level			
Lagged log (nighttime light)	-0.00573***	0.00641***	-0.00196***
	(0.00122)	(0.00117)	(0.000654)
Distance to next water source (km)	5.22e-08	2.49e-07	-1.41e-07
	(2.45e-07)	(2.35e-07)	(1.28e-07)
Km to DRC border	-0.000210	1.87e-05	0.000120
	(0.000228)	(0.000214)	(0.000126)
Urban	-0.0527***	-0.0962***	0.132***
	(0.0176)	(0.0153)	(0.0146)
Year=2006	0.554***	-0.471***	-0.0992***

Table 4 (cont): Women working in agriculture: self-employed/work for the family/others, linear probability model, 2001- 2011			
	(0.0689)	(0.0653)	(0.0385)
Year=2011	0.266***	-0.197***	-0.0755***
	(0.0293)	(0.0277)	(0.0165)
Constant	-1.070***	1.901***	0.108*
	(0.101)	(0.0954)	(0.0586)
N	11,478	11,480	11,474
R-squared	0.20	0.19	0.11

Notes: *** p<0.01, ** p<0.05, * p<0.1. District and month of interview dummies included. Base group column (1): not working, work for family/others; base group column (2): not working, self-employed, working for others; (3) base group: self-employed, not working, work for family. Robust standard errors clustered at PSU level.

Source: Authors

6.2   Effects on household wealth and children's health

In order to establish that changes in employment for women in fact contribute to welfare effects for households and to refute the possibility that a woman's decision to work is purely driven by poverty and may be needed to counteract labour market deteriorations for other adult household members, we tested if the inflow of refugees affected the overall welfare status of the household. To do so, we regressed a binary variable, which assigned the value 1 to poor households based on an asset index (and 0 if they belonged to >=middle categories) on refugee inflow and control variables.[21] We did find positive welfare effects especially for households in the poorest/poor wealth quintiles, as a negative coefficient in Table 5 suggests that households with a higher treatment exposure have a reduced probability to fall into the lower wealth quintiles. This result was robust to looking at the subsample of currently married women (column 2) as is often done in labour market studies.

We also investigated changes in the nutritional status of children below the age of five, born to the women in our sample. This was in reference to a strand of literature that established improvements in children's health outcomes as a consequence of women's increased engagement in employment (refer, for instance, to Klasen, 2003; Doan, 2014; Onarheim, Iversen, & Bloom, 2016). The mechanism was expected to work through greater bargaining power within the household and different spending preferences, for example in favour of health expenditure and more diverse diets among females (Klasen, 2003), and through more available funds that translate to higher consumption of market-purchased inputs such as food, which in turn improves nutritional outcomes. Thus, in Table 6 using subsamples of children below the age of five, we investigated children's anthropometrics in terms of wasting, stunting, and underweight.[22] In line with the positive effects on women's employment found in the previous

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21 The asset index was divided into five wealth categories: poorest, poor, middle, richer, richest.

22 "Wasting" is defined as low weight-for-height; "stunting" as low height-for-age; "underweight" as low weight-for-age.

regressions as well as with the respective literature, our results indicated that children in households which were more exposed to the refugee inflow had on average a better nutritional status.

Overall, these results support the notion that on average the refugee inflow induced positive medium-term impacts on both the economic welfare of the household and children's health outcomes. We discuss potential underlying mechanisms in Section 8.

Table 5: Binary outcome: households of low/lowest wealth quintiles (poor/poorest==1), 2001-2011		
	(1)	(2)
Variables	Poor/poorest household (full sample)	Poor/poorest household (sample: currently married)
Log(RI$_{c,t}$+1)	-0.0909***	-0.100***
	(0.0117)	(0.0146)
Female age	0.000818	-0.0131***
	(0.00240)	(0.00339)
Female age^2	-6.32e-05	0.000132***
	(3.85e-05)	(5.12e-05)
Female education (years)	-0.0355***	-0.0344***
	(0.000814)	(0.00105)
Husband's age		-0.00186***
		(0.000460)
Husband's education		-0.0249***
		(0.00333)
Log (nighttime light)	-0.00210*	-0.00163
	(0.00117)	(0.00142)
Distance to next water source (km)	-1.23e-07	-6.86e-08
	(1.83e-07)	(2.24e-07)
Km to DRC border	0.000275	0.000132
	(0.000181)	(0.000216)
Year=2006	-0.432***	-0.483***
	(0.0507)	(0.0638)
Year=2011	-0.155***	-0.172***
	(0.0199)	(0.0253)
Married	0.0502***	
	(0.00740)	
Constant	1.297***	1.723***
	(0.0800)	(0.102)
N	18,682	12,079
R-squared	0.318	0.318
Notes: Base category (0): Middle, Richer, Richest. Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1. District and month of interview dummies included in all specifications. Robust standard errors clustered at PSU level. Source: Authors		

Table 6: Health undernutrition outcomes of children below the age of 5 years, 2001-2011			
	(1)	(2)	(3)
Variables	**Stunted**	**Wasted**	**Underweight**
Log($RI_{c,t}$+1)	-0.0412*	-0.0249**	-0.0511**
	(0.0249)	(0.0112)	(0.0201)
Female education (years)	-0.0144***	-0.00231**	-0.00928***
	(0.00185)	(0.000944)	(0.00166)
Female age	-0.0102	-0.00167	-0.00515
	(0.00707)	(0.00391)	(0.00644)
Female age^2	0.000150	2.73e-05	0.000100
	(0.000116)	(6.45e-05)	(0.000107)
Log (nighttime light)	0.00600***	-0.000504	0.00238
	(0.00225)	(0.00155)	(0.00226)
Distance to next water source (km)	-1.80e-08	2.02e-07	-9.76e-08
	(4.28e-07)	(2.11e-07)	(3.91e-07)
Km to DRC border	0.000354	0.000218	-1.94e-05
	(0.000412)	(0.000198)	(0.000375)
Urban	-0.0701***	-0.0115	-0.0892***
	(0.0194)	(0.0104)	(0.0162)
Year=2006	-0.124	-0.0959*	-0.172**
	(0.107)	(0.0492)	(0.0870)
Year=2011	-0.00103	-0.0520**	-0.0248
	(0.0420)	(0.0223)	(0.0362)
Constant	0.884***	0.161	0.716***
	(0.184)	(0.103)	(0.166)
N	4,958	4,962	4,958
R-squared	0.058	0.027	0.052

Notes: *** p<0.01, ** p<0.05, * p<0.1. District and month of interview dummies included in all specifications. Robust standard errors clustered at PSU level.

