How to achieve poverty reduction in SSA? From the Green Revolution to Agricultural and Rural Transformations

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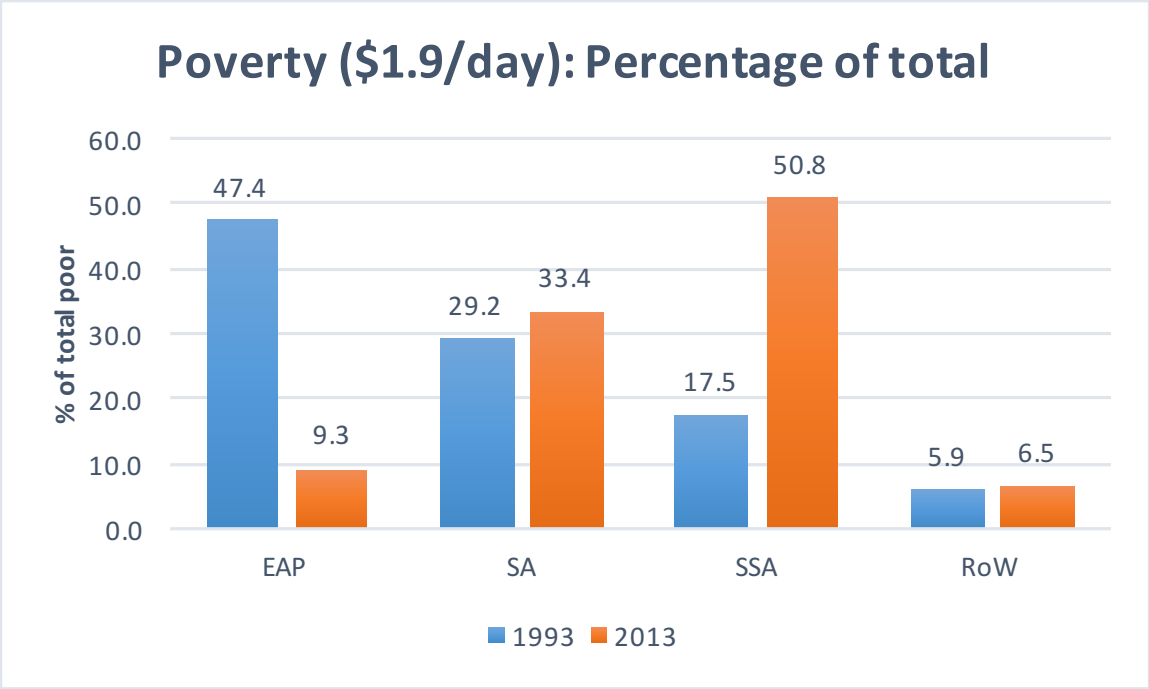
1. If extreme poverty is the SDG1 goal, then SSA is the place



And will increasingly be so due to differential population growth

- If SSA poverty is the issue, then **rural population** and **agriculture** are the main concerns:
  - 82% of SSA poor live in rural areas
  - 75% of SSA rural households' income from agriculture

