

Their Suffering, Our Burden? How Congolese Refugees Affect the Ugandan Population

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Summary. — This paper analyzes the impact of both the long-term presence and additional influxes of refugees on the local population in Uganda. Uganda has a unique legal framework of local integration which makes it an interesting case study. Refugees are allowed to work and move freely. The political aim is to integrate them economically and socially into the host communities. The impact of this approach on Ugandan households' objective and subjective welfare as well as their access to public services is the focus of this study. Two different household surveys covering the years 2002–10 are used in order to employ a difference-in-differences approach. In doing so, the natural experiment of two sudden inflows is exploited, while simultaneously controlling for the long-term trends in refugee numbers. The findings presented here suggest that the Ugandan population living near refugee settlements benefits both in terms of consumption and public service provisions. However, their negative perceptions regarding their own economic situation and their alienation from their national state in favor of their ethnic identity contradict this objective improvement of livelihoods. This is the first study to empirically analyze the effect of a long-term presence of displaced populations on local communities. With refugee situations becoming increasingly protracted, the findings offer important policy insights and point toward an interesting new field of research.
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Key words — refugees and host population, local integration, Uganda, Democratic Republic of the Congo

1. INTRODUCTION

The Second Congo War has also been named Africa's World War, referencing its disastrous impact as the deadliest conflict since World War II. Especially in the east of the country, millions have become internally displaced or have fled to neighboring states. In Uganda, which has a history of recent civil war itself, the accommodation of refugees was initially met with popular support. However, as their situation became increasingly protracted and their return was not conceivable, reluctance developed as refugees were perceived to become a burden on public infrastructure and a source of competition in the labor market.

Similarly, the number of protracted refugee situations, i.e., those that have been lasting for more than five years (Crisp, 2003) has increased globally from 22 in 1999 to 33 by the end of 2013 (United Nations High Commissioner for Refugees, 2014). On average, refugees live in uncertainty about their future for 17 years (Jacobsen, 2002). For a long time, refugee policies largely had an emergency aid type of character, caring for them in camps and aiming at sending them home or to third countries as fast as possible. In 2005, however, the United Nations High Commissioner for Refugees (UNHCR) had a policy shift toward their local integration (United Nations High Commissioner for Refugees, 2005).¹ In a background note in the World Development Report 2011, the World Bank also acknowledges the “development challenge” that exists due to the impact that refugees have on their neighboring countries (Puerto Gomez & Christensen, 2010).

The Ugandan government follows a policy of stressing the aim of economic self-reliance of the refugees and of promoting their local integration by merging public services for Ugandans and the displaced. This approach differs from the well-known approach of “refugee warehousing”. Local integration policies, however, are in danger of failing if nationals feel—and possibly rightly so—that the foreigners' presence is to the their disadvantage (Fielden, 2008).

Uganda has been facing two linked but distinct challenges. Together with the international community, it has to simultaneously provide emergency aid as well as long-term development support and find a transition from one to the other. Both of these tasks run the risk of being fulfilled at the cost of the local Ugandan population due to a tight public budget and an economic environment that is sensitive to externally induced changes in supply and demand. While the presence of refugees will always have an effect on the local population, this impact is likely to be much more pronounced in the Ugandan context of local integration (personal interviews, 2014).

The purpose of this paper is threefold: first, it analyzes to what degree the political goals of refugees' economic independence from aid and inclusion of public services impact the situation of the host population. This is done by examining household welfare in terms of consumption and the accessibility of health and primary education institutions. The hypothesis is that the presence of refugees has an impact on the economic welfare of the surrounding areas' population, depending on the households' source of income. This might be through either price effects or competition in the (labor) market. Furthermore, it is expected that when opening up public services provided by international aid donors to the host population, the general availability of services increases. In contrast, when allowing refugees to access state-run

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services, funds are expected to be redirected away from services for nationals.

Second, in addition to these objective measures, the subjective view of the local population regarding their economic situation and how much they identify with their national state is taken into account. The presence of a large number of foreigners will impact the population's perceptions, which in turn affect the success of the integration process. Third, both the long-term trend in refugee numbers and the extent of supplementary influxes are included in the analysis. This allows me to differentiate the effect of refugees that have been living in Uganda for a long time and thus have built a living from additional sudden inflows of displaced creating emergency-type situations.

Three waves (2002, 2005, 2010) of two different household surveys are used, respectively, in order to employ a difference-in-differences approach. I thus compare the effect of additional refugees in refugee-hosting areas to a control group of non-hosting districts.

The findings presented here suggest that Uganda can benefit from its decades long experience in hosting refugees and its exemplary policy framework. There is an overall significantly positive effect of refugee presence on households' consumption that is overlain in times of sudden additional influx for income groups competing with refugees in the labor market. This increase in consumption is in line with the findings of other studies on western Tanzania. Regarding public services, results show that in terms of education, the non-governmental organizations and other private agencies help the state cope with the additional demand for services. This, conversely, functions less well in the health sector. However, the positive developments in objective measures are not met by the perceptions of the nationals. Ugandans living in the surrounding areas of refugee settlements have more negative views on their present economic situation and feel more alienated from their central government. This could motivate policy makers to look further into this issue and possibly increase efforts to reduce prejudices between the groups.

This paper is organized as follows: Section 2 summarizes the literature this work contributes to and from which the theory of change is derived. Next, the background information regarding refugees and their hosts in Uganda as well as the conflict in the Democratic Republic of the Congo are explained in Section 3. Following, Section 4 describes the identification strategy, model, and data before presenting the findings. In addition to the difference-in-difference approach, an instrumental variable estimator is carried out in Section 4(e). The final part concludes.

2. LITERATURE REVIEW

Most of the literature on refugee crises focuses on the displaced persons themselves, while the perspective of the population living close to the settlements remains largely under-researched. Yet, a large increase in the population can be expected to impact the local economy. This effect is likely to be more pronounced in developing countries which have difficulties providing for their own population. As Kibreab (1985) describes, in a complex chain of events a refugee situation will first affect the displaced population and then spread to the country of asylum, the country of origin and, lastly, the international community. He states that, if given the right support in terms of land, agricultural inputs, and access to markets, refugees will be a stimulus to economic growth and development rather than a burden.

The impact refugees have on a household's consumption within a Ugandan host community is a priori unclear. Possible risks include disease outbreaks, food and land scarcity, unsafe drinking water, and wage competition (Baez, 2011; Montalvo & Reynal-Querol, 2007). Refugee flows can also pose a security threat, e.g., extending the network of the rebels (Kirui & Mwaruvie, 2012; Salehyan & Gleditsch, 2006). In contrast, external funding and additional human resources could raise the welfare of the host community and stimulate their local economies through higher demand and the influx of resources from international humanitarian assistance (Baez, 2011; Jacobsen, 1996, 2002).

In a seminal theoretical paper moving to the micro level, Chambers (1986) finds that net sellers of agricultural products will benefit from increased food demand at the cost of net buyers, while land abundance can mean that more land is used benefiting everyone.² He argues that ignoring especially vulnerable groups of the host population is fatal as they have needs similar to those of the refugees but cannot use the "safety net" of a camp. Many empirical works have directly or indirectly built on these thoughts. In western Tanzania, the presence of Burundian, Rwandan, and Congolese refugees induced an increase in trade and business, and brought with them the positive effects of relief operations but also altered social dynamics and carried new diseases (Berry, 2008; Whitaker, 2002). In Ghana, refugee-hosting areas have been found to undergo a massive structural change as a small agricultural settlement became a growing urban settlement attracting even Ghanaians to move there (Agblorti, 2011).

This qualitative and descriptive literature has only very recently been complemented by quantitative empirical works, mostly focusing on the Tanzanian case.³ Studying the effect of Rwandan and Burundian refugees on the local population after four, ten, and sixteen years, respectively, the overall impact has been found to be positive. Yet, as suggested by previous works, winners and losers can be identified based on the possibility of benefiting from price changes and improved road infrastructure, determined by the access to resources, education, or power (Alix-Garcia & Saah, 2009; Duranton & Maystadt, 2013; Maystadt & Verwimp, 2014).

For the Ugandan context, Dryden-Peterson and Hovil (2004) argue that refugees have the potential to benefit commerce as traders and customers, where the lack of coordination between refugee assistance structures and the wider district development structures has been resolved. On a similar note, Kaiser (2000) describes that an estimated 40% of the assistance provided by UNHCR to the Kiryandongo settlement was directed to the surrounding area. This again points toward a positive impact of refugee presence on households' consumption.

At the community level, effects foreseen by the literature are clearer: there is a general notion that school and health care facilities might be overburdened by the influx while international funding can lead to more and improved infrastructure (Baez, 2011). This is differentiated by Chambers (1986), stating that public services and common property resources will be strained in the short run but can benefit in the long term as external aid creates additional supply. For Uganda specifically, Dryden-Peterson and Hovil (2004) describe how public infrastructure provisions for nationals are enhanced when hosts are allowed to attend refugee schools.

Apart from these objective outcomes, the perceptions of the population are crucial. Jacobsen (2001) determines three main obstacles to local integration: real and perceived security threats, economic and environmental resource burdens (perceived or actual) as well as resistance to integration and

pressure on authorities to segregate refugees. Berry (2008) identifies conflicts caused by environmental degradation in western Tanzania. In Ghana, hosts generally accepted the social and economic integration of Liberians, but were reluctant to political inclusion as well as to them mingling with their families (Agblorti, 2011). Refugees tend to be scapegoats for social ills since they are easily attacked and often unable to defend themselves (Salehyan & Gleditsch, 2006). Thus, regardless of the objective effect of refugee influxes, they tend to be perceived as a burden by the host population (Sorenson, 1994).

In Uganda, Dryden-Peterson and Hovil (2004) describe the perceived injustice from the part of the local populations in Uganda witnessing trucks of the World Food Programme (WFP) entering the settlements. The Ugandan government as well as UNHCR and its implementing partners stress the necessity of including the national population into the budgeting and planning of the service provision in order to avoid conflicts. **Notably, contradicting perceptions exist between the local population who sees a strain on existing resources and government officials and aid agencies who report that infrastructure would not exist in the absence of refugees.** In addition, the new institutions provide a higher quality of services than normally available in rural Uganda (International Organization for Migration, 2013).

This study contributes to the growing body of **quantitative microeconomic** literature in a number of ways. While the Tanzanian studies are *ex post*, the crisis in Uganda is still ongoing. Thus, looking at this context offers the opportunity to distinguish the long-term effects of the refugee presence from the short-term additional inflows after shocks in the sending country. To my knowledge and according to Ruiz and Vargas-Silva (2013), this is the first study focusing on the effects of a prolonged refugee presence. Additionally, so far the studies have been rather descriptive in taking the presence of refugees as a given and analyzing their effect on markets or welfare through market mechanisms. In contrast, **I carry out a policy analysis focusing less on the impact on the market and more on the success of the Ugandan state in mitigating it.** Tanzania and Uganda are interestingly distinct in their path of political reforms of refugees' rights and statuses. While both have a long history of hosting refugees, Tanzania initially encouraged the Burundians fleeing their home in 1972 to integrate and become economically self-sustainable. But when confronted with the inflow in 1993–94 Tanzania restricted their freedom of movement to a 4-km radius around the camp. As mentioned above and described in more detail in Section 3, the Ugandan government decided to take the opposite route and to significantly increase the refugees' possibilities to settle and work where they wish to do so. Hence, the impact of refugees in Uganda is likely to be more pronounced and lasting than the short-term, isolated shock in Tanzania. Finally, the host population's perceptions have not yet been considered in a quantitative study.