Source: Authors

6.3 Effect on social cohesion among the hosts

While there might be positive individual economic effects from increased refugee presence, the impact on the social structure of a society might differ. Below, we examine the potential effect of refugee inflow on components of social cohesion relying on the three dimensions of perceived (in)equality, national identities, and trust as motivated before (see Section 3.3).[23]

Table 7:	Social cohesion indicators measured at the individual level			
Dimension **(Langer et al., 2016)**	**Equality**	**Identity**	**Trust**	
	Perceived equality	Adherence to national identity	Institutional trust	Interpersonal trust
$\text{Log}(RI_{c,t}+1)$	-0.1809***	-0.1576***	0.0030	-0.1276***
	(0.00000)	(0.00000)	(0.83290)	(0.00000)
N	5,731	6,106	7,575	6,093
R-squared	0.172	0.108	0.148	0.052
Notes: Robust standard errors clustered at the PSU level in parentheses; *** p<0.01, ** p<0.05, * p<0.1. District and year dummies included in all specifications.				
Source: Authors				

Table 7 reports our baseline results based on linear probability models using Afrobarometer data from 2000-2012.[24] An increase in the exposure to refugee presence is associated with significantly lower levels of the equality index, that is, with lower levels of perceived economic and social equality. As described in Section 3.3, the equality index is composed of two variables, one indicating perceptions regarding equal treatment of own ethnic group by the state and the second variable measuring perceived economic equality of the respective household in comparison to other Ugandans. We further investigated whether the increased economic inequality was driven by growing or reduced perceived wealth levels in comparison to others. There was no clear pattern in the results which may hint at some households having subjective feelings of welfare losses while others perceived gains compared to fellow households.

We found decreased adherence to the national identity with greater exposure to treatment. This was an indication that respondents living in areas with higher refugee presence tended to identify at least equally or more with their ethnic group as compared to their Ugandan identity. This was in line with the results of Kreibaum (2016), who also noticed in her analysis that adherence to ethnic identity increased with higher refugee presence at the district level. It is unclear, to what extent this is challenging the social fabric of the Ugandan society.

While we found no significant effect of our treatment variable on trust towards state institutions, generalised trust towards other people decreased significantly with greater refugee exposure.

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23 Due to data constraints, we were not able to test the common trend assumptions with respect to the social cohesion data and, hence, could not establish a causal interpretation.

24 Not all outcome variables are available for all years. See Section 3.3 for a detailed description.

All regressions include district and year fixed effects. In order to keep the interpretation simple and be able to differentiate across the various different social cohesion components, we refrained from constructing an aggregated SCI index, which is done for instance by Langer et al. (2016). The reference frame for interpreting social cohesion indicators is often not adequately defined. Often it is measured at the individual level, yet social cohesion is generally a group phenomenon. To account for this, we collapsed the data into a neighbourhood-like level, the enumeration area (PSU). Within each PSU, eight households were randomly selected. Results in this "neighbourhood" level were similar to the individual level results (refer to Table 8) and supported our previous findings.

Table 8: Social cohesion indicators collapsed to the PSU level				
Dimension **(Langer et al., 2016)**	**Equality**	**Identity**	**Trust**	
	Perceived equality	Adherence to national identity	Institutional trust	Interpersonal trust
Log(RIc,t +1)	-0.1751***	-0.1576***	0.0125	-0.1238***
	(0.00000)	(0.00000)	(0.41309)	(0.00000)
N	614	614	975	723
R-squared	0.559	0.391	0.508	0.224
Notes: Robust standard errors clustered. *** p<0.01, ** p<0.05, * p<0.1. District and year dummies included in all specifications.				
Source: Authors				

7   Robustness checks and limitations

The above regression results were based on several identifying assumptions and specification choices. For this reason, we examined their robustness regarding a number of possible threats to our identification strategy, such as i) a potential endogenous refugee index and alternative calculations of the index related to stock versus inflow numbers; ii) different samples; iii) DHS sampling design and seasonality effects; and vi) different treatment periods. In sum, our results remained robust to the diverse set of robustness checks, while certain limitations persisted.

Alternative refugee exposure measure and potential endogeneity

One concern relates to the potential endogeneity of the refugee inflows used in the construction of our refugee index. Despite strict governmental rules regarding the allocation to settlements, refugees could systematically self-select into certain settlements due to, for instance, higher expectations of job opportunities. This would lead in turn to spurious estimates. We therefore substituted our refugee inflow figures with one for all three settlements in the treatment period. This alternative calculation de facto reduced our treatment variable to the distance to settlements. Respectively, Appendix Tables A6 and A7 show as outcomes for the female employment and social cohesion that there were no significant changes to the main results,

suggesting that these estimates did not suffer from this potential endogeneity bias and simultaneously indicating that it was proximity to new economic opportunities rather than the relative size of the treatment that mattered most in our case.

Next, we computed several alternatives to the treatment variable to prove the robustness of our main coefficient of interest. First, we included the refugee inflow/distance component of all three camps separately into the regression to avoid the risk that one specific refugee settlement might be driving our results. Appendix Table A6 confirms for the employment outcomes that all three settlements have an almost equal effect on our outcome variable, with Nakivale (which experienced the largest refugee inflow) having the largest impact. The same was true for the social cohesion dimensions where all three settlements had a comparable effect on the outcome measures (refer to Appendix Table A7).

Following Baez (2011) and Maystadt and Verwimp (2014), we tested whether our treatment variable, refugee exposure $\sum_{s=1}^{3} \frac{P_s}{D_{s,c}^{\alpha}}$, remained robust to the use of different spatial weights in the treatment refugee index variable, with α equal to 0.5, 1, 2, 3. Put simply, if we changed α from 1 to 2 – that is, if we placed a higher weight on the distance – the effect of refugee numbers would be diluted by distance.[25] As expected, the regression coefficients of our employment and social cohesion outcome variables were larger for smaller weights (such as 0.5), and smaller for larger weights (such as 2) (again at the median value of the refugee shock) (refer to Appendix Tables A6 and A7).

In the baseline regression, we modelled the inflows of refugee settlements as linear effects and assumed that exposure to the refugee inflows was a function of both proximity to the settlements and the number of inflows. However, other studies (Maystadt & Verwimp, 2014, and so on) find a non-monotonic relationship between refugee inflows and their outcome variable, consumption. To contribute to that discussion, we introduced the squared term of the refugee exposure index to our regression in Appendix Table A6. Indeed, the significant coefficient of the squared index hints at a nonlinear relationship and diminishing returns between refugee inflows and female employment. We did expect the women living very close to the settlements to be the ones most positively affected by the inflow and the economic opportunities created by an increased demand for agricultural products and other services, while the benefits vanished with an increasing distance to the settlements. This finding was also established for the trust measures (Appendix Table A7).

We also implemented alternative versions of our treatment variable by substituting the inflow refugee values with a level of the settlement population variable (by adding up the different inflow years from 1990 onwards), measuring the stock of the refugee population, rather than inflow figures.[26] Again, we obtained similar employment- and social cohesion-related results compared to the baseline regression (refer to Appendix Tables A6 and A7 respectively).

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25 For instance, for a 100 km distance and α=2, the effect of the same number of refugees is weighted by 100^2=10,000 km, which means that refugee inflows are diluted more by distance. If we take alpha=0.5, the effect of the same number of refugees does not dilute that fast, since we have $100^{0.5}$=10 km.

26 We recognize that this is a rather weak measure as we lack data on outflows of the settlements.

We also provided evidence for the employment outcomes that the effect of the Congolese refugees on our outcome variables was not altered significantly by adding the stock of refugees in the three settlements originating from other countries (such as Burundi, Rwanda or Sudan) to the specification. This would rather reflect the long-term effects of refugee presence (see also Kreibaum, 2016). In the main specification (column 1) of Appendix Table A3, the coefficient is statistically significant, but the size of the effect is extremely small. However, one would expect business opportunities to exist continuously, and last over time. This means that, in our case, the effect was driven by large numbers of the refugee inflow, in other words by new economic opportunities rather than by established ones.