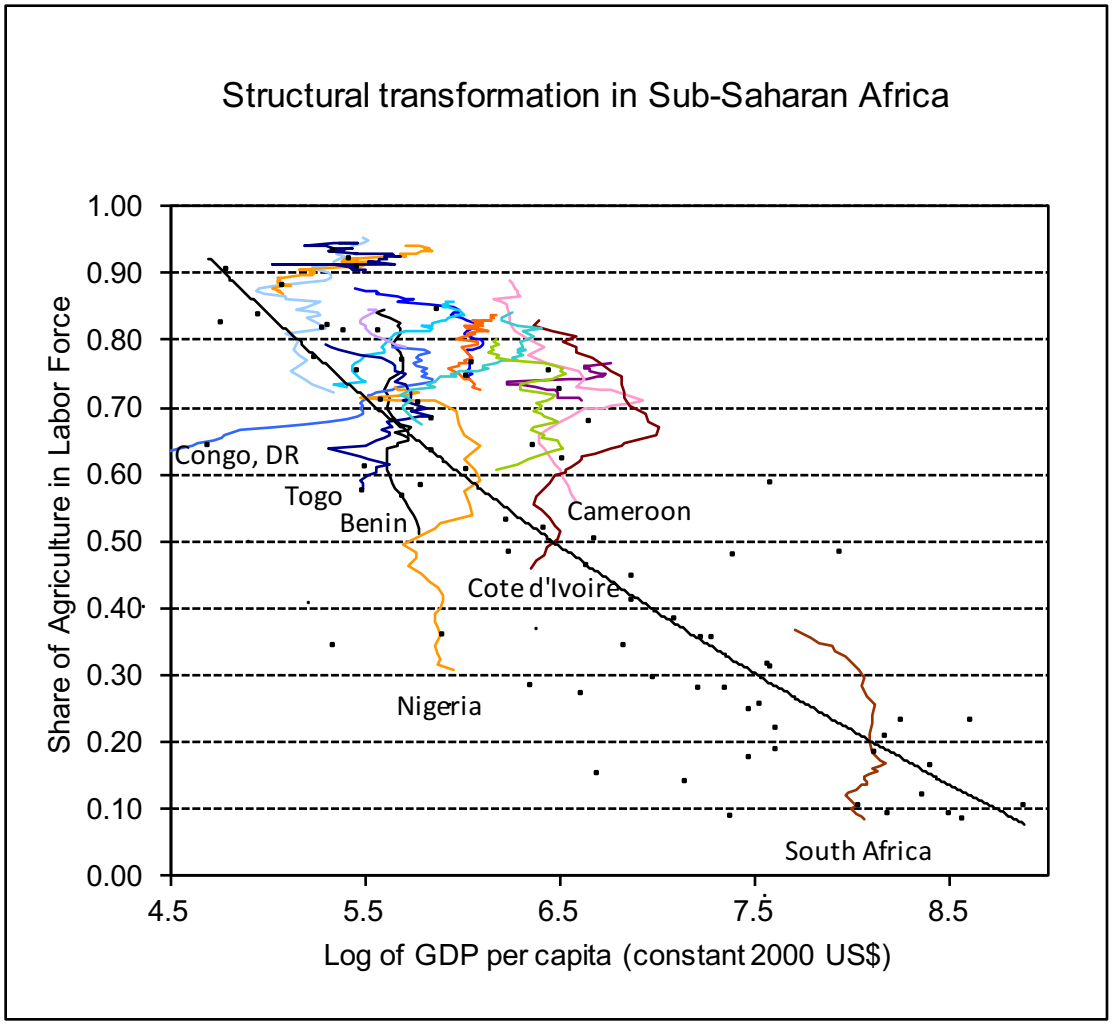
2. Agriculture and rural development key for poverty reduction

If the poor are in rural/Ag, is this due to **selection**?

In other words, did the move out of rural/Ag provide an escape from poverty, with those who stayed behind in rural/Ag left in poverty?

Answer is **NO**

- **Structural transformations** (ST) in SSA have not been accompanied by growth in per capita income