3. REFUGEES IN UGANDA

Uganda is situated in central eastern Africa with the Democratic Republic of Congo (DRC), Rwanda, and Sudan among its neighboring countries. Hence, it is in the center of a region that has seen many internal and internationalized civil wars and a vast extent of destruction and human suffering over the last half century. Most of the more than 190,000 refugees in Uganda come from neighboring countries, including Burundi, the DRC, Kenya, Rwanda, and Sudan (United Nations High Commissioner for Refugees, 2013).

Uganda has traditionally hosted refugees in settlement structures rather than in camps, i.e., in large villages in isolated rural areas. In 1999, the Ugandan government passed the so-called self-reliance strategy (SRS), which was initially aimed at Sudanese refugees in the West Nile Region but was then extended to the whole country. It is supposed to move refugee support from relief to development. When they arrive, they receive a set of non-food items, a plot of land as well as seeds and food rations for two-to-four seasons, at which point they are supposed to be self-reliant, i.e., economically independent from food aid. In 2004, the SRS was replaced with the Development Assistance for Refugee-Hosting Areas (DAR) program which kept the initial focus of the SRS (Clark, 2008). The Refugee Act from 2006–09 built on these statutes.⁴ It was regarded as a model for Africa, recognizing the right of the country's refugees to work, move around the country and live in the community rather than in special areas. However, if they wish to benefit from UNHCR assistance, they are still bound to the settlements which tend to be located in remote and marginal areas, where access to markets can be difficult. Self-settled refugees in urban areas are not eligible for support (Kaiser, 2006). The act introduced steps toward locally integrating the displaced, e.g., through shared use of hospitals and schools in order to resolve inefficient parallel systems. Notably, in many cases services provided to refugees were of better quality than the local ones. Hence, the surrounding populations are likely to have benefited from the refugee presence in cases where they could tap newly established social services (see inter alia Dryden-Peterson & Hovil, 2004; Garimoi Orach, 2005; Rowley, Burnham, & Drabe, 2006).

While in general refugees and nationals live together peacefully and interact economically and socially, the main source of conflict between them appears to be resources, specifically land. When the first refugees arrived in the 1960s and then again in the early 1990s, both populations were rather small. Giving the displaced persons means for agricultural activities was even considered to be a measure to cultivate underutilized land (Jacobsen, 2001). However, in the meantime both groups have grown and land has become a scarce resource with refugees complaining about the size and quality of their plots and hosts accusing them of encroaching on their fields (personal interviews, 2014).

The group of refugees under observation in this work originates from the DRC, a state that has been divided by a violent conflict which was sparked by the Rwandan civil war and genocide. It began in 1998 after a coup led by Laurent Kabila took place against long-term dictator Joseph Mobutu and officially ended in July 2003. During these five years, an estimated 3.5 million people were killed, either as a direct result of the fighting or from starvation and disease. An additional 3.6 million people were displaced. Up to nine African states and about 25 armed groups were involved. Although the conflict was initially fought along ethnic lines, there are clear economic interests at work as well, since the DRC is rich in a number of natural resources such as gold, diamonds, timber, and coltan. Still, despite the peace settlement, the situation is highly fragile since many areas remain under the control of rebel forces. While the conflict appeared to calm down after 2003, two major waves of Congolese fleeing to Uganda can be noted: In 2005–06 they were sent especially to Kyaka II (Kyenjojo district, Central Region), and in 2008 mainly to Nakivale and Kyangwali (Isingiro and Hoima districts, both in the Western Region). These inflows are clearly visible in the numbers presented in Table 1, both in absolute terms and relative to the district population. The three settlements' locations can be seen in Figure 1.

Kyangwali is the oldest refugee settlement in Uganda. The land was first home to those displaced from the conflict in Rwanda beginning in 1960. After the majority of these repatriated in the early 1990s, the camp was vacant until 1997 when the crisis in eastern DRC flared up. Now, it is mainly home to Congolese refugees, whose number is fluctuating between around 16,000 and 22,000 over the period under observation.⁵ Kyangwali is known for its inhabitants' relatively high degree of economic self-reliance (Werker, 2002; personal interviews, 2014). Furthermore, infrastructure integration has been carried out to the degree that health centers and primary schools in the settlement are equally accessible to refugees and the host community (Refugee Law Project, 2008).

Nakivale is the second oldest and largest refugee settlement in Uganda. Founded in the early 1960s to accommodate Rwandans fleeing the unrest, it kept its Rwandan character for a long time. In 2003, of the 14,729 refugees living there, 12,311 were Rwandans and only 1,154 were Congolese. But in 2008, the total number had risen to 38,822, among which were still 12,632 Rwandans, but now also 14,400 Congolese. The host community has been allowed to access the oldest primary school in the area which for a long time was the only one in the county. The "critical mass" of Ugandan pupils allows the school to keep running even when the number of refugee children fluctuates (downward) (Dryden-Peterson & Hovil, 2003).

Kyaka II has developed in a way similar to Nakivale in the last decade. The number of its population rose from 3,159 in 2002 to about 20,000 in 2008. This increase also stemmed mainly from Congolese refugees, about 17,000 of which lived there in 2008. Here, as well, hosts can access primary schools initially built by the UNHCR and its implementing partners (Dryden-Peterson & Hovil, 2004).

The UNHCR and its partner organizations carried out an HIV Behavioural Surveillance Survey (BSS) for Kyaka II and its surrounding communities in 2010 which gives an impression of the composition of both groups as well as the extent of their social and economic interaction (United Nations High Commissioner for Refugees & Intergovernmental Authority on Development, 2010). First, it can be noted that the groups are very similar in many regards. They both are by majority Christian, half of which are Catholic and Protestant, respectively. 95% of both groups have only completed primary education at most (refugees do have a larger share of those who never attended school, though). While in both groups the majority of people interviewed depends on agriculture as their main source of income (70% of the refugees vs. 57% of the Ugandans), the share of those active in pastoralism, trading, and crafts is higher among Ugandans. This is not surprising as refugees get their start-up aid in the form of land while the other employment types

require a more long-term perspective as well as larger initial investments. Around Kyaka II, it appears that the inward mobility of Ugandans visiting the settlement is larger than outward mobility of refugees traveling to surrounding areas. The main reason for Ugandans entering the settlement is indeed the infrastructure provided. They use the market for shopping and benefit from the health care. Refugees have less dominant reasons, they more or less equally go for employment, trade, health care, schools, or visiting relatives. Summarizing the findings, it can be said that the two groups are quite similar. It appears that the local population uses the opportunity to interact more frequently than the refugees. This is probably due to the increase in infrastructure for the former who live in remote areas but also to movement restrictions and aid provided to the latter.

4. DATA AND RESULTS

This work is based on two distinct surveys: the Uganda National Household Survey (UNHS) as well as the Afrobarometer Uganda. They were both carried out in the three waves of 2002–03, 2005–06 and 2009–10 (Ugandan Bureau of Statistics, 2010; Afrobarometer, 2010).⁶ The Afrobarometer interviews at the household level and includes 3,777 households in total.⁷ While the UNHS includes information at the individual level, the information relevant here is collected only for the household. As is commonly done, I use this household level data and add covariates for specific characteristics of the household head. The sample consists of 10,833 households in total.⁸

Descriptive statistics of both datasets are provided in Tables 2 and 3, separated by refugee-hosting and non-hosting areas.⁹ There are 32 districts overall, three of which host refugee settlements.¹⁰ The unconditional comparison indicates that households are similar in terms of size, source of income, education as well as gender and age structure. Yet, there appear to be differences with regard to the explaining factors of interest, i.e., refugee presence, violent events, and distance to the DRC and Rwandan border. In line with the reasoning above, refugee-hosting districts are closer to the borders and suffer from higher numbers of violent events. All of these factors are controlled for in the analysis. From Tables 2 and 3, it would also appear that refugee-hosting areas feature lower consumption, lower education, and lower economic activity as proxied by the night-time light. This is an observation underlining the importance of proper econometric analysis as the results below will not confirm this impression.

Three outcome variables are central to this analysis. First, household level welfare as measured by a consumption aggregate calculated by the Ugandan Bureau of Statistics (UBOS).

Table 1. Absolute and relative number of refugees, 2002–10

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Kyangwali	16,220	17,220	17,000	18,090	19,100	20,109	12,957	20,000	22,230
District %	47.20	47.78	45.06	45.91	46.31	46.58	28.68	42.30	44.54
Kyaka II	3,159	6,180	8,780	14,600	16,415	18,229	20,033	19,132	18,230
District %	8.38	15.79	21.64	34.77	37.72	40.41	42.86	39.49	36.12
Nakivale	14,770	14,729	15,800	15,680	21,000	33,176	38,822	50,000	56,067
District %	61.29	60.04	58.77	55.64	67.99	98.47	111.02	135.39	144.95

Source: Numbers collected from reports by UNHCR and the Refugee Law Project. The upper row presents the refugee population in a settlement, the bottom row divides this number by district population in 1,000s.

Kyangwali settlement is located in Hoima district, Kyaka II in Kyenjojo, and Nakivale in Isingiro.

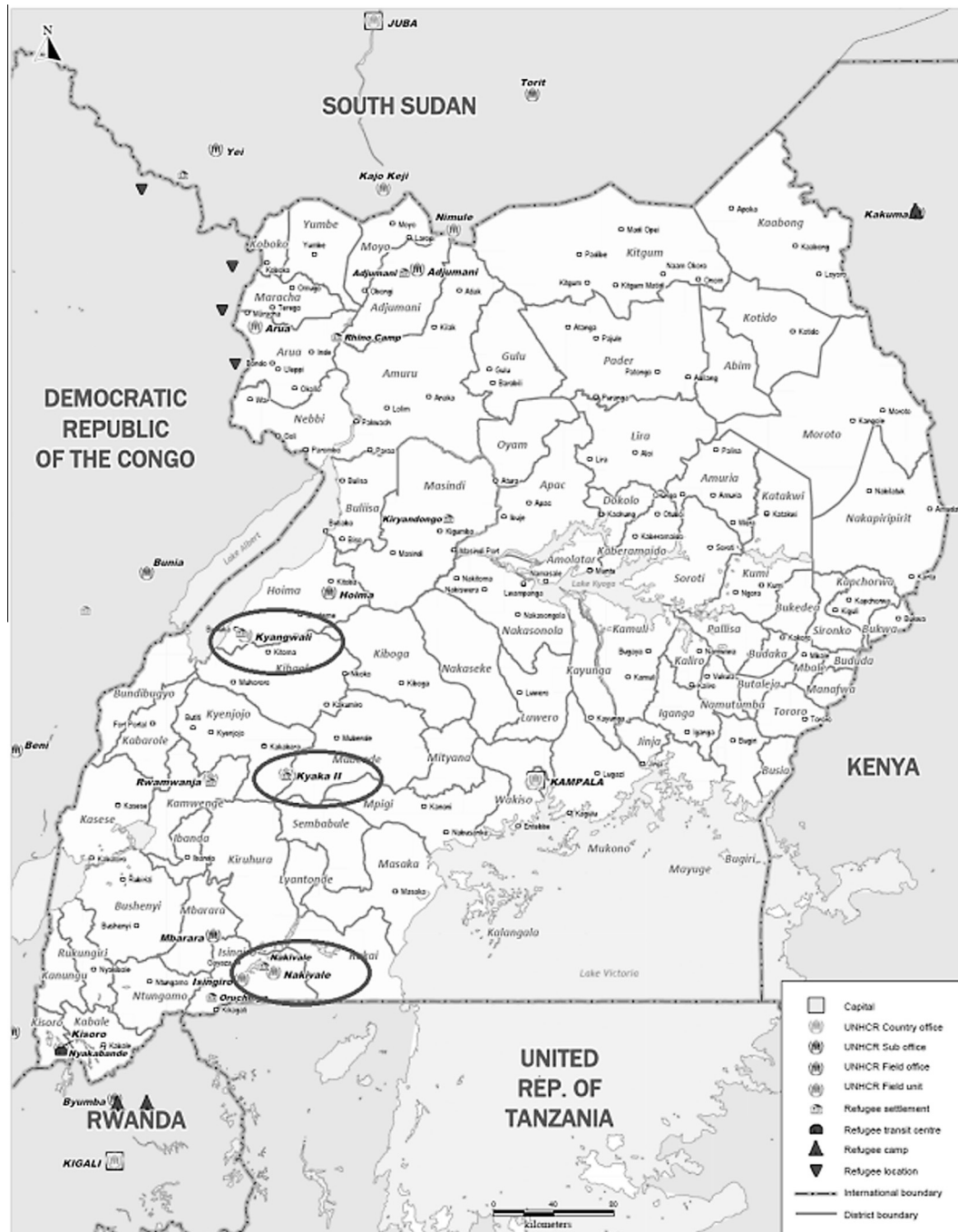


Figure 1. UNHCR presence in Uganda as of July 2012 (Note: Rwamwanja settlement was only opened in 2012. Source: UNHCR website, accessed April 2nd, 2013).