Geographical coverage of the sample

We now explore the robustness of our estimation results to changes in the sample. First, we excluded all remaining Northern districts from the sample (eight in total), which had been occasionally affected by the conflicts of the LRA during the period 2008-2011 (UNHCR, 2018a).[27] This did not change our employment results and even strengthened the results of the social cohesion dimensions (refer to Appendix Tables A8 and A9). Second, we restricted the sample to the Central and Western regions only, in order to see if our results changed remarkably after removing all observations in districts at a larger distance to our settlements. We did not observe any significant qualitative changes in our results after adjusting the sample in Appendix Tables A8 and A9 accordingly. We did find a slight increase in the employment coefficient when reducing the sample to the Central/Western regions, which was as expected since the included clusters were in closer proximity to the settlements. With respect to the social cohesion measures, the smaller samples induced a reduction in significance.

DHS sampling design and seasonality effects

One concern in our analysis was related to the sampling design of the DHS data, which might have potentially led to spurious seasonality effects in our results. While DHS interviews were conducted during different times throughout the year, seasonality patterns differed throughout Uganda. Thus, monthly interview dummies might not sufficiently capture differences in seasonality. If the DHS data sampling procedure in those years with high refugee inflows happened to occur when the South-Western region was in planting or harvesting season while the remaining districts were sampled in the lean season, we would find a highly significant spurious effect on female work in agricultural households, particularly those that were subsistence oriented. Yet, this scenario was very unlikely as the DHS intended to implement a random sampling of the clusters.[28] We nevertheless implemented different strategies to prove that our results were not biased by sampling procedures and seasonality patterns of the data. First, Appendix Figure A3 provides evidence that the average distance from clusters to settlements was comparable for all three DHS rounds. Only the first wave (2000) included more

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27 Five Northern districts (Moyo, Adjumani, Kitgum, Pader and Gulu) were heavily affected by conflicts and were therefore dropped from the entire sample (see Section 3).

28 If there was no systematic bias in selecting DHS clusters within districts – that is, if the selection of clusters was at random – there should not be any problem about seasonality issues.

clusters located closer to the settlements, which would mean that our impacts may actually be underestimated (lower bound estimates).[29] Moreover, there was no huge variation across regions in Uganda regarding crop-growing times except for the fact that the Northern part (which was largely excluded) only had one growing season. As the lean period (months characterised by little or no harvest) lasts from April to June for all regions, the majority of the DHS interviews were conducted during harvesting seasons from August to February (FAO [Food and Agriculture Organization of the United Nations], 2018). We further tested the assumption that our coefficients were not biased by seasonality patterns by including a proxy for droughts, namely the length of the growing season. If farmers experience a prolonged drought period, growing times will be substantially reduced (Kansiime & Mastenbroek, 2016). Appendix Table A10 illustrates that our employment outcomes were robust to both the length of the harvesting season in a district and the inclusion of seasonal/occasional work at the regional level. A further test of restricting the sample to the Western and Central region supports our central findings and is shown in Appendix Table A8, column (3).

Different treatment periods

We also explored the robustness of our results to different treatment periods. The availability of different Afrobarometer waves allowed us to measure the social cohesion outcomes more frequently. We have argued above that, if the year of the survey wave and the refugee influx are the same, we nevertheless consider the respective survey wave still to be in the pre-exposure period. In case there still might have been immediate effects on some of the respondents, we also conducted regression analysis with alternative treatment periods. In Appendix Table A11, we show results where we use the year 2005 as the treatment period for Kyaka II (whereas still as a control period for the other two settlements) and additionally coding the year 2008 as a treatment period for Nakivale settlement (and still as control period for Kyangwali). Hence, by including more "treated" settlements over the years, a general intensification of the treatment exposure over time remains. Results generally supported the outcomes of the baseline regressions whereas significance levels as well as effect sizes were lower. Also, we were not able to establish a decrease in adherence to the Ugandan identity. This hints at the fact that the impact upon the social cohesion dimensions develops and grows over time, particularly with respect to identifying more strongly with own ethnic group.

General limitations

One main concern is that we could not test whether our estimates were confounded by internal migration, since we lacked data on whether respondents had moved away from their initial location/place of residence. However, we came across neither empirical nor anecdotal evidence for substantial migratory movements of this kind. This was also supported by Kreibaum (2016). Our consistent results across a variety of robustness checks provided an example of the beneficial impact of refugee settlements on economic and selected welfare indicators of the

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29 If we assume that overall sampled clusters are located closer to settlements in the pre-shock period, this would lead to a higher refugee index for the post-shock waves. This, in turn, might narrow down the gap between (treatment and control) pre-and post-shock period, which would suggest a downward bias (underestimation) of the reported effects.

host population. At the same time, we found consistent indications that exposure to refugee presence had negative effects on generalised trust levels. Yet, it is worth mentioning that our observed results were only average effects.

Our study sheds light on the potential impacts of refugee inflows within a setting characterised by relatively strong interaction between refugee and host populations. Hence, we fully acknowledge that our results are context-specific and might not apply to more isolated refugee situations. As Ugandan settlements are marked by an intensive interaction between locals and refugees in various economic and social activities, this allows for a more direct impact on local markets and societies. We expect that previous exposure to high refugee numbers has contributed to this interaction between the host population and new arrivals. Due to data constraints, we also recognise that our estimates are not able to shed light on the effects on the male population in terms of labour market outcomes. Hence, we cannot draw a comprehensive picture of the welfare dynamics within the household. Yet, the household perspective is taken when looking into household and child indicators.

Furthermore, due to data constraints, we were limited to the perspective of the host population, and we therefore could not draw any conclusions about the welfare status or subjective social perception of refugees themselves. Particularly for questions related to social cohesion, going beyond the host community perspective would be extremely insightful.

In addition, it is important to keep in mind that there is no uniform definition of social cohesion. Our results shed light on some prominently used determinants of social cohesion, though do not cover all possible measurements of this still blurry concept. Moreover, social cohesion is a concept about society as such, herewith also including the group of refugees now living within the Ugandan communities. As we do not have any data on the perceptions held by the refugees, we can only infer a one-sided picture of the level of social cohesion.

The refugee population peaks within the three settlements occurred at slightly different times. Hence, we captured different lengths of refugee exposure. The two largest settlements in terms of refugee influx (Kyangwali and Nakivale) both experienced their largest peak in refugee numbers at similar times. Hence, our results were mostly driven by medium-term effects (three to four years) whereas the results of the separate settlements point in comparable directions of impact on all our outcome measures.

8   Potential impact channels: a discussion

There are a number of potential theoretical impact channels that may have driven our empirical results. Using insights from exploratory qualitative interviews that we conducted in the Nakivale settlement in 2018,[30] we hypothesise below on mechanisms that have played a role.