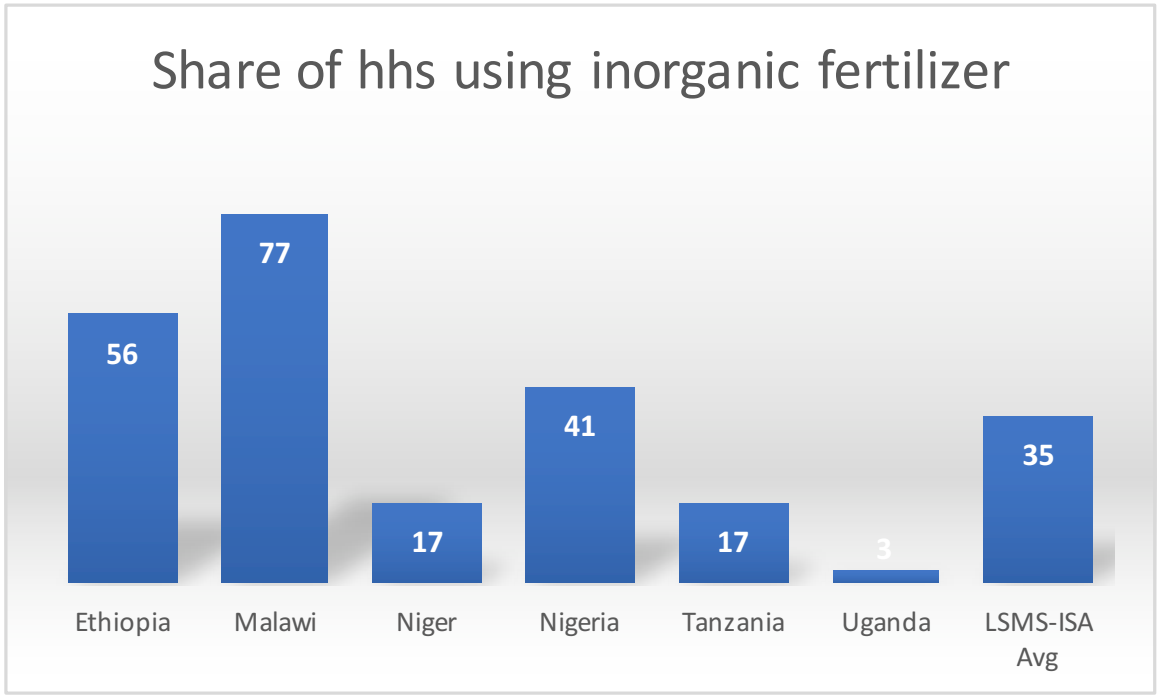


- **Most poverty reduction has been achieved within agriculture and rural areas**, not through ST toward urban environment (Christiaensen, LSMS-ISA data):
  - **Uganda** 2005-09: 70% of poverty reduction in baseline Ag population achieved in agriculture
  - **Tanzania** 1991-2010: 85% of rural poverty reduction achieved in agriculture (34%), in RNFE (25%), and in local towns (30%)
  - **Cross-country**: McMillan, Rodrik, Sepulveda (2017) show that growth through structural transformation less effective than through sector productivity growth

Hence, income growth in **agriculture** and **rural areas** (RNFE, local towns) key for SSA rural poverty reduction

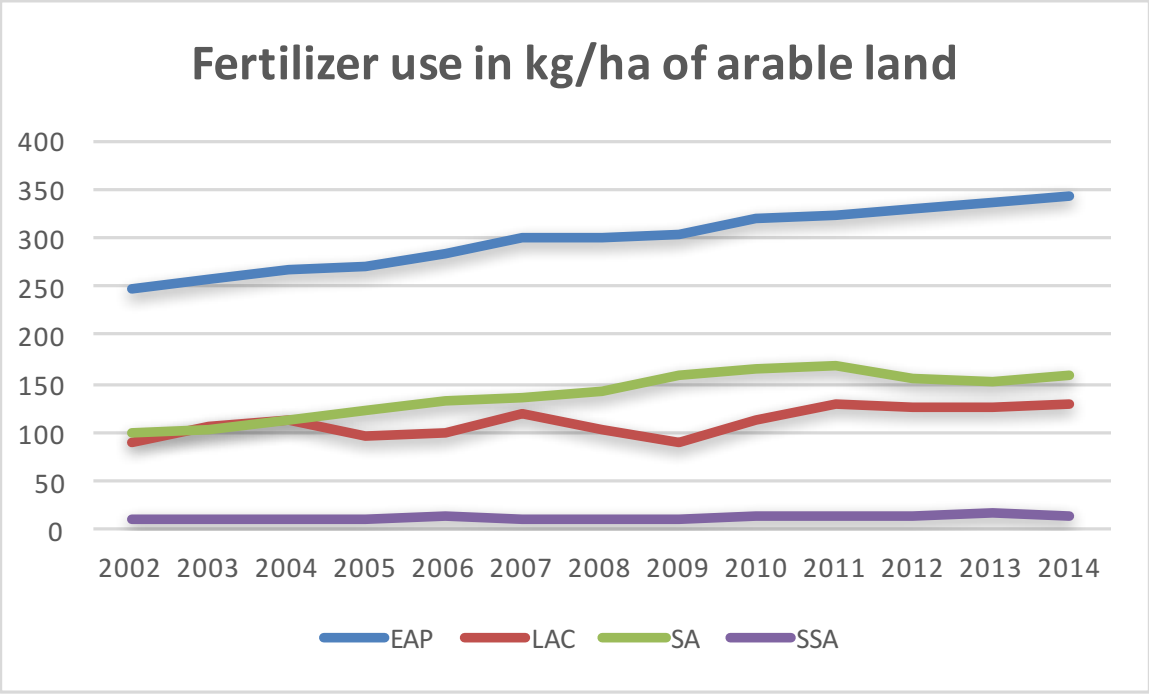
3. Are things changing in SSA agriculture? Paradox of fertilizer use

- Fertilizer use a symptom of Ag modernization, e.g., driven by technological change in seeds
- LSMS-ISA micro info: non-negligible share of smallholder farmers now using chemical fertilizers



