CAN LARGE-SCALE AGRO-INVESTMENTS SERVE AS AN ENGINE FOR INCLUSIVE GROWTH?

EMPIRICAL EVIDENCE FROM UGANDA & ETHIOPIA

Paper presented at
UNU-WIDER conference on Inclusive Growth in Africa
Helsinki, Finnnland

In country partner:

Ethiopian Economics Association
www.eea econ.org

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Sept. 21, 2013
Number of LSLAs globally: Investing countries

Source: The Land Matrix, accessed Sept. 9 - 2013: Number of deals beyond 200 ha, since 2000. (orange – target country, blue – investing country)

Note: Data derived from media reports and validated through various experts and local NGOs, Government officials etc. Accuracy improved since 2010, but still approximation
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Problem statement

Potential risk and opportunities:

- **Risks**: “land grab”, unsustainable resource use, exploitation of labour, etc.
- **Opportunities**: employment generation, market access, improve infrastructure, etc.

➔ **Question**: *Can LSLAs serve as engines for inclusive growth?*

What do I mean by *inclusive*?

- pro-poor (reducing poverty AT LEAST proportionally among the poor)

  *In line with Erik Thorbecke (2013)*

To answer this have to understand how impact on local population’s livelihood situation *(conceptual framework)*

- **Impact not direct**, but occurs across a number of impact channels
Conceptual framing of the five impact channels

- **Land**
  - Value of land (prices)
  - Transfer of land (transactions)
  - Access and use (relative importance)

- **Labour**
  - On- and off-farm employment
  - Access to jobs (who gets them)
  - Wage levels

- **Natural Resources**
  - Access and use (de facto)
  - Value and price of forest products
  - Who uses when (relative importance)

- **Technology & Organisation**
  - Introduction of new technology
  - Organisation of production
  - Diffusion and adoption

- **Institutions & Markets**
  - Property rights (structure/ regime)
  - Rules for and governance of transactions
  - Emergence & functioning of markets

Main impact channels

- Local population
Analytical approach to impact evaluation of LSLAs

Biggest challenge for any impact evaluation: *attrition problem*

Two broad categories of impact evaluation (Hemmer 2011, Khandker 2010)
- Counterfactual impact evaluation (CIE): \(\rightarrow\) *if* there was change
- Theory-based impact evaluation (TBIE): \(\rightarrow\) *how* or *why* there was change

Combining ex-ante and ex-post analysis
- Early stage project: mathematical optimization (*ex-ante*) (Hazell & Norton 1986)
- Older project: analytical narrative (*ex-post*) (Moore 1966, Rodrik 2003)

Data sources & mixed methods
- Qual’ data: expert interviews, group discussions, + in Uganda semi-structure biographical interviews
- Quant’ data: community survey, household survey
Case A: Tilda – Bugiri district, Uganda

Local Context:
- Eastern Uganda, located at transit corridor to Kenya
- Multi-ethnic setting
- Relative poor area within Uganda
- Small trading points & shops along main road

Investment:
- 1.200 ha investment (3.900 ha including catchment)
- Irrigated rice (basmati)
- 4-5h drive to Kampala

History of Investment
- 1968-88: Kibimba Rice Scheme (Chinese Dev. Proj.)
- 1989-96: Kibimba Rice Company (State-operated)
- Since 1997: Tilda Rice UG Ltd. (UK/Indian investor)
Case B: Saudi Star - Abobo, Gambella

Local Context:
- ca. 8,000 people / 1,600 HHs
- 2 Ethnic groups: Anyuak (ind) & Highlander (settlers - Derg)
- little market integration

Investment:
- Remote area within Ethiopia
- Saudi-Ethiopian, with Pakistani farm management & construction team
- 10,000 ha investment
- irrigated rice (basmati)
- Started in 2008/09

Evolution of Investment (simulation)
- 100,000 ha land “affected” (dark green)
- 10,000 ha converted by LSLAs (light green)
- local pop: 25-30 km radius (settlements – blue/green dots)
Today’s situation in Bugiri, Uganda: smallholder operated wetlands

“Kibimba started in 1971 and farmers who went there for employment, acquired skills to cultivate rice, and currently no wetland idle.”