We start by evaluating the positive influence on female employment, particularly in the self-employed agricultural sector. The first potential channel relates to increased access to agricultural markets in proximity to the settlements and changes in the sales structures. Previous to the refugee inflows, no systematic structure for small-scale producers to sell their surpluses generated by agricultural activities existed. Travelling themselves to markets within and outside the settlements was often assessed to be prohibitively expensive, particularly for those situated in remote places. However, increased refugee inflows led to an increasing population within the camp and to more people producing small surpluses across the settlements. As a result, a middle-men trading structure became established over time, such that the so-called "middlemen" bought produce from small farmers and then sold it at larger markets within and outside the settlements which were otherwise too far away to be easily reached by the farmers themselves.[31] This offered new opportunities to sell surplus from agricultural products for people living in rural areas both within and around the settlements. In other contexts, such as Kenya, Alix-Garcia et al. (2018) describe that market structures for the trading of services and goods were better developed within the camp than in neighbouring towns. Similar mechanisms are reported in Tanzania, where the arrival of refugees triggered remote villages to become integrated into a trading regime and improved transportation network (Landau, 2002). Maystadt and Duranton (2014) suggest increased road construction, and herewith reduced transportation costs, to be among the effects of the refugee influx.

Second, population growth triggered by the inflow of refugees generates increased economic potential in general. Given that the refugee population in Nakivale is approximately one-fifth of the overall district population (100,000/500,000), it creates more demand for agricultural products. While this could potentially overburden local economies in the short run – and while we cannot disentangle the temporal dynamics involved – we saw beneficial net effects for the period under consideration. An additional avenue for beneficial welfare effects among host populations is related to increased labour supply as refugees work as cheap labourers on the farms of Ugandans. Particularly, in a situation of high demand for agricultural produce, this enables the host population to increase the potential of their agricultural land to the extent that previous human resources might have been a limiting factor and crowding out effects on local populations are limited in size. Another potential mechanism relates to price stability and increased demand. In Uganda, each arriving household receives a plot of land and a starting kit for agricultural production. In the short run, an exogenous rise in demand by refugees is

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30 It is important to note that these were conducted after the period under investigation.

31 Nakivale and Kyangwali refugee settlements are both located in Uganda's rural countryside, separated by long distances and poor roads from their nearest urban commercial centers of Mbarara and Hoima, respectively (Betts et al., 2014). For instance, the market in Mbarara is around 42 km away from the Nakivale settlement and this takes approximately 1.5 hours by car.

expected to increase prices in local markets (though this can be reduced by food aid provided in the short run). In the medium term and longer-run, providing refugees with these assets serves to stabilise agricultural prices surrounding the camp due to the refugees` potential to trade their surplus for other goods and also creates demand for non-agricultural products (Alix-Garcia et al., 2018). Further anecdotal evidence from Nakivale and Kyangwali settlements report that aid organisations such as UNHCR or the Office of the Prime Minister (OPM) provide specific training for women deliberately including both host populations and refugees. These training courses generate knowledge to improve farming, skills training on crops and livestock production, as well as enabling participants to start farming activities while fostering inter-group relations (personal interviews, 2018). Hence, Ugandan women may now be more skilled to generate and sell agricultural surpluses.

A further possible scenario is that Ugandan males in particular are switching to better-paid jobs in the formal sector offered by non-governmental organisations (NGOs) or public services, which were created due to the increased presence of refugees (UNHCR, 2017), while women might be substituting males' labour force in the agricultural sector. This is related to an insider's advantage that allows them to "climb the ladder" in the local labour force.

Overall, our positive welfare results were in line with the findings of Kreibaum (2016) who noted increased monthly consumption (as a welfare measure) among those living in areas with greater refugee presence.

In line with our negative results in all three social cohesion dimensions, for the period of 2005 to 2012, Langer et al. (2016) have shown that their composite index of social cohesion as well as all three separate dimensions in Uganda seem to have decreased after 2005 and slightly increased from 2012 onwards without reaching the initial levels. According to Langer et al. (2016) an increased ethnicisation of politics in Uganda over this period might explain the reduced levels of identification with the nation state. Our results suggested that, while this might have triggered a general trend towards identification with the respective ethnic group, the presence of refugees seemed to initiate another push towards the ethnic identity. This might in part echo a feeling of neglect by the nation state while simultaneously hinting at the feeling of togetherness with the refugees as ethnic origins were often shared with the newcomers.[32] While the latter might be a positive indication of sympathy with the refugees, identification with the nation state can be an important characteristic of a coherent society, particularly in the case of Uganda where this has often been challenged by ethnic conflicts. Overall, however, results regarding adherence to the national state are difficult to interpret and judge.

It is similarly challenging to evaluate our finding that, in general, income was perceived to be less equally distributed. While in general a perception of more inequality in the society is thought to decrease social cohesion, here it is possible that the host population did not experience economic losses but that the assessment of more inequality was driven by acknowledging the challenging economic circumstances of newly arriving refugees. This

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[32] Most Congolese refugees in the camps originate from the Eastern DRC. Their language and outer appearance resemble those of the Ugandans living in the Western/South-Western part of the country.

recognition was not necessarily challenging social cohesion. Generally, it was also likely that certain occupational groups benefitted more from more intense refugee exposure than others, which was supported by our employment results. Also, Kreibaum (2016) established that households were affected heterogeneously by the refugee presence in the district. Those depending on transfers even showed a decline in consumption rates supporting the perceived economic inequality among respondents. Intensified levels of social inequality could also be triggered by a perceived unfair distribution of support services by national and international agencies towards the newly arrived refugees. This was indicated by some respondents in personal interviews in Nakivale (2018) as public services within the refugee settlements (though open to local Ugandans) were better than those provided outside the settlements.

Due to the difficulties of interpreting these indicators in our specific setting, we considered the variable of trust to be the most reliable stand-alone variable to reflect changes in social cohesion. As a consequence, this result suggested that, despite the welfare gains outlined before, the Ugandan host population may have suffered a simultaneous deterioration of cohesion within the society.

9   Conclusions

We analysed the impact of hosting refugees among Ugandan households and have contributed to the literature by considering impacts that went beyond economic costs and benefits. Uganda is a very interesting case study: despite growing criticism of its self-reliance strategy, it has been praised by the international donors as a country that offers refugees the opportunity to participate economically and socially. For instance, Uganda allows – and, to some extent, mandates – refugees to work and own businesses, grants them relative freedom of movement, and fosters interactions between host and refugee population, for instance, through establishing joint public services.

The displacement episodes under investigation originated from the Democratic Republic of Congo at different points in time after 2005, each sudden and unexpected. For this reason, we were able to treat them as natural experiments and exploit a Difference-in-Differences strategy to identify causal medium to long-term effects (that is, three to seven years after our treatment) of hosting large numbers of refugees. In particular, we exploited both time and distance variations to refugee camps to show how not only women and children but also households in the Ugandan population were affected by refugee inflows originating from the DRC between 2005 and 2009.

We established that a higher exposure to refugees led to higher female labour force participation rates, particularly in agricultural self-employment. Moreover, we observed beneficial effects on these households' welfare and on nutritional outcomes of children. A battery of robustness checks confirmed that the results were consistent for different specifications, samples, and after addressing various concerns about potential endogeneity issues. Hence, we are confident in concluding that a more intense refugee presence following an unexpected displacement episode

of Congolese refugees has resulted – on average – in positive economic and welfare outcomes for women, their children, and the households of the Ugandan host population more generally.

