Standardization of Living Income benchmarking and knowledge gaps in farmer income assessment in cocoa farming. How to proceed?

Maja Slingerland, Ken Giller, Gerrie van de Ven, Yuca Waarts
Wageningen University & Research

2022 International Symposium on Cocoa Research (ISCR), Montpellier, France
Research questions

▪ How to calculate Living Income?
▪ Do cocoa producers earn a living income?
▪ Which scenarios can we imagine to increase income?
▪ What variables underlie income differences?
▪ What are methodological challenges and progress?
▪ How to reach LI for cocoa farmers?
WUR simplified living income approach

Living income

- Low-cost nutritious diet costs
- Miscellaneous costs \(^1\)
- Value of owner-occupied house
- Utilities, maintenance and tax costs
- Health care costs
- Education costs
- Other NFNH goods and service costs \(^2\)
- Non-food non-housing (NFNH) costs
- Unforeseen costs \(^3\)

1. 16% of Low-cost nutritious diet costs (10% variation, 4% food waste, 2% salt etc).
2. Other NFNH goods and services costs: 20% of total Food, Housing, and NFNH costs.
3. Unforeseen costs: 10% of total Living income.

https://doi.org/10.1007/s12571-020-01099-8
<table>
<thead>
<tr>
<th>WUR simplification of Anker &amp; Anker</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A&amp;A</strong></td>
</tr>
<tr>
<td><strong>Unit</strong></td>
</tr>
<tr>
<td><strong>Household</strong></td>
</tr>
<tr>
<td>4-6 persons, 1-2 FTE</td>
</tr>
<tr>
<td><strong>Sources for hh size assessment</strong></td>
</tr>
<tr>
<td>Census data, national statistics, survey, % unemployment etc.</td>
</tr>
<tr>
<td><strong>Food requirements</strong></td>
</tr>
<tr>
<td>2500 kcal/AME (plus nutrition rules); male 1 AME; female 0.82 AME; &lt;18 0.75 AME</td>
</tr>
<tr>
<td><strong>Data sources</strong></td>
</tr>
<tr>
<td>Local FGD, key informants, market prices, food groups</td>
</tr>
<tr>
<td><strong>Calculation procedure</strong></td>
</tr>
<tr>
<td><strong>Living income diet tool</strong>: optimization to lowest cost diet based on food groups</td>
</tr>
<tr>
<td><strong>Education &amp; housing</strong></td>
</tr>
<tr>
<td><strong>FGD &amp; key informants</strong></td>
</tr>
</tbody>
</table>
### Data sets used for LI study for cocoa *

<table>
<thead>
<tr>
<th>Data set</th>
<th>Country</th>
<th>Data year</th>
<th>Number of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>KIT</td>
<td>Ghana</td>
<td>2015/2016</td>
<td>1,384</td>
</tr>
<tr>
<td></td>
<td>Côte d’Ivoire</td>
<td>2015/2016</td>
<td>992</td>
</tr>
<tr>
<td>WUR</td>
<td>Ghana</td>
<td>2010/2011</td>
<td>385</td>
</tr>
<tr>
<td></td>
<td>Côte d’Ivoire</td>
<td>2011/2012</td>
<td>944</td>
</tr>
<tr>
<td>Cargill</td>
<td>Côte d’Ivoire</td>
<td>2017/2018</td>
<td>93,952</td>
</tr>
<tr>
<td>Ghent</td>
<td>Ghana</td>
<td>2013/2014</td>
<td>731</td>
</tr>
</tbody>
</table>

*Different years, only two studies for both countries, different purposes of data collection
*Converted to $ PPP 2018

Income calculations cocoa farms

- Gross cocoa income
  - Household cocoa production * cocoa price
- Other on-farm income
  - Other crops, livestock
- Other off-farm income
  - small business, wage labour, remittances
- Income is standardised to $ PPP*2018/AE/day
  - Comparable across countries and between years
  - Compared to WB poverty line of $1.90 PPP 2011 which equals $2.12 PPP 2018 per person per day
  - Compared to LI $ PPP 2018/AE/day

* PPP (purchasing power parity): local currency required to buy the same amount of goods and services as $1 in the USA
All data give similar outcomes

Many producers below the EPL (30-66%)
Most producers below the LI benchmark (73-94%)
Cocoa is important (largest) part of income
Scenario: Cocoa price doubles