(Older Farmer, Igogo Village)
4 drivers of conversion of wetland to rice fields

Point of departure: until mid-20th century few fields had individualized rights, and wetlands only used for grazing and cultivation during drought (little value)

1st driver: Pioneers had acquired skills from Kibimba and started growing at own fields. Opened wetland close to their own land. (1970s-1980s)

2nd driver: Restructuring at the farm (leaving of Chinese and privatization) cause laying-off of worker. They apply their skills on remaining wetland (1988-92 & 1997-2000)

In addition: Population increases significantly & relative prices of cash crops change (early 2000s)

<table>
<thead>
<tr>
<th>Pull factors</th>
<th>Push factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Related to investment</td>
<td>1) Training in skills &amp; demand for output</td>
</tr>
<tr>
<td>External driver</td>
<td>3) Change in relative price of cash crops</td>
</tr>
</tbody>
</table>

→ “Today all land is taken, but expansion is possible through rental markets.”
(First generation rice growing farmer, Buwuni village)
Source of knowledge about growing rice
by point in time started to grow (farmers growing rice in 2010/11 season)

<table>
<thead>
<tr>
<th>Year started growing rice</th>
<th>Source of knowledge on growing rice</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Parents</td>
<td>Neighbours</td>
</tr>
<tr>
<td>1st Generation (before 1988)</td>
<td>-</td>
<td>33.3</td>
</tr>
<tr>
<td>2nd Generation (1988-1997)</td>
<td>12.5</td>
<td>50.0</td>
</tr>
<tr>
<td>3rd Generation-a (1998-2003)</td>
<td>42.9</td>
<td>50.0</td>
</tr>
<tr>
<td>3rd Generation-b (2004-2011)</td>
<td>50.0</td>
<td>26.9</td>
</tr>
<tr>
<td>Total</td>
<td>39.2</td>
<td>37.3</td>
</tr>
</tbody>
</table>

Source: HH-Survey (2011), N=170

→ Friends and family main source of knowledge
→ However, interviews often revealed peers’ relation to Kibimba/Tilda
Price trend for wetland in selected villages (1990-2013)

based on community survey and recall questions (biographic interviews)

→ Price increased over past 20 years (nominal price even steeper): Today: 120 USD/ acre per season
→ Land for expansion only through rental or farer away

Note: Prices were deflated and standardized for 2010 prices (World Bank, 2013); Exchange rate from Jan 2011 (oanda, 2011).
Future situation in Ethiopia: Large-scale operated rice scheme

(Picture: construction work & test fields; early 2011)
Livelihood activities

1. **Agriculture** using hand tools
2. **Agriculture** using draught animals
3. **Land clearing** /preparation for cultivation
4. **Hunting** * (*only indigenous*)
5. **Gathering** of wild fruits, roots, and fuel wood
6. **Self-employment:** e.g. beer brewing or small businesses
7. **Off-farm employment** paid in cash on a monthly or daily basis

“All models are wrong, but some are useful.”
(Box & Draper 1987, p.424)

**Concept:** each group = 1 representative large-farm

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Required resources and constraints

Endowments/ Inputs
1. agricultural land;
2. open access land / forest
3. labour during peak season
4. labour during off-peak season
5. draught animal (Ox)
6. cash and assets

Market constraints
1. Market constraint: limited demand for locally/ self-produced services & goods (isolation)
2. Labour market constraint: Limited jobs

Open access land – similar to the one cleared for investment

Rice field on the nursery – for seed multiplication

Example of indigenous homestay
Possible future impacts: four scenarios

Base-run: Situation prior to investment’s arrival
• Showing mix of income strategies and initial levels of income

1st Scenario: Forest cleared
• Taking away 10,000 ha of prior open access land (forest/savannah)

2nd Scenario: Evolution of big investment (10,000 ha size)
• Jobs created and partly taken up by locals (ca. 1/3)
• Increasing demand for locally produced goods/services

3rd Scenario: Smaller investment + inclusive rural development plan
• ‘Only’ 5,000 ha investment size (with same effects on employment + demand)
• PLUS: Public investment in infrastructure
• PLUS: Investment in extension services + improved inputs + availability of draught animals/tractor service
Comparison: Composition & Level of gross-returns

Figure 5 Comparison of composition and level of income across all four scenarios.