In addition to these impacts, we studied the effect of increased refugee exposure on indicators of social cohesion, namely the "glue" that holds a society together. We found that the positive economic and welfare impacts described above did not seem to translate into improved measures of social cohesion. Increased refugee presence was negatively associated with various different dimensions of social cohesion, for example, general levels of trust in others. We also found increased levels of perceived social and economic inequality among the host community.

Our paper points to several avenues for future research. First, more work is needed to verify the channels through which the improvement of female employment and household welfare took place. Factors that might have contributed and go beyond higher demand (induced by population growth through refugee presence) include, for instance, improved and altogether new trading-structures established in reaction to more agricultural small-scale production within the settlements; and increased skills and knowledge acquired through training in farming activities. Our results are in line with the recently raised narrative of "refugee economies" describing refugees as economic actors and herewith changing the obsolete picture of reducing refugees to the status of purely dependent human beings (Betts et al., 2014).

Important policy implications resulting from these narratives and our results are that international organisations and governments should further support the ability of the host population to unlock the business potentials associated with migration movements. This necessitates (while not being restricted to) ensuring their labour market access. Fostering economic activities between refugees and host populations is expected to have contributed to the economic and welfare benefits induced by the inflow and presence of refugees. At the same time, the social impact of large numbers of newly arriving populations in hosting communities has to be carefully considered and social cohesion safeguarded. Our results suggest that individual- and household-level welfare gains experienced by the average host community member do not seem to be sufficient in preventing a deterioration in social cohesion. The mismatch between welfare gains and societal outcomes warrants particular attention since we believe that promoting social cohesion does not only serve a valuable end in itself, but is also required to ensure a sustainable (and peaceful) integration of refugees and host communities.

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Appendix

Figure A1:   Average distance from clusters to refugee settlements (in km) for DHS and Afrobarometer data
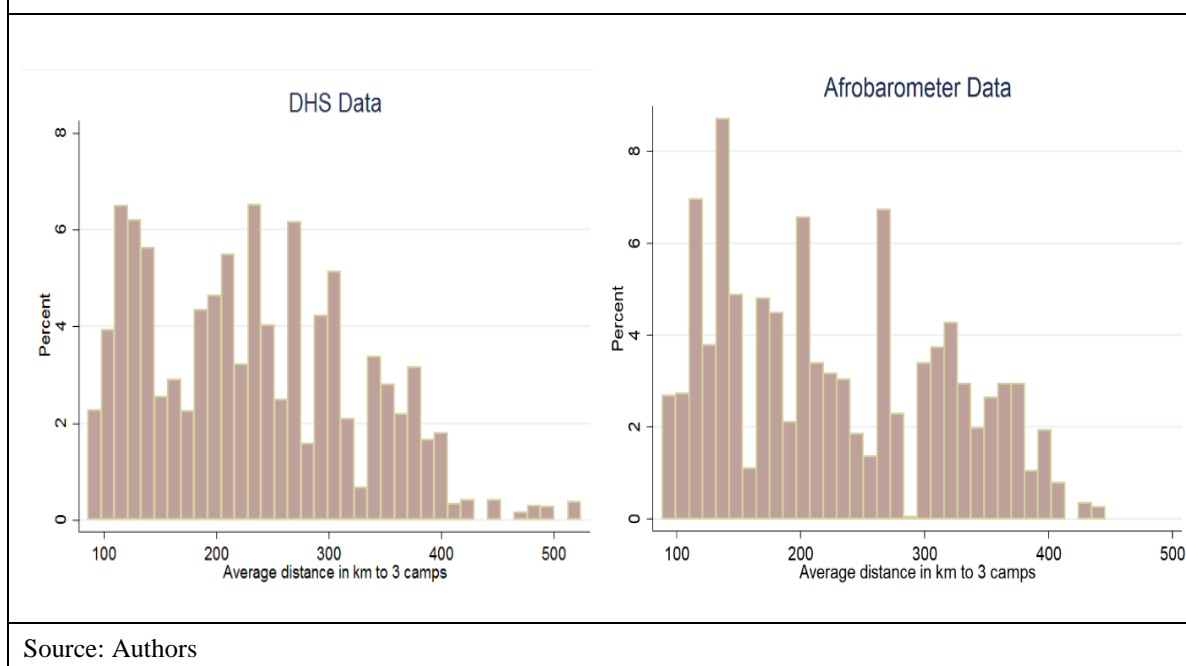
Source: Authors

Table A1:   Two-group mean comparison test in 1995, low refugee intensity districts (control) versus high refugee intensity districts (treatment)

	Differences in means [mean(control)–mean(treatment)]	T-statistic
Women's employment	-0.0664***	(-4.80)
Sector occupation	-0.354***	(-6.71)
Agricultural self-employed	-0.133***	(-7.69)
Agricultural work for family	0.0194	(1.46)
Agricultural work for others	-0.00328	(-0.67)
Female education in years	0.401***	(3.76)
Female age in years	-0.801**	(-3.17)
Female age in years^2	-48.46**	(-3.18)
Currently married	0.0548***	(4.12)
Number of household members	0.405***	(4.13)
Female household head	-0.0446***	(-3.53)
Household wealth	0.108*	(2.53)
Urban	0.132***	(9.71)
N	6227	

Notes: T-statistics in parentheses,* $p<0.05$, ** $p<0.01$, *** $p<0.001$.
Source: Authors (DHS data)

Table A2: Placebo model, 1995/2000: treatment: whether the district will have a "high refugee intensity" in the future				
	(1)	(2)	(3)	(4)
Variables	**Women's employment**	**Agricultural self-employed**	**Agricultural work for family**	**Agricultural work for others**
Treatment: whether district will have a "high refugee intensity" in the future	0.0010 (0.98159)	-0.0237 (0.64107)	0.0354 (0.46382)	0.0007 (0.93885)
Female education (years)	0.0058***	-0.0136***	-0.0027*	-0.0038***
	(0.00678)	(0.00000)	(0.05855)	(0.00341)
Household size	-0.0080***	-0.0108***	0.0120***	0.0006
	(0.00297)	(0.00418)	(0.00003)	(0.59314)
Female age in years	0.0112***	0.0080***	-0.0062***	-0.0014***
	(0.00000)	(0.00000)	(0.00000)	(0.00069)
Female household head	0.0545***	-0.0600***	-0.0208	0.0179***
	(0.00098)	(0.00023)	(0.20361)	(0.00502)
Wealth poor	0.0641*	0.0101	-0.0193	0.0002
	(0.06223)	(0.62654)	(0.31141)	(0.98147)
Wealth middle	0.0474	0.0114	-0.0298*	0.0070
	(0.15811)	(0.61668)	(0.09817)	(0.36725)
Wealth richer	0.0063	0.0124	-0.0907***	0.0059
	(0.87336)	(0.67961)	(0.00031)	(0.52027)
Wealth richest	-0.0394	-0.1156***	-0.1604***	0.0306
	(0.31312)	(0.00480)	(0.00000)	(0.15800)
Urban	-0.0991***	-0.2791***	-0.0727***	0.0171
	(0.00040)	(0.00000)	(0.00062)	(0.13376)
Constant	0.4050***	0.4998***	0.4092***	0.0666***
	(0.00000)	(0.00000)	(0.00000)	(0.00134)
N	12,622	8,717	8,746	8,722
R-squared	0.076	0.185	0.085	0.013

Notes: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.10. Standard errors are clustered at the district level.