Source: Christiaensen (2017) summary of LSMS-ISA studies

- But macro picture for fertilizer use in SSA remains unchanged

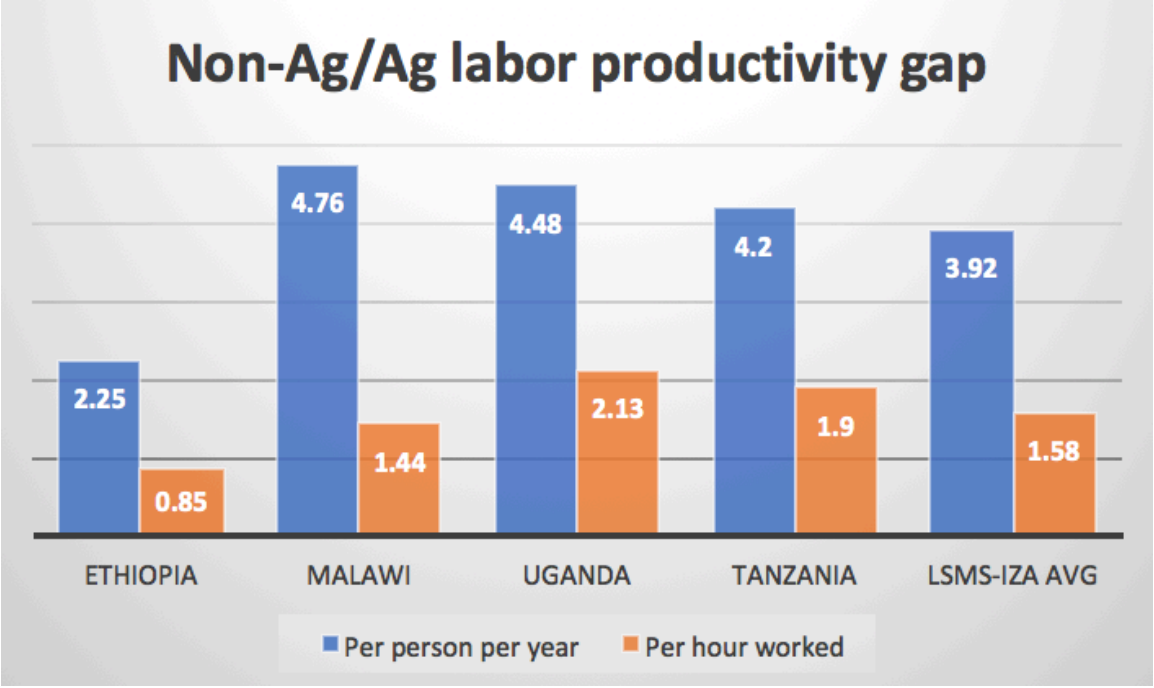


Overall fertilizer use in SSA remains very low & largely unchanged

- **ATAI studies**: low profitability, heterogeneity of adequacy, and institutional constraints (credit, insurance) still effective
- Increasing **land productivity** necessary but not sufficient for poverty reduction: focus on **labor productivity**

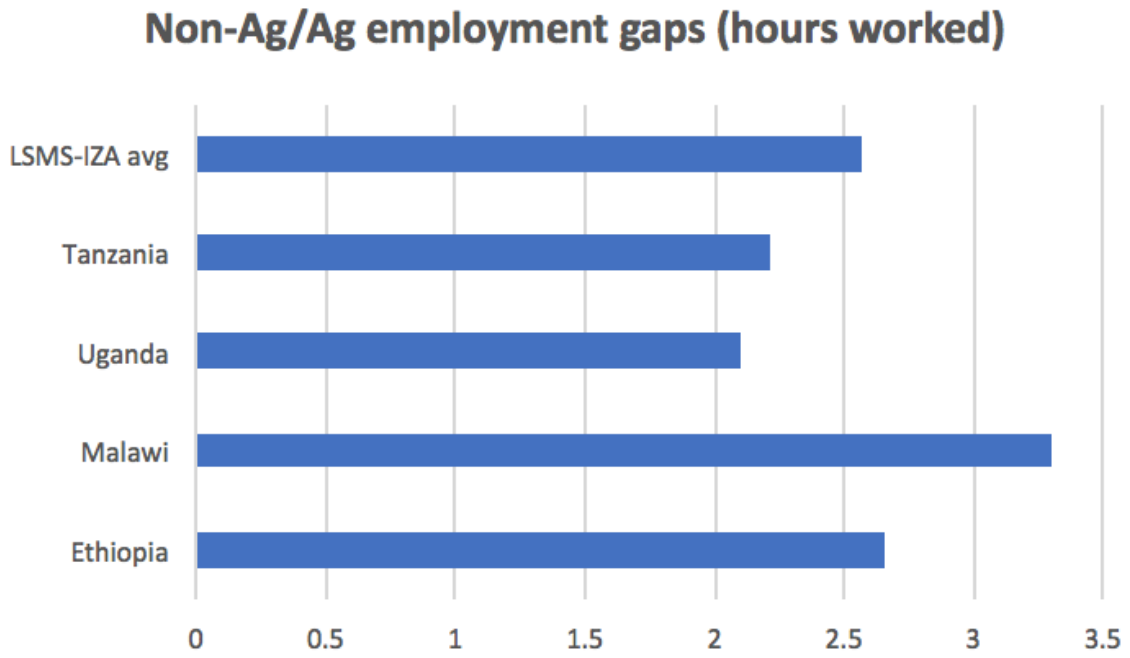
4. SSA rural poverty: Low labor productivity per year in agriculture is the root cause