Overall income of both groups for all Scenarios
(contribution of each activity & per capita income levels)

Source: simulation, based on own data (Gambella HH-survey 2011)
Changes in composition of livelihood strategies as investment size increases – Ethiopia case

### Livelihood activities (percentage share of group’s total income generated by)

<table>
<thead>
<tr>
<th>Status</th>
<th>AGR1</th>
<th>AGR2</th>
<th>HN</th>
<th>GATH</th>
<th>SELF</th>
<th>JOB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base</td>
<td>22.3%</td>
<td>16.7%</td>
<td>29.3%</td>
<td>18.5%</td>
<td>13.3%</td>
<td></td>
</tr>
<tr>
<td>Full size</td>
<td>12.4%</td>
<td>9.8%</td>
<td>17.2%</td>
<td>18.1%</td>
<td>42.5%</td>
<td></td>
</tr>
<tr>
<td><strong>Change</strong></td>
<td>-44%</td>
<td>-41%</td>
<td>-41%</td>
<td>-2.1%</td>
<td>+220%</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Status</th>
<th>AGR1</th>
<th>AGR2</th>
<th>HN</th>
<th>GATH</th>
<th>SELF</th>
<th>JOB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base</td>
<td>1.6%</td>
<td>41.8%</td>
<td>7.0%</td>
<td>37.5%</td>
<td>12.1%</td>
<td></td>
</tr>
<tr>
<td>Full size</td>
<td>0.0%</td>
<td>22.7%</td>
<td>4.0%</td>
<td>35.7%</td>
<td>37.6%</td>
<td></td>
</tr>
<tr>
<td><strong>Change</strong></td>
<td>-100%</td>
<td>-46%</td>
<td>-43%</td>
<td>-4.9%</td>
<td>+211%</td>
<td>-</td>
</tr>
</tbody>
</table>

### Total income of full group

<table>
<thead>
<tr>
<th>Total (Mill. birr)</th>
<th>Total (%-Change)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1</td>
<td>100.0%</td>
</tr>
<tr>
<td>9.4</td>
<td>153.3%</td>
</tr>
</tbody>
</table>

**Note:** AGR1 – manual agriculture, AGR2 – agriculture using draft animals, HN – hunting, GATH – gathering wood, fruits & roots, SELF – self-employment & SME, JOB – off-farm employment/ wage-employment.

*Change = (End/Base) – 100%; it shows the relative change of an activities importance to meet a groups livelihood situation.

- Relative importance ↓: Agriculture, Hunting & Gathering
- Relative importance ↑: Small business, off-farm jobs
- Overall income increase by about 53 – 57%
Comparison: Shadow prices for land & labour

Figure 6  Comparison of shadow prices for land and labour for all four scenarios

Shadow prices

- peak labour, & open access land have price
- Farmland has no price

→ Ind: Oland high value
→ Set: Lp high value
→ Sectoral transformation more pronounced among indigenous

Source: simulation, based on own data (Gambella HH-survey 2011)

Note: see paper by Baumgartner, von Braun, Müller, Abebaw (2013) for more details
Observed change across the five impact channels

**Land**: value increase depends on circumstances
- Value of farmland: ↑ in Uganda ("scramble for wetland") but no shadow price in Ethiopia
- In Uganda: increasing transfer within emerging land-rental market

**Labour**: additional and potentially higher paying income opportunity
- Off-farm employment ↑ → av. income ↑ (Eth);
- Source of cash-income (UG)

**Natural resources**: forest loss most sever for poor
- Use of forest decreases with increasing alternatives (Eth)
- Poor still have high shadow price for forest products (Eth) (*safety net*)
Observed change across the five impact channels