Less hh < LI (73-53%)
Less hh < EPL (30-15%)

Poor benefit the least (low yields)

Rebound effect: higher prices → more expansion & intensification → overproduction → lower prices & more deforestation?
Scenario: Yields increase to 1,500 kg/ha

Less hh < LI (73-14%)

Less hh < EPL (30-<1%)

Poorest benefit the most (have lowest yield)

High investments needed (inputs, credit, training) → most difficult for the poor

Rebound effect as result of over-production → lower prices
### Variables related to income levels

<table>
<thead>
<tr>
<th></th>
<th>Ghana ($ PPP 2018) pppd year</th>
<th>Côte d'Ivoire ($ PPP 2018) pppd year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income ($ PPP 2018)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of household members (#)</td>
<td>-0.36 0.09 -0.22 0.23</td>
<td></td>
</tr>
<tr>
<td>Number of productive household members (#)</td>
<td>0.10 0.25</td>
<td></td>
</tr>
<tr>
<td>Dependency ratio (-)</td>
<td>-0.17 ns -0.19 ns</td>
<td></td>
</tr>
<tr>
<td>Total available land (ha)</td>
<td>0.36 0.52 0.15 0.38</td>
<td></td>
</tr>
<tr>
<td>Cocoa land (ha)</td>
<td>0.36 0.56 0.36 0.55</td>
<td></td>
</tr>
<tr>
<td>Cultivated land (ha)</td>
<td>0.35 0.54 0.29 0.58</td>
<td></td>
</tr>
<tr>
<td>Fallow land (ha)</td>
<td>0.18 0.15 ns ns</td>
<td></td>
</tr>
<tr>
<td>Yield (kg/ha)</td>
<td>0.37 0.45 0.40 0.50</td>
<td></td>
</tr>
<tr>
<td>Dependency on cocoa (proportion of total income)</td>
<td>-0.20 0.26 -0.19 0.29</td>
<td></td>
</tr>
</tbody>
</table>

- More hh members: Higher income/hh/year and Lower income/hh member/day
- More total land, more cocoa land, more cultivated land, higher yield → Higher income/hh/year and Higher income/hh member/day
- Higher income dependency on cocoa → Higher income/hh/year but → Lower income/hh member/year

- Segmentation of households based on different resource endowments such as total (or cocoa) farm size and labor to land ratio, may provide further insight in potential pathways towards achieving living income.

Methodological challenges & progress

- For better assessment of actual **income** of cocoa farmers, we need data on **other income sources** and on **relation between costs** (inputs & labour requirements) and **yield** (revenue) to calculate **net income**.

- Agreeing on **data collection methodology, definitions, and pooling data for analysis** of actual **income** may increase comparability and save costs eg via [http://CocoaSoils.org](http://CocoaSoils.org) data infrastructure and partnership.


- Large attention for LI with cocoa companies and governments in cocoa producing and cocoa buying countries.

- Living Income Community of Practice aims to provide tools for data collection and calculations of living income.

- IDH has benchmarking for living wage assessment & could also support benchmarking for living income.
How to reach a Living Income for farmers?

- Many cocoa farmers have to little area to reach a living income based on cocoa, even when prices increase: Land consolidation?

- For smaller farms yield increase may lead to LI but this needs large investment: Difficult for the poorest? Cash transfers?

- (New) pathways to LI needed:
  - Additional and alternative income sources (also jobs outside agriculture), but scarce
  - Agroforestry for higher income & climate change mitigation, but also needs substantial cocoa yields to prevent expansion

- Farmer segmentation may be useful to design interventions towards Living Income, that are more specific/appropriate for farmers with different resource endowments.

- New policies in companies, buying countries and producing countries are needed, eg to prevent rebound effects (production quota?, reward for preventing expansion?)
Thank you!

Thanks to

Jiska A van Vliet as lead author and Marcelo Tyszler, Ywe Franken, Laurens Golverdingen, Ghent University and others for data and discussions contributing to cocoa LI paper

Thanks to:

NWO-WOTRO project (W08.250.305): Cocoa crop improvement, farms and markets: a science based approach to sustainably improving farmer food security in Ghana and Ivory Coast (WUR, IITA, CNRA, Mondelez)

CocoaSoils program (CocoaSoils.org)

Contact: Maja.Slingerland@wur.nl