It provides monthly household consumption expenditure per adult equivalent weighted by a district level price deflator. Second, I look at public good provision, specifically health and education as these are among the most basic services that a state provides. They are captured at the community level through the question: “Is there a [education/health facility] present in this community?” Although these indicators make a statement on the existence of rather than the actual access to a service, they are still meaningful indicators. A positive effect of the presence of refugees would indicate the building of new facilities. A negative impact would imply the diversion of scarce resources. One possible diversion would be away

from refugee localities in reliance on the international aid community. Another one could take place within the refugee localities away from the service provision to nationals and instead providing for displaced people. Third, households’ subjective well-being is analyzed, reported as the answer to: “In general, how would you describe: Your own present living conditions?” as well as “Let us suppose that you had to choose between being a Ugandan and being a (Ethnic Group). Which of the following best expresses your feelings?” In the first case, the variable takes a value of one for “Neither good nor bad”, “Fairly good” or “Very good” rather than 0 which represents “Very bad” or “Fairly bad”. In the second case, the variable is

Table 2. *Descriptive statistics UNHS, at the household and community level*

	Non-hosting areas			Refugee-hosting areas			<i>T</i> -Statistic
	Mean	SD	<i>N</i>	Mean	SD	<i>N</i>	
<i>Household level</i>							
Consumption	59,115.18	104,971.34	10,017	46,495.88	43,963.89	814	3.41***
Age	39.96	14.54	10,019	40.08	14.60	814	−0.22
Male	0.72	0.45	10,019	0.78	0.42	814	−3.28**
Household members	5.13	3.06	10,019	5.34	2.93	814	−0.214
Highest grade	6.45	5.40	9,863	5.72	5.16	811	3.73***
Main source of income							
Wage	0.23	0.42	9,958	0.22	0.42	811	0.22
Self-employed	0.30	0.46	9,958	0.21	0.41	811	5.14***
Property	0.01	0.09	9,958	0.01	0.09	811	−0.06
Transfers	0.05	0.22	9,958	0.05	0.22	811	−0.06
Agriculture	0.42	0.49	9,958	0.50	0.50	811	−4.9***
<i>Community level</i>							
Refugees per 1,000	0.00	0.00	1,046	48.94	32.84	84	−48.44***
Urban	0.26	0.44	1,046	0.18	0.39	84	1.70
Population in 1,000	388,822.46	240,407.10	1,046	398,103.48	61,825.44	84	−0.35
Distance border	124.16	85.54	1,046	52.17	19.50	84	7.69***
Violent events	0.33	0.68	1,046	0.66	0.81	84	−4.20***
Night-time light (*1,000,000)	0.60	1.08	1,046	0.07	0.08	84	4.53***
Public services available							
Gov. primary school	0.39	0.49	1,040	0.33	0.47	84	1.00
Priv. primary school	0.35	0.48	917	0.30	0.46	73	0.88
Gov. health unit	0.09	0.28	1,042	0.08	0.28	84	0.15
Priv. health unit	0.34	0.47	1,003	0.26	0.44	77	1.49

* $p < 0.05$.** $p < 0.01$.*** $p < 0.001$.Table 3. *Descriptive statistics Afrobarometer, at the household level*

	Non-hosting areas			Refugee-hosting areas			T-Statistic
	Mean	SD	N	Mean	SD	N	
Living conditions	0.39	0.49	3106	0.43	0.50	658	-1.78
Ethnic rather than national identity	0.24	0.43	3005	0.22	0.42	623	0.84
Age	33.46	12.33	3118	33.92	12.42	659	-0.86
Male	0.50	0.50	3118	0.50	0.50	659	-0.02
Highest grade	3.21	1.79	3113	3.33	1.75	658	-1.54
Gone w/o food	0.76	1.01	3114	0.59	0.98	653	4.06***
Gone w/o water	1.02	1.26	3115	1.20	1.39	657	-3.35***
Gone w/o medical care	1.36	1.20	3113	1.33	1.20	656	0.72
Radio news	3.46	1.07	3116	3.56	1.00	658	-2.13*
Refugees per 1,000	0.00	0.00	3118	32.06	13.02	659	-137.59***
Night-time light (*1,000,000)	0.00	0.00	3118	0.00	0.00	659	13.05***
Urban	0.15	0.35	3118	0.15	0.35	659	0.12
Population in 1,000	440,788.00	266,915.13	3118	921,088.53	401,771.84	659	-37.99***
Distance border	116.60	86.93	3118	60.68	7.99	659	16.50***
Violent events	0.38	0.78	3118	0.49	0.73	659	-3.25**

* $p < 0.05$.** $p < 0.01$.*** $p < 0.001$.

1 if the response is “I feel only (ethnic group)” or “I feel more (ethnic group) than Ugandan” as opposed to 0 which stands for “I feel equally Ugandan and (ethnic group)”, “I feel more Ugandan than (ethnic group)” or “I feel only Ugandan”. The motivation for analyzing whether a person feels more belonging to their nationality or their ethnicity is based on the idea that perceived identity also depends on the context the person finds themselves in (e.g., [Hadnes & Roggemann \(2014\)](#)) and

might be used as a means of differentiation. That is, Ugandans and refugees have a similar ethnic background. Depending on the degree to which the Ugandans sympathize with or feel the need to discriminate against the refugees, either identity could become more important.

The main explanatory variables of interest reflect the long-term presence of refugees as well as the shocks between the respective survey waves. The number of refugees per 1,000

inhabitants is used as an indicator for host country capacity, following the UNHCR.¹¹ In the first step, the levels themselves at the district level are analyzed. This is the most straightforward measure of refugee pressure and follows the long-term trend. Yet, it does not consider spikes in refugee numbers between two survey years such as the emergencies in 2006 and in 2008 which might better explain outcomes that are malleable in the short run. In order to do so, further specifications simultaneously account for this shock, too. The shock is represented by a variable capturing the maximum increase in refugees over local population from one year to the next (between survey waves). Extreme increases in the refugee population are deemed as a strain on local infrastructure and a possible trigger of public resentment.¹²

Furthermore, control variables are added at the household level, explaining the household's ability to make a living as well as their attitudes. Namely, I include the household head's age, sex, the highest grade of schooling completed, and binary variables for the main income source (wage, self-employment, property, transfers or subsistence agriculture).¹³ In line with the literature, I also add the squared term of age because an inverted U shaped relationship between age and both income (or consumption) and life satisfaction has been found (e.g., Dolan, Peasgood, & White (2008), Gehring (2013), Lohmann (2015), van Biesebeek (2010)).

In addition, community (rural/urban), and district characteristics are included, such as violent events (Report data from ACLED: Raleigh, Linke, Hegre, & Karlsen (2010)) and nighttime light as a proxy for regional development (NOAA National Geophysical Data Center & US Air Force Weather Agency, 2011). In general, the situation in Uganda's south and south-west was peaceful in the period under observation. The activities of the Lord's Resistance Army (LRA) were concentrated in the north of the country and moved into Southern Sudan and the DRC from 2006 onwards. The intensity of activities of the Allied Democratic Forces (ADF) peaked between 1997 and 2001, while by 2002, they had calmed down (De Luca & Verpoorten, 2015). In line with this, there are very few event days per year on average recorded, which are not focused on specific areas of the country. Regarding per capita GDP, one might assume that the more straightforward measure would be the average per capita consumption as measured by the survey. However, this measure would not be available for the Afrobarometer. In addition, while including district fixed effects, it would be a very close predictor of household consumption and would overlay the effect of other variables. Thus, in order to ensure comparability between all specifications, the light data is used as a proxy. As mentioned above, refugees might just be sent to sparsely inhabited areas as well as to ones close to the border with the conflict region. Thus, both the district population (Ugandan Bureau of Statistics, 2011) and the shortest sub-county distance to either the DRC or Rwanda (author's calculation) are controlled for.

(a) Identification

The identification of the effect of an increase in the number of refugees rests on the unexpected size and nature of the refugee influxes, generating a natural experiment.¹⁴ Figure 2 displays the absolute number of refugees arriving each year between 1990 and 2011. As can be seen, the numbers are very close to zero throughout the 1990s and the peaks in inflows described above are clearly visible.

All three settlements under observation already existed when these shocks occurred. A certain degree of adaptation by the local infrastructure and the population is thus likely

to have already happened at this point in time. Nakivali and Kyaka II especially have massively increased in size, which will have affected the surrounding communities. As at the time of these additional influxes, a peace agreement had already been signed in the DRC the situation appeared to have calmed down. Thus, these emergencies hit the local Ugandan governments as well as the aid agencies rather suddenly as both parties were unprepared. Specifically, the large number of people arriving within that short period of time was unexpected (personal interviews, 2014). When arriving in one of the transition centers at the border, refugees do not have a choice concerning their long-term settlement but are allocated according to capacity of the settlements. All of these factors underline that from the point of view of the Ugandan households or communities the large increase in refugees was unexpected and random, making this setting a suitable natural experiment. Additionally, the Congolese people entered Uganda rather than other neighboring countries because of movements in their own state, which are presumably unrelated to the public service provision and welfare in Ugandan districts. Considering that Ugandan rebels are also involved in the conflict, this could be disputable in districts bordering the DRC. However, the assumption certainly holds for those districts concerned here as the settlements were initially set up for Rwandan refugees and are thus further away from the Congolese border.

Two further and related assumptions that need to be valid in order for the identification strategy to hold are the comparability of refugee-hosting and non-hosting districts as well as a common trend. The common trend assumption states that in the absence of refugees, refugee-hosting and non-hosting districts would have developed in a parallel manner with regard to the outcomes of interest. The earliest available wave of the UNHS is from the year 1992.¹⁵ As this is "in between" the two periods of the refugee settlements' activity (i.e., the 1960s and the 2000s), this data can help test if refugee-hosting districts differed from those without a refugee settlement (see Table 4). As can be seen, the two groups appear to be very similar. They do not differ significantly in any of the characteristics (see the *t-statistics* of the two-group mean-comparison test).