**Technology:** Diffusion not directly related to investor, though early learner acquired skills from working at site.
- Transfer not necessarily automatic, but *shocks* as catalyst (UG)
- Diffusion mainly through neighbours and friends; skills from work at investment (UG)

**Institutions:** Property rights regime not necessarily violated and rental market can create efficient outcomes.
- Rental market for land established (UG)
- Traditional rights over wetland still in place, but currently being challenged (UG)
- Change in power-balance and problem to enforce rules upon-investor (Eth)
Conclusion and policy recommendations

Growth: relative positive picture
• Both regions increased production (extensification & adoption of new crop)
• Incomes have been going up in both locations, partly due to arrival of investor

Inclusion: mixed picture
• Growth not pro-poor
• Marginalized less likely to participate in off-farm employment (Eth); but land-less can gain income and poorer farmers earn extra cash (UG)
• In both locations

Role of smallholder and their organisation
• In both cases smallholder-driven production showed more sustainable growth (less vulnerable to shocks)

→ Policies should consider smallholder production
THANKS FOR YOUR ATTENTION

Thankful for support of many people at ZEF, in Ethiopia and Uganda for their assistance and support

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Financial support by:

In country partner:

Evangelisches Studienwerk e.V. Villigst

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Phenomenon of large scale land acquisitions

Are LSLAs a new phenomenon?
- Yes and no!
- Many investments have old roots, dating back to colonial times
- Still, since food price crisis, increasing commercial interest in farmland

Driver of recent wave of investments:
- Supply of farmland ↓ (e.g. population ↑, climate change, etc.)
- Demand for farmland ↑ (e.g. av. income in BRIC ↑, demand for biofuel ↑, etc.)
- Institutional change motivates investors (e.g. investment climate in LDCs, stock market regulations, etc.)

Who invests?
- Foreign (companies, private equity, and state-supported),
- Domestic (national elites and diaspora)
Conceptual framework: re-allocation of land

Fig. 1 Conceptual linkages between LSLA investments and local populations

Investment: Commercial farm

- Commercial Agriculture
- Hiring workers & paying wage

Rural Non Farm Economy (RNFE)

- Off-farm employment
- Market integration
- Jobs
- Selling produce

Rural Population

Agricultural land (private holdings)

Open forest & scrubland (open access land)

Agriculture

Forest products

Selling produce

Commercial Agriculture

Hiring workers & paying wage

Rural Non Farm Economy (RNFE)

Off-farm employment

Market integration

Jobs

Selling produce
Scenarios 1+2: Emergence of investment & shock

Figure 4  Changes in income levels due to evolution of the large-scale investment (absolute and relative)

<table>
<thead>
<tr>
<th>Per capital income change (both groups)</th>
<th>(in pppUS$ &amp; %-change)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-90.0%</td>
<td>-100.0%</td>
</tr>
<tr>
<td>-110.0%</td>
<td>-120.0%</td>
</tr>
<tr>
<td>-130.0%</td>
<td>-140.0%</td>
</tr>
<tr>
<td>-150.0%</td>
<td>-160.0%</td>
</tr>
<tr>
<td>-170.0%</td>
<td>%Change_Ind</td>
</tr>
<tr>
<td>-90.0%</td>
<td>-100.0%</td>
</tr>
<tr>
<td>-110.0%</td>
<td>-120.0%</td>
</tr>
<tr>
<td>-130.0%</td>
<td>-140.0%</td>
</tr>
<tr>
<td>-150.0%</td>
<td>-160.0%</td>
</tr>
<tr>
<td>-170.0%</td>
<td>%Change_Set</td>
</tr>
<tr>
<td>ppp$/capita_Ind</td>
<td>ppp$/capita_Set</td>
</tr>
</tbody>
</table>

1st Scenario

- 10,000 ha transformed into commercial farm
  → Loss of Oland
  → + JOB
  → + Demand-SELF

Assumption: disproportional JOB up-take (60:40)

2nd Scenario

- Production shock:
  → cut by 50% (JOB / SELF)

Note: codes describe the change in factors: -K ha Oland | +Jobs | +%SELF-demand.
Source: simulation, based on own data (Gambella HH-survey 2011)
Set up of Model

- **Standardization**: using monetary units for activities!
  - Using opportunity costs (=market price ± transport costs)
  - Difficulty to price some activities (fuel-wood collection, hunting, etc.)