Source: Authors (DHS data)

Figure A2: Linear trend of female labour force participation rates (mean) in "high intense" refugee districts versus "low intense" refugee districts before and after the treatment period
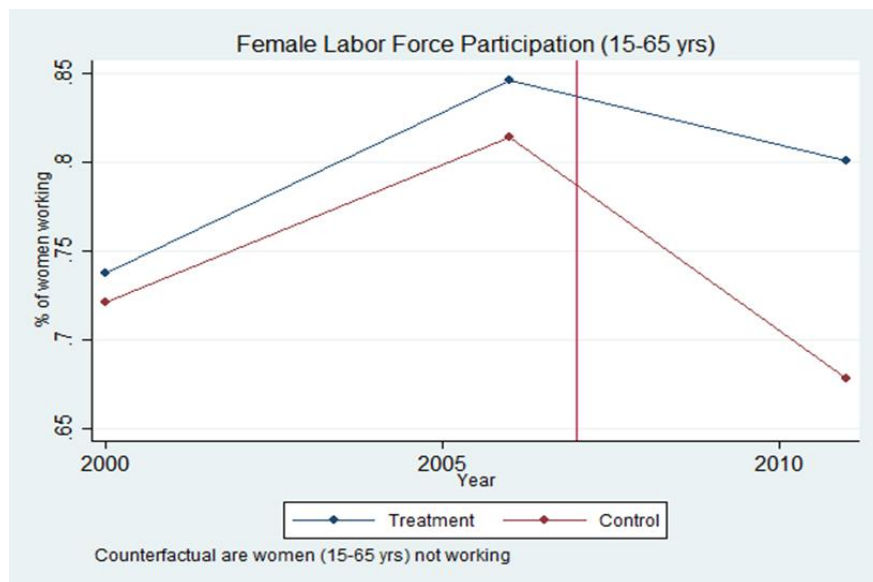
Source: Authors (DHS data)

Table A3: Employment outcomes: non-linear (logit) models for binary employment outcomes				
	(1)	(2)	(3)	(4)
Variables	**Women's employment**	**Agricultural self - employed**	**Agricultural work for family**	**Agricultural work for others**
Log($RI_{c,t}+1$)	0.353***	0.781***	-0.638***	-0.0531
	(0.0747)	(0.0751)	(0.0912)	(0.163)
Female education (years)	0.00693	-0.0728***	-0.0238***	-0.115***
	(0.00599)	(0.00590)	(0.00745)	(0.0132)
Female age	0.262***	0.124***	-0.284***	-0.00234
	(0.0150)	(0.0150)	(0.0170)	(0.0288)
Female age^2	-0.00328***	-0.00141***	0.00371***	-0.000234
	(0.000244)	(0.000236)	(0.000272)	(0.000466)
Married	0.167***	0.785***	-0.552***	-1.036***
	(0.0502)	(0.0514)	(0.0584)	(0.0982)
Female household head	0.169***	0.0196	-0.332***	-0.201**
	(0.0480)	(0.0476)	(0.0592)	(0.101)
Household size	-0.0430***	-0.00641	0.0728***	-0.0224
	(0.00627)	(0.00673)	(0.00763)	(0.0155)
Wealth poor	-0.0914	-0.132**	0.111	-0.178
	(0.0726)	(0.0639)	(0.0709)	(0.129)
Wealth middle	-0.156**	-0.177***	0.115	-0.488***
	(0.0738)	(0.0668)	(0.0754)	(0.141)
Wealth richer	-0.289***	-0.269***	-0.0576	-0.534***
	(0.0740)	(0.0692)	(0.0811)	(0.148)
Wealth richest	-0.416***	-0.957***	-0.377***	-0.292*
	(0.0846)	(0.0858)	(0.105)	(0.171)
Lagged log (nighttime light)	0.00116	-0.0114	-0.0221***	0.0182
	(0.00726)	(0.00747)	(0.00844)	(0.0182)
Distance to next water source (km)	-2.57e-06**	5.21e-07	1.36e-06	-1.30e-06
	(1.29e-06)	(1.17e-06)	(1.55e-06)	(2.53e-06)
Km to DRC border	-0.00109	-0.00172	0.00120	0.00280
	(0.00122)	(0.00111)	(0.00134)	(0.00231)
Urban	-0.300***	-0.862***	-1.069***	0.731***
	(0.0606)	(0.0703)	(0.103)	(0.136)
Constant	-3.878***	-6.213***	5.227***	-0.819
	(0.528)	(0.524)	(0.608)	(1.121)
N	18,682	15,023	15,025	15,019
Pseudo R-squared	0.16	0.18	0.18	0.12
Source: Authors (DHS data)				

Table A4:	Social cohesion outcomes: non-linear (logit) models for binary social cohesion outcomes	
Dimension **(Langer et al., 2016)**	**Identity**	**Trust**
	Adherence to national identity	Interpersonal trust
Log(RI$_{c,t}$ +1)	-0.8434***	-1.0160***
	(0.00000)	(0.00000)
N	6,090	6,093
Pseudo R-squared	0.0896	0.0584

Notes: Robust standard errors clustered at the PSU level in parentheses; *** p<0.01, ** p<0.05, * p<0.1. District and year dummies included in all specifications.
Source: Authors (Afrobarometer data)

Table A5:	Social cohesion outcomes: descriptive statistics				
	(1)	(2)	(3)	(4)	(5)
	Full sample	**Above median of the refugee index**	**Below median of the refugee index**	**Difference (3)-(2)**	**T-statistic**
Log(RI$_{c,t}$ +1)	4.24	4.69	3.74	-0.95***	-63.12
SCI inequality component (centred at 0)	-0.50	-0.44	-0.56	-0.12***	-4.44
"=1 if own economic condition is the same compared to others"	0.18	0.19	0.17	-0.03	-1.53
"=1 if own ethnicity was never treated unfairly by government"	0.33	0.38	0.27	-0.11***	-5.16
SCI identity component (=1 if feels only or mostly Ugandan)	0.21	0.19	0.24	0.05***	2.71
SCI institutional trust component	0.28	0.31	0.25	-0.06***	-4.23
"=1 if trusts electoral commission a lot"	0.20	0.23	0.15	-0.08***	-4.65
"=1 if trusts police a lot"	0.22	0.23	0.20	-0.03*	-1.73
"=1 if trusts courts a lot"	0.32	0.34	0.30	-0.04*	-1.69
"=1 if trusts president a lot"	0.32	0.36	0.28	-0.08***	-3.90
"=1 if trusts parliament a lot"	0.34	0.36	0.31	-0.05**	-2.32
SCI interpersonal trust component (=1 if trust other people a lot)	0.16	0.11	0.21	0.10***	6.46
N	2,104	1,112	992		

Notes: Median refugee index refers to the year 2012 and all differences also refer to this year. p<0.05, ** p<0.01, *** p<0.001.
Source: Authors (Afrobarometer data, 2012)

