Economic Impact of Giving Land to Refugees

Heng Zhu\textsuperscript{a}, J. Edward Taylor\textsuperscript{a}, Anubhab Gupta\textsuperscript{a}, Mateusz Filipski\textsuperscript{b}, Jaakko Valli\textsuperscript{c}, Ernesto Gonzalez-Estrada\textsuperscript{d}

\textsuperscript{a}Department of Agricultural and Resource Economics, Social Sciences and Humanities Bldg., University of California, Davis, CA 95616, United States.

\textsuperscript{b}International Food Policy Research Institute, 1201 I St NW Eye Street, NW, Washington, DC 20005, United States

\textsuperscript{c}United Nations World Food Programme, Clayton, Ciudad Del Saber, CalleVicente Bonilla, Edificios124-125, Corregimientode Ancon, Panama, Rep. De Panama.

\textsuperscript{d}United Nations World Food Programme, East and Central Africa Regional Bureau, 00621, Nairobi, Kenya

Selected paper/poster prepared for presentation at the 2018 Agricultural & Applied Economics Association Annual Meeting, Washington, D.C., August 5-7, 2018

Copyright 2018 by Heng Zhu, J. Edward Taylor, Anubhab Gupta, Mateusz Filipski, Jaakko Valli, Ernesto Gonzalez-Estrada. All rights reserved. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that this copyright notice appears on all such copies.
Economic Impact of Giving Land to Refugees
Heng Zhu a, J. Edward Taylor a, Anubhav Gupta a, Mateusz Filipski b, Jaakko Valli c, Ernesto Gonzalez-Estrada d

Overview
This paper adds to a sparse but growing literature on the economic costs and benefits of hosting refugees. We leverage the quasi-random nature of land allocation in one Ugandan refugee settlement to estimate economically the impact of access to land on refugee welfare, and a general equilibrium model to simulate the spillover effects on income and production in the surrounding host-country economy. The combined approaches reveal that providing refugees with agricultural land significantly improves host-country economy. The combined approaches reveal that on refugee welfare, and a general equilibrium model to simulate costs and benefits of hosting refugees. We leverage the quasi-random nature of land allocation in one Ugandan refugee settlement to estimate economically the impact of access to land on refugee welfare, and a general equilibrium model to simulate the spillover effects on income and production in the surrounding host-country economy. The combined approaches reveal that providing refugees with agricultural land significantly improves host-country economy.

Background
A dramatic increase in the number of global refugees in recent years has triggered academic and policy debate on the economic implications of hosting displaced populations. Conventional wisdom holds that a large influx of refugees may create scarcity for scarce resources, driving up prices of local goods and negatively affecting the welfare of local populations. However, recent studies suggest that refugees and the aid they receive have the potential to create real-income spillovers for host-country producers in local product and factor markets. The initial land-endowment effects on food security are positive but not significant. Refugee households receiving larger plots of cultivable land scored higher on the index of dwelling characteristics: an additional plot size of 1.63 log points higher, out of an average of 14.4, while the diversity of food types consumed by members of the household in the week prior to the survey.

Data and Methods
We implemented a comprehensive survey to a stratified random sample of refugees, local households, and businesses inside and outside of two major refugee settlements, Rwamwanja settlement, situated in the South-west and Adjumani settlement in the North. Detailed information on individual demographics, household level production and consumption were collected over the course of two months. WFP provided a full list of the population of refugee households, which were sorted into cash and food aid recipients. A random sample was drawn from the population of each recipient type. Local households were randomly sampled from their respective village rosters. The final data set contains 1503 household surveys (612 households for Rwanwanga, split between refugee households and host-country households within a 15 km radius around the settlement. Host-country households benefit significantly from the income spillovers created by refugee assistance.

We have data for two separate settlements, only those collected from Rwanwanga settlement are used in the primary analysis. Land allocation for refugee families at Rwanwanga settlement is based on availability at the time of arrival. Given that there is a substantial amount of agricultural land (refugees can leave the camp freely), creating scenario whereby initial plots allocated to refugee households are essentially random. This is not the case in Adjumani settlement, where land allocation is based on household needs and ability to utilize farmland (as judged by settlement management). Given that there might be systematic differences in refugee characteristics over time, we perform a conditional balance test (controlling for year of arrival) on key household demographics for both settlements in Table 1B below.

Results
Given our argument regarding the random nature of land allocation, we estimate the intent-to-treat (ITT) effect of initial land endowment on household outcomes using the model:

\[ Y = \beta_0 + \beta_1 \text{Land} + \epsilon \]

where \( Y \) is the outcome variable of interest and \( \text{Land} \) is an indicator variable for whether the household received a cultivable plot upon arrival. Land is likely to be correlated with unobserved traits that affect welfare, such as household demographics. To address this, we use a general equilibrium model to simulate the spillover effects on income and production in the surrounding host-country economy.

We leverage the quasi-random nature of land allocation in one Ugandan refugee settlement to estimate economically the impact of access to land on refugee welfare, and a general equilibrium model to simulate the spillover effects on income and production in the surrounding host-country economy. The combined approaches reveal that providing refugees with agricultural land significantly improves host-country economy.

General Equilibrium LEWIE model Results
We used data from the household and business surveys to estimate econometrically a LEWIE model in which one or more host-country households interact within a general-equilibrium model of the local economy. We used this model to simulate the impacts of refugees, refugee aid, and refugee land allocations on the economy within 15 kilometers around each settlement, including income and production spillovers. Monte Carlo method, outlined in Taylor and Filipski (2014), makes it possible to conduct a sensitivity analysis simultaneously with regard to all model parameters and construct an analogue to confidence bands around simulated impacts. Because this is a structural model, the simulation results shed light on the likely pathways through which refugee assistance, including land allocations, affect local economies, including income and production spillovers to host-country households.

Table 3: Local economy—impact of refugee assistance (with land)

<table>
<thead>
<tr>
<th>Settlement</th>
<th>Cash</th>
<th>Food</th>
<th>Cash</th>
<th>Food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rwanwanga</td>
<td>2.15</td>
<td>0.30</td>
<td>2.15</td>
<td>0.30</td>
</tr>
<tr>
<td>Adjumani</td>
<td>2.10</td>
<td>0.40</td>
<td>2.10</td>
<td>0.40</td>
</tr>
</tbody>
</table>

The total income spillover net of WFP aid cost from an additional refugee household receiving cash and an average-sized parcel of land at Rwanwanga is UGX 3 million ($876). Aid cost does not include the cost of land, since land is provided free of charge through negotiations between the national and local governments.

References
To be added in.