- **Objective function**: What do local people maximize?
  - Total Gross Margin – return to their scarce resources (“profit max”)

- **Assumed Constraints**:
  - Local market-constraint: can’t sell as much as they like to (SELF)
  - Labour-market constraint: (OFFJOB)
  - Peak-season Labour supply constraint (PLabour) [9:3 month]

- **Sensitivity test**: confidential intervals around mean values
  - For Endowment & productivity mean values were used,
  - Model was tested for sensitivity (± s.d.)
# Shadow prices of different inputs across scenarios

Absolute values for both groups (USD) – Ethiopia case

<table>
<thead>
<tr>
<th>Endowment</th>
<th>Specification</th>
<th>Shadow prices in USD</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ind</td>
<td></td>
<td>Base scenario</td>
<td>Full operation (10,000 ha)</td>
</tr>
<tr>
<td>Forest / bush land</td>
<td>Hunting</td>
<td>0.90</td>
<td>0.90</td>
</tr>
<tr>
<td></td>
<td>Gathering</td>
<td>1.49</td>
<td>1.49</td>
</tr>
<tr>
<td>Labour</td>
<td>Peak season</td>
<td>0.43</td>
<td>0.43</td>
</tr>
<tr>
<td>Draft animal</td>
<td>Yoke of oxen</td>
<td>17.04</td>
<td>17.04</td>
</tr>
<tr>
<td>Set</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forest / bush land</td>
<td>Gathering</td>
<td>0.63</td>
<td>0.51</td>
</tr>
<tr>
<td>Labour</td>
<td>Peak season</td>
<td>0.45</td>
<td>1.45</td>
</tr>
<tr>
<td>Draft animal</td>
<td>Yoke of oxen</td>
<td>29.63</td>
<td>0.00</td>
</tr>
</tbody>
</table>

*Note: Based on results from simulation. Exchange rate Jan 2011: 1USD = 16.4 ETB; For details on scenarios see Baumgartner et. al. (2013)*

- Agricultural land has no positive shadow price
- Increasing value: Labour (peak), Ox (ind)
- Decreasing value: Forest land, Ox (set)
Limitations of the analysis/model presented

“All models are wrong, but some are useful.”

(Box & Draper 1987, p.424)

**Behavioural assumptions**
- assumes complete flexibility of household members across activities

**Measurements & dimensional issues**
- no gender specific / or intra-HH impacts captured
- Only income-poverty (not multi-dimensional)

**Externalities not capture**
- Only direct economic benefits from Oland/forest (no env. serv.)
- potential local economy-wide gains not considered
Findings from follow-up visit (May 2013)

**Governance of LSLAs in Gambela**
1. Before 2010: Region was assessing investors’ capacity and only gave about 30-40% of requested land (Gam EIA data 2010)
2. After 2010: Region stopped giving out land (only 2-3 new cases in the last 3 years)
3. Monitoring remains very limited: Relevant directorate admitted no visit of investment in past month
4. Payment of land lease: Investors resist to pay increased rates to Woreda

**Employment creation**
1. Dual labour market: “Dum-track-division”: only young can go and work there
2. Farmer gain from more cash in the village: Households can have extra income, or sell maize to fellow villagers
3. Conflict last year: Anyuak likely to loose out on at least one case (still mainly Highlander in semi-skilled and skilled jobs)

**Business and income situation:**
1. Business activities decreased after shooting 1 yrs ago & since camp fully functional
2. Villagers get more wealthy and can afford new housing
Further policy recommendations

**Inclusive growth?**
1. Lack of major ethnic group due to hiring process, and lack of qualification
2. Also problem with aspiration (education?)

**Environmental monitoring**
1. Limited capacity (& will?) to monitor investments
2. Env. sustainability

**Policy recommendations**
1. Training of local group: Job training, but also nat. Ressource use and marketing
2. Increase support to monitoring