Table A6: Employment outcomes: robustness to alternatives to the refugee exposure index		
	(1)	(2)
Variables	**Women's employment**	**Women agricultural self-employed**
Constant refugee inflow (=1) for each camp		
$\log\left(\sum_{s=1}^{3} \frac{1}{D_{s,c}^{\alpha}} + 1\right)$	2.596***	
	(0.493)	
Individual refugee settlements		
Kyaka II settlement $\quad \mathrm{Log}\left(\frac{P_{Kyaka\,II}}{D_{Kyaka\,II,c}^{\alpha}} + 1\right)$	0.0255** (0.0122)	
Nakivale settlement $\quad \mathrm{Log}\left(\frac{P_{Nakivale}}{D_{Nakivale,c}^{\alpha}} + 1\right)$	0.0580*** (0.00986)	
Kyangwali settlement $\quad \mathrm{Log}\left(\frac{P_{Kyangwali}}{D_{Kyangwali,c}^{\alpha}} + 1\right)$	0.0378*** (0.0123)	
Spatial weights		
A. RI with α=0.5	0.0002***	0.0003***
	(0.000)	(0.000)
B. RI with α=2	0.0165***	0.0234***
	(0.003)	(0.004)
C. RI with α=3	0.2120***	0.3235***
	(0.072)	(0.076)
D. RI with α=1 and without log	0.0009***	0.0015***
	(0.000)	(0.000)
U-shaped relationship		
$\mathrm{Log}(RI_{c,t}+1)$	-0.2117***	-0.1016***
	(0.033)	(0.043)
$\mathrm{Log}(RI_{c,t}+1)^2$	0.0341***	0.0324***
	(0.004)	(0.005)
Level of settlement population		
$\mathrm{Log}\left(\sum_{s=1}^{3} \frac{Level\ of\ refugees}{D_{s,c}^{\alpha}} + 1\right)$	0.106*** (0.0150)	0.181*** (0.0231)
District, year dummies	Yes	Yes
Month of interview dummies	Yes	Yes
Notes: Only the coefficient for the Refugee Index ($RI_{c,t}$) is reported. All control variables are included. Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10. Source: Authors (DHS data, 2001-2011)		

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Table A7: Social cohesion outcomes: robustness to alternatives to the refugee exposure index				
	Equality	**Identity**	**Trust**	
Variables	Perceived equality	Adherence to national identity	Institutional trust	Interpersonal trust
Constant refugee inflow (=1) for each camp				
Log $(\sum_{s=1}^{3} \frac{1}{D_{s,c}^{\alpha}} + 1)$	-5.7561***	-3.8901***	0.3459	-4.6021***
	(0.00001)	(0.00127)	(0.59628)	(0.0000)
Individual refugee settlements				
Kyaka II settlement Log$(\frac{P_{Kyaka\,II}}{D_{Kyaka\,II,c}^{\alpha}} + 1)$	-0.1662***	-0.1680***	0.0143	-0.1225***
	(0.00000)	(0.00000)	(0.37596)	(0.00000)
Nakivale settlement Log$(\frac{P_{Nakivale}}{D_{Nakivale,c}^{\alpha}} + 1)$	-0.1296***	-0.1588***	0.0121	-0.0992***
	(0.00000)	(0.00000)	(0.41444)	(0.00000)
Kyangwali settlement Log$(\frac{P_{Kyangwali}}{D_{Kyangwali,c}^{\alpha}} + 1)$	-0.1576***	-0.2056***	0.0230	-0.1169***
	(0.00017)	(0.00000)	(0.28073)	(0.00000)
Spatial weights				
A. RI with α=0.5	-0.0003***	-0.0004***	0.0000	-0.0002***
	(0.00000)	(0.00000)	(0.54602)	(0.0000)
B. RI with α=2	-0.0112***	-0.0079**	-0.0022	-0.0087**
	(0.00002)	(0.03134)	(0.33341)	(0.01375)
C. RI with α=3	-0.1077***	-0.0418	-0.0304	-0.0839***
	(0.00001)	(0.23639)	(0.24255)	(0.00566)
D. RI with α=1 and without log	-0.0012***	-0.0012***	-0.0000	-0.0008***
	(0.00000)	(0.00002)	(0.94461)	(0.00013)
U-shaped relationship				
Log(RI$_{c,t}$+1)	-0.1557	0.0843	-0.0220	-0.4927**
	(0.13956)	(0.39310)	(0.72223)	(0.02941)
Log(RI$_{c,,t}$+1)^2	-0.0031	-0.0297***	0.0031	0.0402
	(0.79520)	(0.00913)	(0.68226)	(0.10405)
Level of settlement population				
Log$(\sum_{s=1}^{3} \frac{Level\ of\ refugees}{D_{s,c}^{\alpha}} + 1)$	-0.1835***	-0.1561***	0.0024	-0.1317***
	(0.00000)	(0.00000)	(0.86573)	(0.00000)

Notes: Robust standard errors clustered at the PSU level. *** p<0.01, ** p<0.05, * p<0.1. District and year dummies included in all specifications.
Source: Authors (Afrobarometer data, 2000-2012)

Table A8:	**Employment outcomes: alternative samples**		
Variables	**(1)** **Married sample**	**(2)** **Exclude Northern Districts**	**(3)** **Exclude Northern and Eastern Districts**
Log(RI$_{c,t}$ +1)	0.0792***	0.0707***	0.0934***
	(0.0229)	(0.0119)	(0.0161)
Female education (years)	0.00765***	0.00250**	0.00250**
	(0.00113)	(0.00102)	(0.00126)
Female age	0.0281***	0.0577***	0.0622***
	(0.00335)	(0.00235)	(0.00292)
Female age^2	-0.000319***	-0.000751***	-0.000814***
	(4.94e-05)	(3.75e-05)	(4.66e-05)
Household size	-0.00491***	-0.00882***	-0.0105***
	(0.00148)	(0.00115)	(0.00147)
Female household head	0.0171*	0.0205***	0.0353***
	(0.00926)	(0.00741)	(0.00895)
Wealth poor	-0.00669	0.00495	0.0127
	(0.0123)	(0.0115)	(0.0155)
Wealth middle	-0.00859	-0.00854	0.00160
	(0.0124)	(0.0116)	(0.0150)
Wealth richer	-0.0362**	-0.0280**	-0.0160
	(0.0144)	(0.0121)	(0.0158)
Wealth richest	-0.0602***	-0.0525***	-0.0468**
	(0.0168)	(0.0145)	(0.0183)
Husband's age	-0.00102**		
	(0.000478)		
Husband's education	0.00117		
	(0.00314)		
Lagged log (nighttime light)		-0.00410***	-0.000485
		(0.00140)	(0.00228)
Distance to next water source (km)	-3.98e-07	-3.00e-07	-4.76e-07*
	(3.05e-07)	(2.43e-07)	(2.78e-07)
Km to DRC boarder	0.000303	0.000195	-1.93e-05
	(0.000316)	(0.000197)	(0.000233)
Urban	-0.0901***	-0.0570***	-0.0535***
	(0.0177)	(0.0121)	(0.0144)
Year=2006	0.293***	0.227***	0.345***
	(0.0980)	(0.0541)	(0.0768)

Table A8 (cont): Employment outcomes: alternative samples			
Year=2011	0.258***	0.265***	0.247***
	(0.0388)	(0.0208)	(0.0290)
Constant	0.0493	-0.645***	-0.727***
	(0.124)	(0.0907)	(0.120)
N	12,079	14,713	9,622
R-squared	0.12	0.18	0.197

Notes: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1. District and month of interview dummies included in all specifications. Dependent variable: women's employment.