Camps are likely to have been established in order to facilitate food aid, to be easily accessible by the refugees and to be in areas with unused land. When taking the very simple approach of regressing a binary indicator for refugee presence on district characteristics for the very earliest available data from the year 1992 (see Table 5), neither district welfare nor the distance to the border with the DRC appear to be significant in neither the ordinary least squares (OLS) nor the negative log-log specification.¹⁶ The analysis nevertheless controls for these factors and takes advantage of the variation in the number of refugees over time. Additionally, district-specific factors that are constant over time are captured in fixed effects.

Based on the comparable composition of the refugee-hosting and non-hosting districts in 1992, we can test the common trend assumption adding the survey wave from the year 1995.¹⁷ Using these survey waves has the advantage that the data was collected before 1998, i.e., prior to the outbreak of the conflict in the DRC. A binary indicator for whether or not a district will host refugees in the future is used to run a placebo model, regressing the outcomes of interest on this indicator and including the available covariates. The future status as a refugee-hosting district does not determine changes in household consumption or government health and educational service provision between the years 1992 and 1995, as shown in Table 12 in the appendix. This supports the assumption of common trends in the absence of refugees. However,

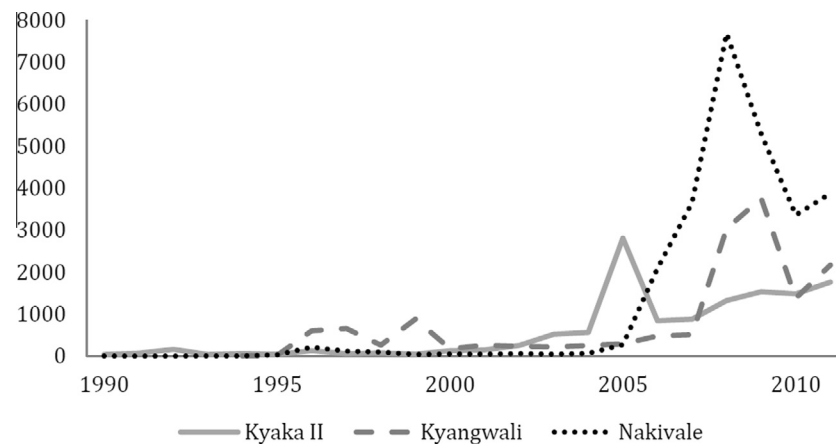


Figure 2. Number of newly arriving refugees by settlement, 1990–2011 (numbers provided by UNHCR).

Table 4. District characteristics in 1992, at the household level, including t-test

	Non-hosting areas Mean	Refugee-hosting areas Mean	T-statistic
Age	39.49	38.33	1.02
Male	0.73	0.74	−0.26
Household members	4.51	4.38	0.50
Highest grade	5.91	6.53	−0.95
Av. welfare in district	25,331.46	28,888.64	−1.27
Urban	0.30	0.42	−1.63
Population in 1,000	5,206,941.87	6,548,489.33	−0.59
Distance border	107.28	56.32	0.98
Main source of income			
Wage	0.25	0.27	−0.41
Self-employed	0.14	0.18	−1.31
Property	0.00	0.01	−1.51
Transfers	0.00	0.00	−0.52
Agriculture	0.57	0.48	1.20
Public service available			
Primary school	0.34	0.35	−0.09
Gov. health unit	0.12	0.09	0.34
Priv. health unit	0.14	0.02	1.48

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 5. Refugee presence and district characteristics in 1992

	(1) OLS	(2) Logit
Av. Welfare in district	0.0000003 (0.00003)	−0.00005 (0.0002)
Urban	1.2 (0.9)	11.1 (7.9)
Population in 1,000	0.00000003 (0.00000004)	0.0000004 (0.0000005)
Distance border	−0.001 (0.001)	−0.01 (0.02)
Constant	−0.3 (0.6)	−5.6 (5.0)
Observations	18	18

Standard errors in parentheses.

The dependent variable is a binary variable indicating whether the district will host refugees in future.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

the coefficient is statistically significant and negative for the private health service provision. This means that the results for this outcome variable need to be interpreted with care.

Another important identifying assumption is that the composition between treated and untreated groups remains constant in a repeated cross-sectional analysis. In the case presented here, this means that there must not be any systematic migration between districts. I do not have data specifically on this issue in the datasets employed. However, contrary to the case of Ghana described in the literature section, there is no anecdotal evidence on systematic in- or out-migration. Looking at the population growth at the district level over the period of observation, the country-wide average is at 3.4% per annum and the average over the refugee-hosting districts is at 3.7% per annum. This also does not give reason to suspect population movements on a large scale. Possible biases that would result in the case of migration are discussed in the findings section.

The analysis considers refugee intensity at the district level. Two factors support the assumption that the effect is rather confined to the district level. The first one concerns the location of the settlements which are situated in remote rural areas with high transportation costs. That is to say, interaction among refugees and the host population is confined to a rather small radius. The displaced are only considered for UNHCR support when living in these settlements, so that if they make use of their newly acquired right to work outside the settlement, they are likely to do so within commuting distance. Second, the political system in Uganda after democratization has put a lot of weight on decentralization. It allocated the public policies' decision-making power to the so-called LC5 level, i.e., the districts (Byenkyia, 2012; Ranis, 2012). This means that, for example, negotiations between the UNHCR and the government over the service provision and sharing take place in a district-specific way.¹⁸

(b) Model

This work uses three repeated cross-sections of two distinct household waves to implement difference-in-difference models. The treatment of interest, the intensity of refugee presence at the district level, is measured in two different ways as explained in the data section. As the major rise in refugee numbers in Uganda took place in the years 2006 and 2008, there are two pre-treatment (2002 and 2005) and one post-treatment period (2010). In general, the equation that includes household and district control variables ($X_{i,t}$ and $D_{d,t}$) takes the following form:

$$y_{i/c,t} = \beta_0 + \beta_1 \text{refugee_level}_{d,t} + \beta_2 \text{shock}_{d,t} + \beta_3 X_{i,t} + \beta_4 D_{d,t} + \delta_t + \delta_d + \epsilon_{d,t}, \quad (1)$$

with y being the different outcomes, i and c indicate the household or community, respectively, d the district, and t the year. I first only include the refugee levels and add the shock variable in the second step. Year (δ_t) and district fixed effects (δ_d) are included to control for unobserved heterogeneity in a year across all districts as well as within districts. As the units of observation (households, communities) are at a lower level than the unit of the refugee presence measure (districts), standard errors ϵ are clustered at the district level.¹⁹ As the number of clusters is rather small (32), standard errors are additionally bootstrapped as suggested by Cameron, Gelbach, and Miller (2008). The coefficients of interest are β_1 for the long-term impact of refugees on the host population and β_2 representing the additional effect of sudden inflows.

In line with much of the recent literature, linear probability models have been given preference over logit or probit ones due to specification advantages such as the bootstrapping of standard errors and the interpretation of interaction terms. However, results do not change when applying a nonlinear model for binary outcomes, as presented in Tables 15 and 16 in the appendix.

(c) Findings

Results for the impact of the level of refugees in a district on the outcomes of interest are presented in Table 6.²⁰ Overall, refugee presence appears to increase monthly consumption (column 1) of those already living in the area. Possible channels are that they open up new possibilities to trade and attract new enterprises. Economically, the effect means that increasing the number of refugees per 1,000 inhabitants by 10 (which is reasonable looking at the data in Table 1), would on average increase consumption by 3%. At the average expenditure in refugee-hosting areas of 46,496 Ugandan shillings (UGX), this would be about 1,408 UGX or 75 US cents, 2.15 US dollars if purchasing power parities are considered. This is roughly equivalent to a day's income and is hence considerable.

Differentiating by income source draws a more nuanced picture. Despite the overall positive effect, households depending on transfers are negatively affected by a larger number of displaced. This could be because of a diversion of funds.²¹

Regarding the public service provision (columns 2–5), a higher number of refugees is associated with a smaller probability of a government health center being present in a community. This is another indication for the diversion of state funds away from the local population. Specifically, an increase of 10 refugees over 1,000 inhabitants is correlated with a decrease of 0.008 percentage points (column 2). At an average likelihood of 0.08, this represents a decrease of around 10%.

With regard to primary schools, privately provided education (e.g., by non-governmental organizations, NGOs) is more common in places where more refugees live (see column 5). This is in line with policy expectations, as NGOs react to humanitarian crises. Here, an increase in 10 refugees over 1,000 inhabitants is related with an increase of 0.06 percentage points in the probability that a private primary school is accessible. At the average likelihood of a private primary school in a refugee-hosting area of 0.3 this would be around 20% higher.

There is no statistically significant effect for private health centers or government schools (columns 3 and 4). Taken together, the results indicate that the Ugandan government does not readjust the service provision in the health sector to the increased population. In primary education, outcomes could stem from private providers building new infrastructure and opening it to refugees or from the refugee population making it worthwhile to provide education in sparsely settled areas. Both of these channels are in line with the literature.

Interestingly, when looking at the households' own assessment of their economic situation in Table 7, column 1, it yields a result contradicting the welfare analysis but in line with qualitative findings of Kaiser (2000) and Dryden-Peterson and Hovil (2004) described above. On average, people feel as though they are worse off in areas with a higher level of refugees (column 1). This means that perceptions of the local population do not reflect the objective improvements in economic activity and access to infrastructure that both NGO and government officials describe. A similar finding was presented by the Ugandan Participatory Poverty Assessment Report (UPPAR, Republic of Uganda (2000)). It revealed

Table 6. *The effect of refugees on multiple outcomes, linear probability models, 2002–10*

	(1) Log(Consumption)	(2) Gov. health unit	(3) Priv. health unit	(4) Gov. primary school	(5) Priv. primary school
Refugees per 1,000	0.003* (0.076)	−0.0008** (0.014)	−0.002 (0.254)	0.0009 (0.294)	0.006*** (0.000)
Wage*Refugees per 1,000	−0.001 (0.476)				
Self-employed*Refugees per 1,000	−0.001 (0.386)				
Property*Refugees per 1,000	0.003 (0.47)				
Transfers*Refugees per 1,000	−0.006*** (0.002)				
Wage	0.1*** (0.002)				
Self-employed	0.2*** (0.000)				
Property	0.3** (0.012)				
Transfers	0.2*** (0.008)				
Year = 2005	0.1*** (0.000)	0.04* (0.092)	0.2*** (0.000)	0.1** (0.024)	0.03 (0.484)
Year = 2010	0.4*** (0.000)	0.07*** (0.006)	0.1** (0.016)	0.2*** (0.004)	0.1*** (0.000)
Observations	10,609	1,126	1,080	1,124	990
Mean outcome	10.64	0.088	0.34	0.38	0.35
Adjusted <i>R</i> squared	0.333	0.0548	0.177	0.0720	0.185

P-Values from bootstrapping standard errors in parentheses. Standard errors are clustered at the district level.

District fixed effects and control variables are included in all specifications.

**p* < 0.10.

***p* < 0.05.

****p* < 0.01.

Table 7. *Households' perceptions, linear probability models, 2002–10*

	(1) Living conditions	(2) Ethnic or national identity
Refugees per 1,000	−0.006** (0.014)	0.008** (0.03)
Year = 2005	0.02 (0.946)	−0.05*** (0.008)
Year = 2010	0.04 (0.114)	0.07 (0.126)
Observations	3,741	3,608
Mean perception	0.400	0.233
Adjusted <i>R</i> squared	0.125	0.0494

P-Values from bootstrapping standard errors in parentheses.

Standard errors are clustered at the district level.

