The Human Capital Effects of Hosting Refugees: Evidence from Kagera

Chiara Kofol *
Maryam Naghsh Nejad **

*Centre for Development Research, Bonn
**Institute of Labor Economics (IZA), Bonn

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OVERVIEW

- Refugees influx has an impact on human capital (schooling, child labor, youth employment):
  - Availability of schools
  - increase in food prices thus increase in agricultural labour demand
  - competition for wage labor (skilled/unskilled)
  - changes in households wealth
- Policies for human capital development in host countries?
Motivation

One of the key consequences of civil conflict is forced migration (priority in the 2030 Agenda for Sustainable Development)


- total global stock of 244 million international migrants
- ≈ 65.3 million are forced migrants
- ≈ 21 million are refugees (half of whom are children < 18)

Tanzania in 1993-1998: 1 million refugees

- School attendance age 6-17 (71.3%, 28.7% if in work) (ILO, 2014)
- Incidence of child labor age 6-17 (28.8%, 35% in rural areas) (ILO, 2014)
- Incidence of hazardous child labor age 6-17 ≈ 21.5% (ILO 2014)
- Youth unemployment age 5-24 ≈ 5.5% ILO (2015)
CONTRIBUTION

- First study to investigate the impact of forced migration on human capital though channels of child labor and schooling
- Drawing upon a natural experiment, finding the causal impact of refugee arrival on natives
Question: Estimate the human capital consequences of hosting refugees in Tanzania (Kagera region)

- Short/long term impact of the refugees influx on:
  - Child labor
  - School attendance
- Which mechanisms?
  - Schooling
  - Agriculture demand
  - ..?
RELEVANT LITERATURE

Voluntary migration in host countries:

▶ Wide range of immigrant outcomes associated with their economic assimilation to the host region (Borjas, 1987; Hansen and Lofstrom, 2004; Bolesta, 2006; Bevelander and Lundh, 2007); mixed results

▶ Labor market performance of native populations (Chiswick, 1989; Card, 1990; Card and Altonji, 1991; Lalonde and Topel, 1991; Pischke and Velling, 1994; Borjas, Freeman and Katz, 1997; Friedberg, 2001; Fairlie and Meyer, 2003); mixed results
RELEVANT LITERATURE

Forced migration in host countries:

- Labor markets: Ruiz and Silva (2015) find that the forced migration shock significantly decreases the probability of being an employee outside the household.

**RELEVANT LITERATURE**

Forced migration impact (due to conflict):

- Baez (2011) finds that childhood exposure to this massive arrival of refugees in Kagera reduces, schooling by 0.2 years (7.1%) and literacy by 7 percentage points (8.6%) and undermines child health.

Impact of forced migration on human capital in host countries has still to be explored.
CIVIL CONFLICT IN BURUNDI AND RWANDA

- Major ethnic civil conflicts erupted in Burundi and Rwanda during 1993 and 1994, respectively.
- Hundreds of thousands of casualties in just a few months.
- During the 1993-1998 period, over 1 million people left these two countries and sought refuge in Western Tanzania.
- In some regions of Tanzania, refugees outnumbered natives five to one (Whitaker 2002).
- Similar language as natives and access to labor markets.
REFUGEE INFLUX

Fig. 1. Total number of refugees hosted by Tanzania, 1991–2004.

Source: United Nations High Commissioner for Refugees (UNHCR)
Kagera, Tanzania

- Kagera is a region of Tanzania which borders Rwanda and Burundi - mainly agricultural.
- It became one of the main destinations for refugees in Tanzania due to its geographic location.
- Geographical characteristics, in addition to differences in distance to the borders to Rwanda and Burundi, resulted in a natural experiment in which an area (i.e., West) was much more affected by the refugee inflow in comparison to the other area (i.e., East).
Kagera’s geography
LOCATION OF REFUGEE CAMPS
DATA

Kagera Health and Development Survey (KHDS):