Source: Authors (DHS data, 2001-2011)

Table A9: Social cohesion outcomes: alternative samples				
Dimension (Langer et al., 2016)	**Equality**	**Identity**	**Trust**	
	Perceived equality	Adherence to national identity	Institutional Trust	Interpersonal Trust
Exclude Northern districts				
$\text{Log}(RI_{c,t}+1)$	-0.1875***	-0.1415***	0.0291*	-0.1160***
	(0.00000)	(0.00001)	(0.05446)	(0.00000)
N	4,698	5,000	6,209	4,999
R-squared	0.151	0.110	0.142	0.053
Exclude Northern and Eastern districts				
$\text{Log}(RI_{c,t}+1)$	-0.0296	0.0294	-0.0202	-0.0819***
	(0.39349)	(0.34890)	(0.35931)	(0.00536)
N	2,990	3,221	3,988	3,251
R-squared	0.173	0.153	0.159	0.069

Notes: Robust standard errors clustered at the PSU level in parentheses; *** p<0.01, ** p<0.05, * p<0.1. District and year dummies included in all specifications.

Source: Authors (Afrobarometer data, 2000-2012)

Figure A3: Kernel density estimates of cluster to settlements average distance for all three waves

Average Distance from Clusters to Settlements
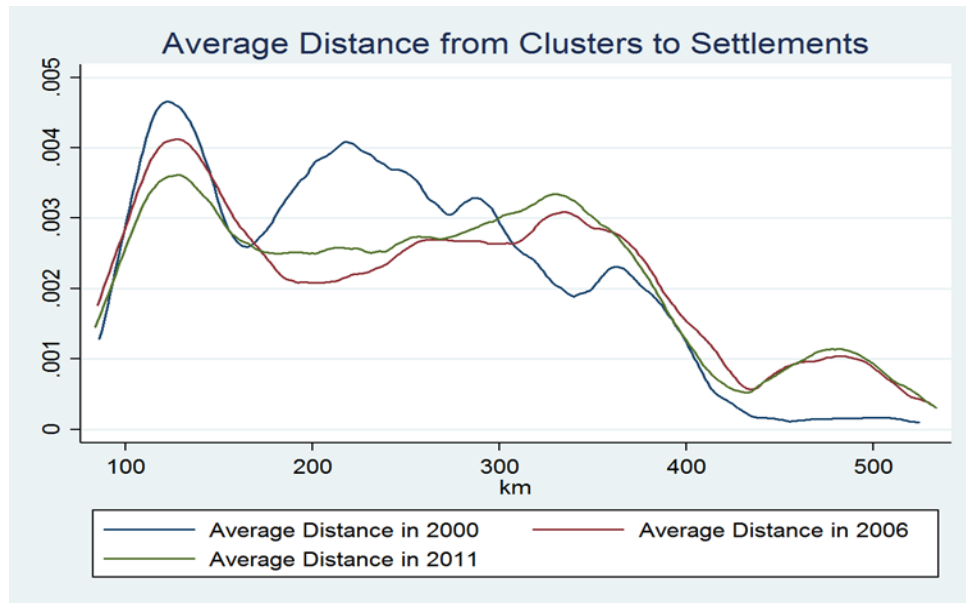
Source: Authors (DHS data)

Table A10: Employment outcomes: controlling length of the growing season and seasonal work per district

	(1)	(2)	(3)	(4)
Variables	Women's employment Status	Women's employment Status	Agricultural self-employed	Agricultural self-employed
Log(RI$_{c,t}$+1)	0.08***	0.06***	0.16***	0.17***
	(0.014)	(0.015)	(0.019)	(0.021)
District level				
Length of growing season	0.06***		-0.02	
	(0.019)		(0.024)	
Seasonal/occasional work		-0.28***		0.11
		(0.089)		(0.111)
N	12,079	12,079	10,352	10,352
R-squared	0.12	0.12	0.19	0.19

Notes: Robust standard errors in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.10$. District and month of interview dummies included in all specifications.

Source: Authors (DHS data)

Table A11: Social cohesion outcomes: different treatment periods				
	Equality	Identity	Trust	
Dimension (Langer et al., 2016)	Perceived equality	Adherence to national identity	Institutional Trust	Interpersonal Trust
Log(RI$_{c,t}$ +1)	-0.0928*	0.0271	0.0377***	-0.0358*
	(0.05801)	(0.55380)	(0.00751)	(0.06069)
N	5,731	6,106	7,575	6,093
R-squared	0.166	0.098	0.149	0.044

Notes: Robust standard errors clustered at the PSU level in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$. District and year dummies included in all specifications.

Source: Authors (Afrobarometer data)

Table A12: Employment outcomes: testing interactions between the refugee exposure index and female education/ household wealth			
	(1)	(2)	(3)
Variables	Women's employment status	Women's employment status	Women's employment status
Log(RI$_{c,t}$ +1)	0.0500**	0.0566**	0.0520**
	(0.0209)	(0.0219)	(0.0210)
Female education (years)	-0.00428**		0.0524***
	(0.00187)		(0.00236)
			-0.000685***
Household head	0.0124*	0.0135*	(3.58e-05)
	(0.00719)	(0.00725)	-0.00806***
Household wealth poor		0.00133	(0.00117)
		(0.0201)	-0.0146
Household wealth middle		-0.0203	(0.0125)
		(0.0198)	-0.0251**
Household wealth richer		-0.0614***	(0.0123)
		(0.0212)	-0.0517***
Household wealth richest		-0.117***	(0.0137)
		(0.0249)	-0.0976***
Log(RI$_{c,t}$ +1)* Female education (years)	0.000876		(0.0157)
	(0.000584)		
Household wealth poor*Log(RI$_{c,t}$+1)		-0.00570	
		(0.00674)	

Table A12 (cont): Employment outcomes: testing interactions between the refugee exposure index andfemale education/household wealth			
Household wealth middle* Log($RI_{c,t}$ +1)		-0.00145	
		(0.00679)	
Household wealth richer* Log($RI_{c,t}$ +1)		0.00476	
		(0.00720)	
Household wealth richest* Log($RI_{c,t}$ +1)		0.0107	
		(0.00773)	
Household head		0.0163	
		(0.0135)	
Household head* Log($RI_{c,t}$ +1)			-0.00152
			(0.00440)
Month, district and year of interview dummies included	Yes	Yes	Yes
Constant	-0.189	-0.206	-0.282***
	(0.139)	(0.139)	(0.0971)
N	18,682	18,682	18,682
R-squared	0.16	0.16	0.16
Notes: Clustered-Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10. The following control variables are included: log nighttime light; proximity to water, km to order, urban, married, female age, female age squared, household size. Source: Authors (DHS data)			

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