District fixed effects and control variables are included in all specifications.

**p* < 0.10.

***p* < 0.05.

****p* < 0.01.

that, despite a decrease in poverty in objective measures (notably consumption), the population in the project districts described their welfare situation as having deteriorated over the same period.²² It is possible that the positive effects shown in the analysis above are overlain in the perceptions by a sense of competition for resources. As summarized in the literature section, the Ugandans have expressed envy at the sight of food aid and additional support being delivered to refugee settlements. As Lohmann (2015) and other authors have shown, perceived well-being depends on the reference group that

one chooses. Thus, if host communities have the impression that another group living nearby receives more support than they do, this can be reflected in their self-assessment.

Linked to this factor is the perception of being neglected by the national state in comparison to the refugees. This impression holds for the feeling of identity (Table 7, column 2). Here, the host population is more inclined to identify with their ethnicity rather than their nationality, i.e., as being Ugandan. At the same time, a larger extent of identifying with the ethnic background which is often shared with the refugees could also

symbolize sympathy. As stated above, the host population is an important stakeholder in the process of local integration and should thus be considered. Unfortunately, the Afrobarometer does not include occupation information for all waves. Hence a disaggregated analysis, as in the case for welfare, is not possible and a more nuanced picture cannot be drawn.

In Tables 8 and 9, the additional shock measure is included in the regression. In column 1, the positive effect on consumption can now be traced back to the additional sudden influx while the level of refugees turns insignificant. This is in line with reports from the field that aid agencies make sure to include nationals into emergency programs. Rather than those locals depending on transfers, now the households relying on wages are adversely affected. This can easily be understood, as the refugees' most important asset is their labor. When entering the labor market, they can decrease wages by increasing labor supply but also by accepting a smaller payment.

While the effect of refugees on the government health service provision is no longer significant, the coefficient of refugee levels for private health service access is now significant and negative. This is clearly counter-intuitive. However, when going back to the 1992 characteristics in Table 4, one can see that the availability of private clinics is already higher in non-refugee hosting areas (0.14 *vs.* 0.02). For this point in time, the difference is not significantly different in the *t*-test. Yet, it appears that the divergence has continued due to service provision clustering around Kampala and Lake Victoria (as visible when looking at values by district), making the difference become significant by now. The results for the primary

school provision (columns 4 and 5) are stable as compared with Table 6.

Looking at subjective measures in Table 9, the impact of refugees on self-assessed welfare (column 1) is now insignificant. This could be based both on the increased assistance to locals in times of emergency or on the deteriorated status of the reference group. The finding for the dominant identity does not change and the shock variable does not appear to have a distinct influence here.

(d) Discussion and robustness

From the findings section one can see a rather robust positive effect of refugees on the consumption and private education access of host communities. The effects in the health sector are slightly less stable and indicate a negative impact. Households' perceptions of their own economic situation as well as their feeling towards their national state have also been shown to be negatively affected in different specifications.

Overall, the main effect stems from the level of refugees in survey years, i.e., the steady increase, rather than from the shock variable. This could mean that long-term effects dominate short-term fluctuations. This makes sense, considering that structures have already been set up and personnel is already present. However, the survey only asks about the existence of a public service and not its quality. It is thus still possible (and likely) that schools and clinics have been built to provide for the long-term population, but are overrun by an unexpected influx. Teachers and implementing organizations report that there are up to 150 pupils per classroom (personal

Table 8. *The effect of refugees adding a short-term shock, linear probability models, 2002–10*

	(1) Log(Consumption)	(2) Gov. health unit	(3) Priv. health unit	(4) Gov. primary school	(5) Priv. primary school
Refugees per 1,000	0.001 (0.478)	−0.001 (0.384)	−0.002** (0.032)	0.0003 (0.84)	0.008*** (0.000)
Maximum increase	0.3*** (0.002)	0.1 (0.518)	−0.06 (0.528)	0.1 (0.524)	−0.4 (0.368)
Wage*Max. increase	−0.2** (0.026)				
Self-employed*Max. increase	0.02 (0.864)				
Property*Max. increase	−0.1 (0.672)				
Transfers*Max. increase	−1.2 (0.226)				
Wage	0.1*** (0.000)				
Self-employed	0.2*** (0.000)				
Property	0.4*** (0.006)				
Transfers	0.1** (0.014)				
Year = 2005	0.1*** (0.006)	0.04 (0.126)	0.2*** (0.000)	0.1** (0.04)	0.04 (0.3)
Year = 2010	0.4*** (0.000)	0.07** (0.018)	0.1** (0.016)	0.2*** (0.002)	0.1*** (0.004)
Observations	10,609	1,126	1,080	1,124	990
Mean outcome	10.64	0.088	0.34	0.38	0.35
R squared	0.333	0.0548	0.177	0.0715	0.188

p-Values from bootstrapping standard errors in parentheses. Standard errors are clustered at the district level.

District fixed effects and control variables are included in all specifications.

**p* < 0.10.

***p* < 0.05.

****p* < 0.01.

Table 9. *Households' perceptions adding a short-term shock, linear probability models, 2002–10*

	(1) Living conditions	(2) Ethnic or national identity
Refugees per 1,000	−0.006 (0.128)	0.009* (0.086)
Maximum increase	−0.03 (0.714)	−0.1 (0.444)
Year = 2005	0.003 (0.938)	−0.04** (0.022)
Year = 2010	0.05 (0.138)	0.07 (0.142)
Observations	3,741	3,608
Mean perception	0.400	0.233
Adjusted <i>R</i> squared	0.126	0.050

p-Values from bootstrapping standard errors in parentheses.

Standard errors are clustered at the district level.

District fixed effects and control variables are included in all specifications.

*** *p* < 0.01.

* *p* < 0.10.

** *p* < 0.05.

interviews, 2014). Yet, this does not appear in these data.

As discussed in the identification section, the natural experiment setting should ensure a clear identification of the effect. I did not find an indication of large scale migration taking place, thus challenging the assumption of a constant group composition (see Section 4(a)). Outward migration away from refugee-hosting districts would only occur in cases where the living conditions of the nationals worsen. Yet, this is not the case for the objective measures. A negative estimate as in the case of the subjective indicators would be underestimated if anything. Inward migration would further stimulate economic activity and would then work as a channel for improved consumption. However, when considering public services, competition would increase with population as opposed to the positive estimated effect.

In order to put the robustness of the findings to an additional test and get a sense of the size of the coefficients, the models are re-run implementing the indicator applied by Maystadt and Verwimp (2014) (see Table 22 in the appendix). They use the number of refugees weighted by the distance to the nearest settlement at the sub-county level.²³ This means that, keeping district fixed effects, the variation between sub-counties within the same district is exploited. For a Ugandan household living nearby the settlement, the distance would be equal to one so that the measure would be identical to the one applied in this study. For this case, the estimated marginal effect on consumption would be larger than in the main specification (0.008 as compared with 0.003) but would decrease with increasing distance. This is exactly what one would expect in the case of spill-overs between sub-counties within a district. As sub-counties are a smaller administrative unit and distances between them are more easily travelled spill-overs are not surprising here. This finding underlines the appropriateness of districts rather than sub-counties as the level of treatment for this analysis. In their study, Maystadt and Verwimp (2014) find a marginal effect that is slightly smaller than the one estimated here. This was anticipated because of the more direct interaction between locals and refugees, the policy of local integration and the longer duration of the refugee presence. The other effects on government health services, private primary schooling, and perceptions can also be confirmed with this measure.

When calculating the model at the district level (i.e., the level where the number of refugees is measured), some of the effects turn insignificant. However, the impact on private schooling and national identity especially does not vary (see Table 23). All tables are presented in the appendix.

(e) *Instrumental variable approach*

It has been shown above that the crucial assumptions for an identification of the effect of refugees on the host population hold in the context of a natural experiment. In order to address the possible remaining doubts about endogeneity through unobserved heterogeneity, an additional instrumental variable approach is applied.²⁴ I take the total number of Congolese refugees entering Uganda in a given year and divide it by the districts' distance to the Congolese border. To be an adequate instrument, this measure should be a sufficient determinant of the number of refugees within a district. At the same time, it must not have a direct effect on households' consumption and perceptions as well as the public service provision that does not work through the presence of refugees and is not controlled for given the other regressors in Eqn. (1). The relevance of the instrument is benchmarked by the explanatory power of the first stage regression.

As for the exclusion restriction, the identifying assumption is made that the total number of Congolese refugees divided by the distance to the border affects the outcomes of interest only through a change in refugee intensity within the districts. The refugees entering Uganda from the DRC flee from violent outbreaks in their own country. These are very unlikely to be directly linked to the outcomes under observation here. Additionally, violent events on the specific district's territory are controlled for. As explained above, settlements are set up close to the displaced persons' point of entry in order to facilitate their administration. This should also not be directly related to the outcomes of interest, especially as district fixed effects and the rural or urban status of a community are included in the estimation equation. Consequently, the resulting indicator is very highly correlated with the size of the settlements, but both the variables that it consists of are arguably exogenous to the dependent variables analyzed here.

Econometrically, to isolate the refugee-related component of the outcomes, I instrument refugee intensity using varying

Table 10. *Instrumental variable approach, 2SLS models, second stage, 2002–10*

	(1) Log(Consumption)	(2) Gov. health	(3) Priv. health	(4) Gov. primary school	(5) Priv. primary school
Refugees per 1,000	0.003*** (0.001)	−0.0003 (0.002)	−0.006** (0.003)	0.003 (0.003)	0.006*** (0.002)
Wage*Refugees per 1,000	−0.002* (0.0009)				
Self-employed*Refugees per 1,000	−0.002 (0.001)				
Property*Refugees per 1,000	0.007 (0.006)				
Transfers*Refugees per 1,000	−0.006*** (0.001)				
Year = 2005	0.1*** (0.02)	0.04* (0.02)	0.2*** (0.04)	0.1*** (0.04)	0.03 (0.04)
Year = 2010	0.4*** (0.02)	0.07** (0.03)	0.1*** (0.05)	0.2*** (0.05)	0.1*** (0.05)
Observations	10,609	1126	1080	1124	990
Mean outcome	10.64	0.0879	0.337	0.384	0.348
Adj. <i>R</i> squared	0.328	0.0208	0.144	0.0375	0.146

Robust standard errors in parentheses.

District fixed effects and control variables are included in all specifications.

* $p < 0.1$.

** $p < 0.05$.

*** $p < 0.01$.

Table 11. *Instrumental variable approach, 2SLS models, second stage, 2002–10*

	(1) Living conditions	(2) Ethnic identity
Refugees per 1,000	−0.005 (0.003)	0.005* (0.003)
Year = 2005	0.005 (0.02)	−0.05** (0.02)
Year = 2010	0.05* (0.03)	0.07*** (0.03)
Observations	3,741	3,608
Mean outcome	0.400	0.233
Adj. <i>R</i> squared	0.116	0.0379

Robust standard errors in parentheses.

District fixed effects and control variables are included in all specifications.

* $p < 0.1$.

** $p < 0.05$.

*** $p < 0.01$.

total annual numbers of refugees and distance to the border as an instrument in a two-stage least squares estimation. As presented in Tables 10 and 11, the results hold for the UNHS analysis and for the dominant identity, both in terms of significance and size of the coefficients. Although the size of the coefficient remains similar to the main specifications for perceived living conditions, it turns insignificant. These tables only include the second stages of the estimations, the full tables showing also the first stage and the respective *F* statistics can be found in the appendix. In all cases, the *F* statistics are above 30, thus indicating a strong instrument confirming the findings from the difference-in-differences models above.