- Information about households in different areas of Kagera before and after the forced migration shock
- Using 2004 data (about 10 years after the shock) allows us to explore the impact of hosting refugees on human capital also in the long run
- KHDS interviewed 915 households and their members up to four times between fall 1991 and January 1994. Households were randomly selected from 51 communities in the Kagera region
- an excellent recontact rate of 93%.
SCHOOL ENROLMENT RATES
**EMPIRICAL SPECIFICATION**

\[ Y_{it} = \alpha_1 + \alpha_2 \delta_i + \alpha_3 \gamma_w + \alpha_4 t + \alpha_5 D_{it} + \alpha_6 X_{it} + u_{it} \]  

- \( Y_{it} \) is the binary outcome of interest for individual i at time t (child/youth being in work, school enrollment).
- \( \delta_i \) is the individual fixed effect (available only for the short term panel 1991-1994).
- \( \gamma_w \) represents the ward dummies, t is the time dummy (2010 = 1, that is, the after "shock" period).
- \( D_{it} \) is the measure of the intensity of the forced migration shock and is the log of the inverse of the distance to the border (for the first period this variable is set to zero).
- \( X_{it} \) are the individual, household and regional control variables
- \( u_{it} \) error term
Identification Strategy

The location of forced migrants was affected by a series of geographical barriers and logistical decisions.

Using the heterogeneity in terms of intensity of refugee shock in different communities proxied by the distance to the border enables us to causally estimate the impact of refugee arrival on child outcomes.
**SHORT TERM- ACROSS AGE**

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1) child labor ages 7-13</th>
<th>(2) child labor ages 14-17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refugee Intensity</td>
<td>-0.090***</td>
<td>0.369***</td>
</tr>
<tr>
<td></td>
<td>(0.032)</td>
<td>(0.021)</td>
</tr>
<tr>
<td>Observations</td>
<td>877</td>
<td>249</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.371</td>
<td>0.997</td>
</tr>
<tr>
<td>Number of hhid</td>
<td>764</td>
<td>235</td>
</tr>
<tr>
<td>Household F.E.</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

Notes: Cluster robust standard errors in parentheses, the cluster is the variable defined as “cluster” in the KHDS.  
*** p < 0.01, ** p < 0.05, * p < 0.1  
The dependent variables are variables defined at the child level. Refugee intensity is measured at the household level.
## Short Term - Across Type of Work

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1) W. employ. 5_13</th>
<th>(2) W. employ. 14_17</th>
<th>(3) Agriculture 5_13</th>
<th>(4) Agriculture 14_17</th>
<th>(5) selfemp 5_13</th>
<th>(6) selfemp 14_17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refugee Intensity</td>
<td>-0.007</td>
<td>-0.087***</td>
<td>0.204***</td>
<td>-0.001</td>
<td>-0.092*</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>877</td>
<td>249</td>
<td>877</td>
<td>249</td>
<td>877</td>
<td>249</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.054</td>
<td>0.380</td>
<td>0.701</td>
<td>0.227</td>
<td>0.885</td>
<td></td>
</tr>
<tr>
<td>Number of hhid</td>
<td>764</td>
<td>235</td>
<td>764</td>
<td>235</td>
<td>764</td>
<td>235</td>
</tr>
</tbody>
</table>

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SHORT TERM-SCHOOLING ACROSS AGE

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1) school enrol 7.13</th>
<th>(2) school enrol 14.17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refugee Intensity</td>
<td>-0.038</td>
<td>-0.113**</td>
</tr>
<tr>
<td>Observations</td>
<td>877</td>
<td>249</td>
</tr>
<tr>
<td>R²</td>
<td>0.348</td>
<td>0.768</td>
</tr>
<tr>
<td>Number of hhid</td>
<td>764</td>
<td>235</td>
</tr>
</tbody>
</table>

Notes: Cluster robust standard errors in parentheses, the cluster is the variable defined as "cluster" in the KHDS. 
*** p<0.01, ** p<0.05, * p<0.1 
The dependent variables are variables defined at individual level. Refugee intensity is measured at the household level.
HH EXPENDITURE-SHORT RUN