5. CONCLUSION

This paper carries out an analysis of both the impact of protracted refugee situations as well as of additional sudden inflows on the host population in Uganda. This case is especially interesting as Uganda is in the course of combining its

public service provision for refugees and hosts as well as giving refugees more freedom to work and move. These policy reforms affect the population living in nearby villages and, at the same time, can only succeed if these important stakeholders are sufficiently included in the process.

The results presented here indicate that there is a division of tasks between the public and private sector regarding public infrastructure. Communities are more likely to have access to primary schools run by NGOs or other private organizations, which thus raises their overall provision with this service. In the health sector, the state appears to be overrun by demand and communities in refugee-hosting districts are less likely to have access to public clinics. This implies that, although already carried out, the coordination between international donors and local Ugandan governments can be improved. This is especially the case when it comes to common budgeting for refugees and hosts. The official yardstick for successful integration is that Ugandans and displaced persons should be equally well off. Consequently, refugee-hosting regions should not be better or worse off than non-hosting dis-

tricts. Yet, a slight over-provision with public services (as seen in Table 6, column 5) might be desirable. As interviewed partners in the field stress, it is important for local populations to clearly perceive the benefits of hosting refugees in order to avoid conflicts between the two groups.

While all employment groups can benefit from the increased population in their neighborhood, some groups benefit significantly less and are vulnerable to losses due to sudden influxes. These parts of the population are directly forced into competition with refugees entering the labor market or requiring assisting transfers. These findings are in line with previous results from Tanzania, stressing their external validity.

From a policy maker's point of view, a sound analysis of the local contexts should be carried out in order to find a way to mitigate negative effects, particularly for recipients of transfers. Those depending on financial assistance in the communities surrounding refugee settlements are very likely to be the most vulnerable share of the population. They are not only unable to share in the beneficial effects of the refugees' presence but on top of that are negatively affected by it. Conse-

quently, ways have to be found to target assistance at them, e.g., in the form of food aid or cash transfers.

Furthermore, the negative perceptions of the Ugandan population should not be ignored as they could threaten the whole approach of local integration. Subjective assessments can be confounded by multiple psychological effects and thus divert from objective measures, thus policy makers should not just rely on the latter ones. Further approaches should be sought to bring both groups together and allow them to reduce possible prejudices. The UNHCR has already organized meetings and workshops including the two groups. It appears that even more effort should be carried out in that direction. Again, it is important that the local population becomes aware of the benefits the refugees bring with them.

Yet, none of the surveys explicitly considered refugees and the policies related to them. This should be kept in mind when interpreting the results of this work. There needs to be more data and research in order to get a clearer view of both the impact of refugees on their host populations in general as well as the Ugandan reforms specifically.

NOTES

1. The ideas of increased local integration and durable solutions through improved burden-sharing between donor-states and African refugee-hosting states had already been discussed at the International Conferences on Assistance to Refugees in Africa (ICARA I and II) in 1981 and '84. Yet, they had little lasting legacy (Betts, 2004; Loescher, 2001).

2. In their work on the effect of internally displaced persons Alix-Garcia, Bartlett, and Saah (2012) develop a similar conceptual framework.

3. Also see Ruiz and Vargas-Silva (2013) for a comprehensive literature review on "The Economics of Forced Migration".

4. The Refugee Act was drafted in 2006 but passed in 2009.

5. Please note that these numbers and the ones to follow are estimates collected from reports by the UNHCR, the Refugee Law Project and others.

6. I did not treat missing data but accepted missing values so that the respective households or communities were dropped from the analysis. I do not have any reason to suspect that information is missing in a systematic fashion.

7. Specifically, there are 1,113 households in the year 2002–03, 949 in 2005–06 and 1,715 in 2009–10.

8. Specifically, the UNHS captures 4,822 households in the year 2002–03, 3,366 in 2005–06, and 2,645 in 2010.

9. Refugee-hosting districts are those comprising refugee settlements independent from the number of inhabitants. Self-settled refugees cannot be accounted for as they are not registered.

10. In order to disentangle external effects from conflicts abroad in the form of international refugees from economic hardships caused by fighting during the civil war and internally displaced persons (IDPs), this work focuses on the relatively peaceful Southern and Western parts of Uganda. The Ugandan civil war took place approximately from 1987 to 2005, then the fighting moved abroad to the DRC and the Central African Republic. The South–West is also the bordering region with the DRC and Rwanda and the refugees' point of entry. Thus, their share relative to the local

population is especially high. Kampala has been excluded as it is the main urban center of the country and thus very different from other districts. Furthermore, it hosts many unofficial refugees that cannot be accounted for.

11. Please note that both the number of refugees and the district population vary over time. Population size is included as a control variable in all specifications in order to capture population changes.

12. Of course, extreme reductions in the refugee population can decrease overall population to a degree that makes running services uneconomical which would also threaten the host population's access to those services. However, this phenomenon is not the focus of this paper. At the same time, inflows are more likely to be exogenous to the dependent variables, while outflows of refugees—both to other areas of the host country or back to their country of origin—are likely to depend on the living conditions within the settlement.

13. The information on the main income source is taken from the UNHS. Households are asked for their most important source of income. Second sources or income diversification more broadly are not covered by the survey.

14. Maystadt and Verwimp, 2014, Alix-Garcia and Saah (2009), Baez (2011) follow a similar identification strategy in their analysis of the impact of Rwandan and Burundian refugees on Tanzanian markets.

15. However, no detailed information on the size of the refugee settlements is available so that the analysis cannot be extended to the waves of 1992, 1995, and 1999.

16. The current number of districts (32) is the result of multiple partitions in the course of the 1990s. In 1992, there were merely 18 districts, thus the small number of observations in Table 5.

17. Unfortunately, the Afrobarometer does not provide data this far in the past so that these tests have to focus on the UNHS.

18. I still test for the presence of spill-overs in Tables 13 and 14 in the appendix. I use a binary indicator for whether or not a district borders a refugee-hosting district. I find a significant and positive effect

in the case of consumption. This finding underlines that the planning of public infrastructure is confined to the specific district. The population can still benefit from more vivid economic activity. I also find a negative and significant effect on the own perceived economic situation. As socio-economic interaction can cross borders, so can human perceptions.

19. This affects the numbers of observation reported. They represent the households or communities in the survey while the “real” number of observations has to be based on the districts as these are the levels where the treatments vary. The sample encompasses 32 districts, three of which host refugees as described above. Hence, a higher number of households makes the estimates more efficient while the model is identified by the variation across districts.

20. Please note that reduced models including only the indicator for refugee levels and fixed effects are presented in the appendix. Coefficients are of comparable size and significance and are thus not shown here for

improved manageability. For the same reason, control variables have been suppressed in the main tables. Full tables are also included in the appendix.

21. The omitted category is subsistence agricultural income which is presumably the most independent from the economic environment.

22. The districts included in the present analysis, however, were not part of the UPPAR. To my knowledge nobody has analyzed the reasons for this contradiction. Yet, the results of the poverty assessment might stem from the fact that the seven poorest districts were selected then so that people might have judged their situation relative to the one of districts that were better off.

23. Sub-counties are an administrative unit below the level of districts.

24. I would like to thank James Fenske who shared this idea at the Annual Bank Conference for Africa 2014 in Paris.

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APPENDIX A. IDENTIFICATION

Tables 12–14.

Table 12. *Testing for a common trend 1992–95, linear probability models*

	(1) Log(Consumption)	(2) Gov. clinic	(3) Priv. clinic	(4) Primary school
Future refugee-hosting district	0.0482 (0.494)	−0.029 (0.252)	−0.087*** (0.004)	−0.0253 (0.596)
Urban	0.199*** (0.000)	0.0798** (0.014)	0.176*** (0.000)	−0.001 (0.994)
Av. welfare in district	0.00001*** (0.000)	−0.000002 (0.462)	0.000002 (0.404)	0.000003 (0.452)
Year = 1995	0.0210 (0.67)	0.0097 (0.722)	0.0309 (0.568)	0.174*** (0.008)
Observations	5,083	596	596	615
Mean outcome	10.05	0.09	0.13	0.49
R squared	0.478	0.0200	0.0848	0.0473

p-Values from bootstrapping standard errors in parentheses.

Standard errors are clustered at the district level. Household control variables are included in column 1.

**p* < 0.1.

***p* < 0.05.

****p* < 0.01.

Table 13. *Including a neighborhood matrix to check for spill-overs, linear probability models, 2002–10*

	(1) Log(Consumption)	(2) Gov. health unit	(3) Priv. health unit	(4) Gov. primary school	(5) Priv. primary school
Neighbor	0.10* (0.094)	0.006 (0.736)	−0.005 (0.91)	−0.04 (0.606)	0.03 (0.614)
Wage*Neighbor	−0.10 (0.174)				
Self-employed*Neighbor	−0.03 (0.666)				
Property*Neighbor	0.0009 (0.99)				
Transfers*Neighbor	−0.2* (0.066)				
Wage	0.2*** (0.000)				
Self-employed	0.3*** (0.000)				
Property	0.4** (0.03)				

(continued on next page)

Table 13 (*continued*)

	(1) Log(Consumption)	(2) Gov. health unit	(3) Priv. health unit	(4) Gov. primary school	(5) Priv. primary school
Transfers	0.2 [*] (0.066)				
Age	0.003 (.0.378)				
Age squared	−0.00001 (0.73)				
Male	0.01 (0.462)				
Household members	−0.04 ^{***} (0.002)				
Highest grade	0.04 ^{***} (0.000)				
Night-time light (log)	0.004 (0.294)	−0.0010 (0.72)	−0.004 (0.246)	−0.004 (0.236)	−0.0002 (0.934)
Urban	0.3 ^{***} (0.000)	0.09 ^{***} (0.000)	0.2 ^{***} (0.000)	−0.007 (0.864)	0.2 ^{***} (0.000)
Population in 1,000	0.0002 (0.392)	−0.00003 (0.538)	0.00009 (0.288)	0.00009 (0.236)	0.0002 [*] (0.09)
Violent events	0.04 ^{**} (0.042)	0.002 (0.904)	0.05 ^{**} (0.032)	−0.03 (0.242)	0.007 (0.784)
Distance border	0.0006 [*] (0.054)	0.00003 (0.806)	0.001 ^{***} (0.000)	−0.0002 (0.18)	0.001 ^{***} (0.000)
Year = 2005	0.1 ^{***} (0.000)	0.03 (0.116)	0.2 ^{***} (0.000)	0.09 [*] (0.066)	0.06 (0.15)
Year = 2010	0.4 ^{***} (0.000)	0.06 ^{**} (0.002)	0.1 ^{***} (0.002)	0.2 ^{***} (0.008)	0.2 ^{***} (0.002)
Observations	9,801	1,042	1,003	1,040	917
Mean outcome	10.64	0.088	0.34	0.38	0.35
Adjusted <i>R</i> squared	0.316	0.0215	0.155	0.0262	0.135

‘Neighbor’ is a binary variable indicating whether a district borders a refugee-hosting district.

p-Values from bootstrapping standard errors in parentheses.

Standard errors are clustered at the district level.

* *p* < 0.10.

** *p* < 0.05.

*** *p* < 0.01.

Table 14. *Including a neighborhood matrix to check for spill-overs, linear probability models, 2002–10*

	(1) Living conditions	(2) Ethnic or national identity
Neighbor	−0.07 [*] (0.094)	0.03 (0.31)
Age	−0.006 [*] (0.1)	−0.003 (0.32)
Age squared	0.00006 (0.2)	0.00002 (0.636)
Male	−0.02 (0.38)	0.01 (0.356)
Highest grade	0.02 ^{***} (0.000)	−0.003 (0.6)
Gone w/o food	−0.06 ^{***} (0.002)	−0.0007 (0.958)
Gone w/o water	−0.0004 (0.964)	0.01 ^{**} (0.028)
Gone w/o medical care	−0.07 ^{***} (0.002)	−0.001 (0.836)
Radio news	0.02 ^{**} (0.028)	−0.003 (0.844)
Log(mean light)	−0.006 ^{***} (0.006)	0.002 (0.346)

Table 14 (*continued*)

	(1) Living conditions	(2) Ethnic or national identity
Urban	−0.01 (0.622)	0.009 (0.716)
Population in 1,000	0.00004 (0.26)	−0.00002 (0.776)
Distance to border	−0.0004* (0.056)	0.0003 (0.176)
Violent events	0.03*** (0.008)	0.0003 (0.992)
Year = 2005	0.03 (0.378)	−0.05** (0.048)
Year = 2010	0.08*** (0.000)	0.07* (0.054)
Observations	3,741	3,608
Mean outcome	0.400	0.233
R squared	0.108	0.0225

*‘Neighbor’ is a binary variable indicating whether a district borders a refugee-hosting district.

p-Values from bootstrapping standard errors in parentheses.

Standard errors are clustered at the district level.

* *p* < 0.1.

** *p* < 0.05.

*** *p* < 0.01.

APPENDIX B. NON-LINEAR MODELS

Tables 15 and 16.

Table 15. *Non-linear models for binary outcomes, 2002–10*

	(1) Gov. health unit	(2) Priv. health unit	(3) Gov. primary school	(4) Priv. primary school
ref_pop_09	0.992** (0.00330)	0.988 (0.00736)	1.004 (0.00361)	1.033* (0.0196)
Year = 2005	1.686* (0.470)	3.038*** (0.508)	1.706*** (0.351)	1.178 (0.276)
Year = 2010	2.513*** (0.781)	2.366*** (0.681)	2.361*** (0.678)	2.117*** (0.482)
Log(mean light)	1.019 (0.0209)	0.968 (0.0311)	1.034 (0.0271)	1.000 (0.0301)
Urban	2.285*** (0.600)	4.052*** (0.942)	0.934 (0.170)	2.770*** (0.453)
pop09_1000	0.999 (0.00153)	1.001 (0.00114)	1.000 (0.00117)	1.003*** (0.000980)
Distance to border	0.998 (0.00699)	1.002 (0.00515)	0.996 (0.00383)	1.015* (0.00803)
Violent events	1.049 (0.163)	1.137 (0.136)	0.829 (0.102)	0.851 (0.0867)
Observations	1,086	1,074	1,124	972
Mean provision	0.088	0.34	0.38	0.35
R squared	n.a.	0.151	0.055	0.146

The link function was chosen based on the distribution of the outcome.

Column 1 was estimated as a negative log–log model, columns 2–5 as logit models.

Exponentiated coefficients are shown. Standard errors in parentheses and clustered at the district level. District fixed effects are included in all specifications.

* *p* < 0.10.

** *p* < 0.05.

*** *p* < 0.01.

Table 16. *Logit models for binary outcomes, 2002–10*

	(1) Living conditions	(2) Ethnic or national identity
Refugees per 1,000	0.975** (0.00970)	1.058*** (0.0157)
Year = 2005	1.028 (0.164)	0.763*** (0.0692)
Year = 2010	1.265 (0.181)	1.495** (0.301)
Log(mean light)	0.957*** (0.0107)	0.990 (0.0139)
Urban	0.934 (0.111)	1.062 (0.128)
pop1000_05	1.003*** (0.00100)	0.998* (0.00111)
Distance to border	0.938* (0.0327)	1.015 (0.0456)
Violent events	1.026 (0.0801)	1.267*** (0.106)
Age	0.967** (0.0158)	0.989 (0.0167)
Age squared	1.000 (0.000206)	1.000 (0.000215)
Male	0.919 (0.0785)	1.075 (0.0730)
Highest grade	1.083*** (0.0259)	0.974 (0.0273)
Gone w/o food	0.723*** (0.0433)	0.998 (0.0552)
Gone w/o water	0.993 (0.0417)	1.068** (0.0303)
Gone w/o medical care	0.731*** (0.0378)	0.968 (0.0470)
Radio news	1.127*** (0.0474)	0.980 (0.0479)
Observations	3,741	3,608
Mean perception	0.400	0.233
R squared	0.101	0.047

The link function (logit) was chosen based on the distribution of the outcome.

Exponentiated coefficients are shown. Standard errors in parentheses and clustered at the district level. District fixed effects are included in all specifications.

* $p < 0.1$.

** $p < 0.05$.

*** $p < 0.01$.

APPENDIX C. REDUCED MODELS

Table 17.

Table 17. *Reduced models for all outcome variables, linear probability models, 2002–10*

	(1) Log(Consumption)	(2) Gov. health unit	(3) Priv. health unit	(4) Gov. primary school	(5) Priv. primary school	(6) Living conditions	(7) National or ethnic identity
Refugees per 1,000	0.002*** (0.000)	−0.0008** (0.024)	−0.003* (0.09)	0.002** (0.018)	0.007*** (0.000)	−0.004** (0.012)	0.005*** (0.000)
Year = 2005	0.08*** (0.000)	0.02 (0.338)	0.2*** (0.000)	0.1*** (0.008)	−0.005 (0.958)	0.04 (0.304)	−0.05*** (0.002)
Year = 2010	0.4*** (0.000)	0.05** (0.042)	0.1*** (0.01)	0.2*** (0.000)	0.1*** (0.006)	0.1*** (0.002)	0.06* (0.06)
Observations	10,831	1,126	1,080	1,124	990	3,764	3,628
Mean outcome	10.64	0.088	0.34	0.38	0.35	0.400	0.233
R squared	0.149	0.0422	0.126	0.0671	0.150	0.0451	0.0445

P-values from bootstrapping standard errors in parentheses. Standard errors are clustered at the district level.

District fixed effects are included in all specifications.

* $p < 0.1$.

** $p < 0.05$.

*** $p < 0.01$.

APPENDIX D. FULL MODELS

Tables 18–21.

Table 18. *The effect of refugees on multiple outcomes, linear probability models, 2002–10*

	(1) Log(Consumption)	(2) Gov. health unit	(3) Priv. health unit	(4) Gov. primary school	(5) Priv. primary school
Refugees per 1,000	0.003* (0.076)	−0.0008** (0.014)	−0.002 (0.254)	0.0009 (0.294)	0.006*** (0.000)
Wage*Refugees per 1,000	−0.001 (0.476)				
Self-employed*Refugees per 1,000	−0.001 (0.386)				
Property*Refugees per 1,000	0.003 (0.47)				
Transfers*Refugees per 1,000	−0.006*** (0.002)				
Wage	0.1*** (0.002)				
Self-employed	0.2*** (0.000)				
Property	0.3** (0.012)				
Transfers	0.2*** (0.008)				
Age	0.003 (0.394)				
Age squared	−0.00001 (0.798)				
Male	0.02 (0.258)				
Household members	−0.04*** (0.002)				
Highest grade	0.04*** (0.000)				
Night-time light (log)	0.002 (0.786)	0.002 (0.324)	−0.004 (0.658)	0.008 (0.344)	−0.0004 (0.952)
Urban	0.3*** (0.000)	0.07*** (0.004)	0.3*** (0.000)	−0.02 (0.696)	0.2*** (0.000)
Population in 1,000	0.0005*** (0.000)	−0.00007 (0.654)	0.0003 (0.252)	0.00002 (0.946)	0.0006*** (0.000)
Violent events	0.01 (0.598)	0.007 (0.758)	0.03 (0.148)	−0.04 (0.126)	−0.03 (0.15)
Distance border	0.002* (0.056)	−0.00010 (0.828)	0.0005 (0.62)	−0.0008 (0.35)	0.003 (0.134)
Year = 2005	0.1*** (0.000)	0.04* (0.092)	0.2*** (0.000)	0.1** (0.024)	0.03 (0.484)
Year = 2010	0.4*** (0.000)	0.07*** (0.006)	0.1** (0.016)	0.2*** (0.004)	0.1*** (0.000)
Observations	10,609	1,126	1,080	1,124	990
Mean outcome	10.64	0.088	0.34	0.38	0.35
Adjusted <i>R</i> squared	0.333	0.0548	0.177	0.0720	0.185

p-Values from bootstrapping standard errors in parentheses.

Standard errors are clustered at the district level.

District fixed effects are included in all specifications.

* *p* < 0.10.** *p* < 0.05.*** *p* < 0.01.

Table 19. *Households' perceptions, linear probability models, 2002–10*

	(1) Living conditions	(2) Ethnic or national identity
Refugees per 1,000	−0.006** (0.014)	0.008** (0.03)
Age	−0.007* (0.082)	−0.002 (0.47)
Age squared	0.00007 (0.162)	0.000008 (0.828)
Male	−0.02 (0.334)	0.01 (0.278)
Highest grade	0.02*** (0.000)	−0.004 (0.382)
Gone w/o food	−0.06*** (0.002)	−0.001 (0.94)
Gone w/o water	−0.003 (0.834)	0.01** (0.024)
Gone w/o medical care	−0.07*** (0.002)	−0.005 (0.532)
Radio news	0.02 (0.016)	−0.004 (0.674)
Urban	−0.01 (0.632)	0.01 (0.566)
Population in 1,000	0.0007*** (0.004)	−0.0004* (0.098)
Distance to border	−0.01* (0.092)	0.0004 (1.0)
Violent events	0.008 (0.772)	0.04** (0.05)
Log(mean light)	−0.009*** (0.006)	−0.002 (0.454)
Year = 2005	0.02 (0.946)	−0.05*** (0.008)
Year = 2010	0.04 (0.114)	0.07 (0.126)
Observations	3,741	3,608
Mean perception	0.400	0.233
Adjusted <i>R</i> squared	0.125	0.0494

Standard errors in parentheses.

District fixed effects included in all specifications.

* $p < 0.1$.** $p < 0.05$.*** $p < 0.01$.Table 20. *The effect of refugees adding a short-term shock, linear probability models, 2002–10*

	(1) Log(Consumption)	(2) Gov. health unit	(3) Priv. health unit	(4) Gov. primary school	(5) Priv. primary school
Refugees per 1,000	0.001 (0.478)	−0.001 (0.384)	−0.002** (0.032)	0.0003 (0.84)	0.008*** (0.000)
Maximum increase	0.3*** (0.002)	0.1 (0.518)	−0.06 (0.528)	0.1 (0.524)	−0.4 (0.368)
Wage*Max. increase	−0.2** (0.026)				
Self-employed*Max. increase	0.02 (0.864)				
Property*Max. increase	−0.1 (0.672)				
Transfers*Max. increase	−1.2 (0.226)				
Wage	0.1*** (0.000)				
Self-employed	0.2*** (0.000)				

Table 20 (*continued*)

	(1) Log(Consumption)	(2) Gov. health unit	(3) Priv. health unit	(4) Gov. primary school	(5) Priv. primary school
Property	0.4*** (0.006)				
Transfers	0.1** (0.014)				
Age	0.003 (0.39)				
Age squared	−0.000009 (0.834)				
Male	0.02 (0.248)				
Household members	−0.04*** (0.002)				
Highest grade	0.04*** (0.000)				
Night-time light (log)	0.001 (0.814)	0.001 (0.314)	−0.004 (0.682)	0.007 (0.4)	0.0007 (0.944)
Urban	0.3*** (0.000)	0.07*** (0.008)	0.3*** (0.000)	−0.02 (0.704)	0.2*** (0.000)
Population in 1,000	0.0005*** (0.000)	−0.00008 (0.618)	0.0003 (0.236)	0.000008 (0.976)	0.0006*** (0.000)
Violent events	0.008 (0.674)	0.007 (0.704)	0.03 (0.17)	−0.04 (0.15)	−0.03 (0.19)
Distance border	0.002* (0.076)	−0.00009 (0.832)	0.0005 (0.654)	−0.0008 (0.29)	0.003 (0.112)
Year = 2005	0.1*** (0.006)	0.04 (0.126)	0.2*** (0.000)	0.1** (0.04)	0.04 (0.3)
Year = 2010	0.4*** (0.000)	0.07** (0.018)	0.1** (0.016)	0.2*** (0.002)	0.1*** (0.004)
Observations	10,609	1,126	1,080	1,124	990
Mean outcome	10.64	0.088	0.34	0.38	0.35
R Squared	0.333	0.0548	0.177	0.0715	0.188

p-Values from bootstrapping standard errors in parentheses.