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>IHHexpPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refugee Intensity</td>
<td>0.128***</td>
</tr>
</tbody>
</table>

Observations 1,048  
Number of H_ID 714  
R-squared 0.191

Notes: Cluster robust standard errors in parentheses, the cluster is the variable defined as “cluster” in the KHDS.  
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The dependent variables are variables defined at household level. Refugee intensity is measured at the household level.
# Long Term - Across Age 2004

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1) child labor ages 7-13</th>
<th>(2) child labor ages 14-17 min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refugee Intensity</td>
<td>0.073***</td>
<td>0.053***</td>
</tr>
<tr>
<td>Observations</td>
<td>2,865</td>
<td>431</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.206</td>
<td>0.135</td>
</tr>
</tbody>
</table>

Notes: Cluster robust standard errors in parentheses, the cluster is the variable defined as “cluster” in the KHDS.

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

The dependent variables are variables defined at the child level. Refugee intensity is measured at the household level.
### Results

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1) employee</th>
<th>(2) employee</th>
<th>(3) farmwrk</th>
<th>(4) farmwrk</th>
<th>(5) selfemp</th>
<th>(6) selfemp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refugee Intensity</td>
<td>-0.001</td>
<td>0.002</td>
<td>0.064***</td>
<td>0.048***</td>
<td>0.012*</td>
<td>0.013**</td>
</tr>
<tr>
<td>Observations</td>
<td>3,194</td>
<td>431</td>
<td>3,194</td>
<td>431</td>
<td>3,194</td>
<td>431</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.012</td>
<td>0.033</td>
<td>0.239</td>
<td>0.125</td>
<td>0.030</td>
<td>0.048</td>
</tr>
</tbody>
</table>

Notes: Cluster robust standard errors in parentheses, the cluster is the variable defined as “cluster” in the KHDS.

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

The dependent variables are variables defined at the child level. Refugee intensity is measured at the household level.
### Long Term - Schooling 2004

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>enrol 7.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>enrol 14.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refugee Intensity</td>
<td>0.009</td>
<td>-0.008</td>
</tr>
<tr>
<td>Observations</td>
<td>2,865</td>
<td>431</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.077</td>
<td>0.019</td>
</tr>
</tbody>
</table>

Notes: Cluster robust standard errors in parentheses, the cluster is the variable defined as “cluster” in the KHDS. 

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

The dependent variables are variables defined at the child level. Refugee intensity is measured at the household level.
## HH EXPENDITURE-LONG RUN

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>lHHexpPC</th>
<th>(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refugee Intensity</td>
<td>-0.271***</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Observations</th>
<th>673</th>
</tr>
</thead>
<tbody>
<tr>
<td>$R^2$</td>
<td>0.028</td>
</tr>
</tbody>
</table>

Notes: Cluster robust standard errors in parentheses, the cluster is the variable defined as "cluster" in the KHDS. 
*** p<0.01, ** p<0.05, * p<0.1 
The dependent variables are variables defined at household level. Refugee intensity is measured at the household level.
# Food Prices

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>(1) non-aid food prices Burundi</th>
<th>(2) non-aid food prices Rwanda</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refugee Intensity_{bu}</td>
<td>604.114* (322.109)</td>
<td></td>
</tr>
<tr>
<td>Refugee Intensity_{rw}</td>
<td></td>
<td>799.433* (424.251)</td>
</tr>
<tr>
<td>Year F.E.</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Community F.E.</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Observations</td>
<td>144</td>
<td>144</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.507</td>
<td>0.513</td>
</tr>
</tbody>
</table>

Notes: Cluster robust standard errors in parentheses, the cluster is the variable defined as "cluster" in the KHDS. 

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

The dependent variables are variables defined at individual level. Refugee intensity is measured at the household level.
CONCLUSION

▶ the intense influx of refugees:

Short-run:

▶ decreased child labor, in particular for younger children.
▶ decreased the employment of younger children in the agricultural sector, increased the employment of high school children

Long-run:

▶ increased child labor

▶ The mechanism behind this shift:

▶ Food prices
▶ Schooling