Standard errors are clustered at the district level.

District fixed effects are included in all specifications.

**p* < 0.10.

***p* < 0.05.

****p* < 0.01.

Table 21. *Households' perceptions adding a short-term shock, linear probability models, 2002–10*

	(1) Living conditions	(2) Ethnic or national identity
Refugees per 1,000	−0.006 (0.128)	0.009* (0.086)
Maximum increase	−0.03 (0.714)	−0.1 (0.444)
Age	−0.007** (0.076)	−0.002 (0.468)
Age squared	0.00007 (0.154)	0.000007 (0.806)
Male	−0.02 (0.362)	0.01 (0.304)
Highest grade	0.02*** (0.000)	−0.005 (0.37)
Gone w/o food	−0.06*** (0.002)	−0.0006 (0.914)
Gone w/o water	−0.002 (0.87)	0.01** (0.022)
Gone w/o medical care	−0.07*** (0.002)	−0.005 (0.548)

(*continued on next page*)

Table 21 (continued)

	(1) Living conditions	(2) Ethnic or national identity
Radio news	0.02** (0.006)	−0.004 (0.612)
Log(mean light)	−0.009** (0.014)	−0.002 (0.564)
Urban	−0.01 (0.624)	0.01 (0.584)
Population in 1,000	0.0007*** (0.006)	−0.0003* (0.086)
Distance to border	−0.01 (0.108)	−0.0003 (0.978)
Violent events	0.005 (0.796)	0.04** (0.038)
Year = 2005	0.003 (0.938)	−0.04** (0.022)
Year = 2010	0.05 (0.138)	0.07 (0.142)
Observations	3,741	3,608
Mean perception	0.400	0.233
Adjusted <i>R</i> squared	0.126	0.050

Standard errors in parentheses.

District fixed effects included in all specifications.

* $p < 0.1$.** $p < 0.05$.*** $p < 0.01$.

APPENDIX E. ROBUSTNESS

Tables 22 and 23.

Table 22. Replacing refugee levels with the *M–V* indicator, linear probability models, 2002–10

	(1) Log(Consumption)	(2) Gov. health	(3) Priv. health	(4) Gov. school	(5) Priv. school
Maystadt/ Verwimp indicator	0.009* (0.08)	−0.01*** (0.002)	0.00008 (1.0)	0.0004 (0.994)	0.07*** (0.000)
Year = 2005	0.1*** (0.000)	0.04* (0.06)	0.2*** (0.000)	0.1** (0.028)	0.02 (0.582)
Year = 2010	0.4*** (0.000)	0.07** (0.012)	0.1** (0.026)	0.2*** (0.006)	0.1*** (0.000)
Observations	10,609	1,126	1,080	1,124	990
Mean outcome	10.64	0.088	0.34	0.38	0.35
<i>R</i> squared	0.332	0.0549	0.176	0.0711	0.187
	(6) Living conditions			(7) Ethnic identity	
Maystadt/Verwimp measure	−0.249** (0.012)			0.311** (.0.014)	
Year = 2005	0.0006 (1.0)			−0.05*** (0.006)	
Year = 2010	0.04 (0.132)			0.07 (0.124)	
Observations	3,741			3,608	
Mean outcome	0.400			0.233	
<i>R</i> squared	0.126			0.0492	

* $p < 0.1$.** $p < 0.05$.*** $p < 0.01$.

Table 23. *District-level analysis*

	(1) Log(Consumption)	(2) Gov. health	(3) Priv. health	(4) Gov. school	(5) Priv. school
Refugees per 1,000	0.002* (0.0009)	−0.0008 (0.0005)	−0.002** (0.0007)	0.0009 (0.0008)	0.006*** (0.0005)
Wage	0.1*** (0.02)				
Self-employed	0.2*** (0.02)				
Property	0.4*** (0.07)				
Transfers	0.1*** (0.03)				
Year = 2005	0.1*** (0.02)	0.04*** (0.007)	0.2*** (0.01)	0.1*** (0.01)	0.03** (0.01)
Year = 2010	0.4*** (0.02)	0.07*** (0.01)	0.1*** (0.02)	0.2*** (0.02)	0.1*** (0.02)
Night-time light (log)	0.002 (0.003)	0.002 (0.001)	−0.003 (0.002)	0.007*** (0.002)	−0.00006 (0.002)
Urban	0.3*** (0.02)	0.08*** (0.007)	0.2*** (0.01)	−0.01 (0.01)	0.2*** (0.01)
Population in 1,000	0.0000005*** (0.0000002)	−0.00000004 (0.00000009)	0.00000003** (0.0000001)	0.00000006 (0.0000001)	0.0000006*** (0.0000001)
Distance border	0.002*** (0.0004)	−0.0001 (0.0002)	0.0005 (0.0003)	−0.0009** (0.0004)	0.003*** (0.0004)
Violent events	0.010 (0.01)	0.007 (0.006)	0.03*** (0.009)	−0.04*** (0.009)	−0.03*** (0.009)
Observations	10,609	10,802	10,347	10,783	9,455
Mean outcome	10.64	0.0873	0.333	0.384	0.346
R squared	0.332	0.0512	0.173	0.0699	0.186
		(1) Living conditions			(2) National identity
ref_pop		−0.006*** (0.002)			(0.002)
year_dummy2		0.03 (0.04)			−0.02 (0.03)
year_dummy3		0.05 (0.04)			0.04 (0.04)
log_light		−0.008 (0.005)			−0.002 (0.004)
urban		0.03 (0.1)			0.08 (0.09)
pop_district		0.0000008** (0.0000003)			−0.0000002 (0.0000003)
dist_boarder		−0.02* (0.01)			−0.008 (0.008)
events		0.009 (0.02)			0.03** (0.02)
Observations		74			74
Mean outcome		0.388			0.212
R squared		0.832			0.741

Standard errors in parentheses.

District fixed effects and control variables included in all specifications.

* $p < 0.1$.** $p < 0.05$.*** $p < 0.01$.

APPENDIX F. INSTRUMENTAL VARIABLE

Tables 24–26.

Table 24. *Replacing refugee levels with an instrumental variable, Two-Stage Least Squares (2SLS) models, 2002–10*

	(1) Log(Consumption)	(2) First stage	(3) Gov. health	(4) First stage	(5) Priv. health	(6) First stage
Refugees per 1,000	0.003*** (0.001)		−0.0003 (0.002)		−0.006** (0.003)	
Wage*Refugees per 1,000	−0.002* (0.0009)					
Self-employed*Refugees per 1,000	−0.002 (0.001)					
Property*Refugees per 1,000	0.007 (0.006)					
Transfers*Refugees per 1,000	−0.006*** (0.001)					
Instrumental variable		0.129*** (0.004)		0.1*** (0.009)		0.1*** (0.009)
Wage*IV		0.215*** (0.003)				
Self-employed*IV		0.243*** (0.011)				
Property*IV		0.386*** (0.087)				
Transfers*IV		0.222*** (0.011)				
Year = 2005	0.1*** (0.02)	0.2* (0.09)	0.04* (0.02)	0.2 (0.3)	0.2*** (0.04)	0.3 (0.3)
Year = 2010	0.4*** (0.02)	0.6*** (0.06)	0.07** (0.03)	0.6*** (0.2)	0.1*** (0.05)	0.6*** (0.2)
Observations	10,609	10,609	1,126	1,126	1,080	1,080
Mean outcome	10.64		0.0879		0.337	
Adj. <i>R</i> squared	0.328	0.959	0.0208	0.958	0.144	0.958
<i>F</i> statistic	94.64	599.6	2.373	75.20	9.128	65.41

Robust standard errors in parentheses.

District fixed effects and control variables are included in all specifications.

Note that in column 2 first stages for the instrument and the interaction terms have been combined.

p* < 0.1.*p* < 0.05.****p* < 0.01.Table 25. *Replacing refugee levels with an instrumental variable Two-Stage Least Squares (2SLS) models, 2002–10*

	(1) Gov. school	(2) First stage	(3) Priv. school	(4) First stage
Refugees per 1,000	0.003 (0.003)		0.006*** (0.002)	
Instrumental variable		0.1*** (0.009)		0.1*** (0.008)
Year = 2005	0.1*** (0.04)	0.2 (0.3)	0.03 (0.04)	0.08 (0.3)
Year = 2010	0.2*** (0.05)	0.6*** (0.2)	0.1*** (0.05)	0.6*** (0.2)
Observations	1,124	1,124	990	990
Mean outcome	0.384		0.348	
Adj. <i>R</i> squared	0.0375	0.958	0.146	0.960
<i>F</i> statistic	2.807	75.19	16.63	71.50

Robust standard errors in parentheses.

District fixed effects and control variables are included in all specifications.

p* < 0.1, *p* < 0.05.****p* < 0.01.

Table 26. *Replacing refugee levels with an instrumental variable Two-Stage Least Squares (2SLS) models, 2002–10*

	(1) Living conditions	(2) First stage	(3) Ethnic identity	(4) First stage
Instrumental variable		0.1*** (0.004)		0.1*** (0.004)
Refugees per 1,000	−0.005 (0.003)		0.005* (0.003)	
Year = 2005	0.005 (0.02)	−0.1 (0.2)	−0.05** (0.02)	−0.2 (0.2)
Year = 2010	0.05* (0.03)	−0.1 (0.1)	0.07*** (0.03)	−0.1 (0.1)
Log(mean light)	−0.009** (0.004)	−0.02** (0.010)	−0.002 (0.003)	−0.03*** (0.010)
Urban	−0.01 (0.02)	0.07 (0.08)	0.01 (0.02)	0.07 (0.08)
Population in 1,000	0.0006** (0.0002)	0.01*** (0.001)	−0.0002 (0.0002)	0.01*** (0.001)
Violent events	0.008 (0.02)	−1.1*** (0.1)	0.03* (0.01)	−1.2*** (0.1)
Observations	3,741	3,741	3,608	3,608
Mean outcome	0.400		0.233	
Adj. <i>R</i> squared	0.116	0.962	0.0379	0.964
<i>F</i> statistic	16.48	2,171.5	4.698	1,964.2

Robust standard errors in parentheses.

District fixed effects and control variables are included in all specifications.

* $p < 0.1$.** $p < 0.05$.*** $p < 0.01$.Available online at www.sciencedirect.com**ScienceDirect**