Labor productivity per person/year low in Ag compared to Non-Ag
But labor productivity per hour worked is not very different in Ag than in Non-Ag (McCullough, 2017, LSMS-ISA)



Large Non-Ag/Ag gaps in labor productivity **per person per year** (blue), but low gaps in labor productivity **per hour worked** (red).

5. What explains low labor productivity in agriculture? Erratic/spotty labor calendars

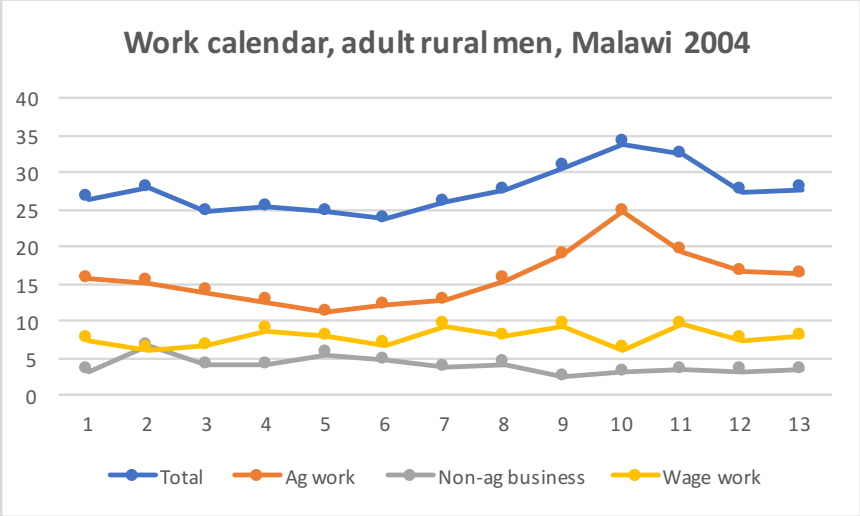


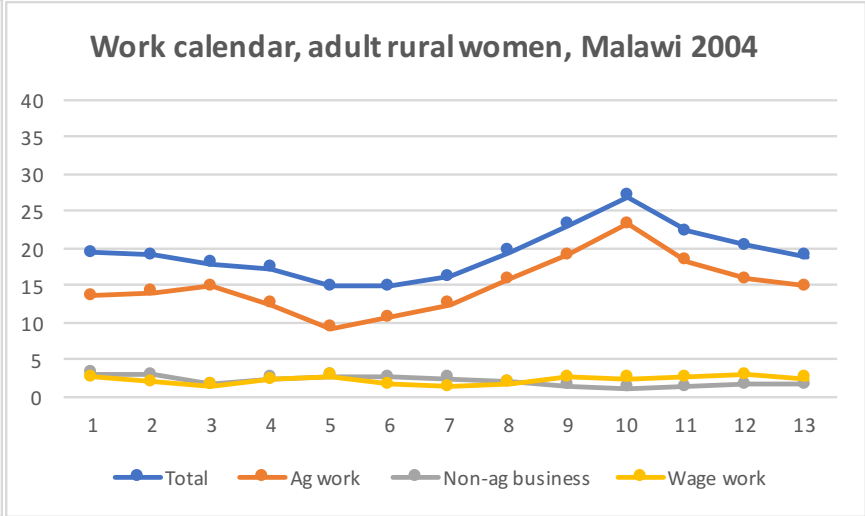
Average hours worked per worker per year (McCullough, LSMS-ISA)

- In non-agriculture: 1850 hours/year (7h/day)
- In agriculture: 700/year (2.7h/day)

Ag **labor calendars** are **seasonal** for rural populations, with insufficient opportunities of access to employment in Non-Ag business and wage work to smooth out labor calendars

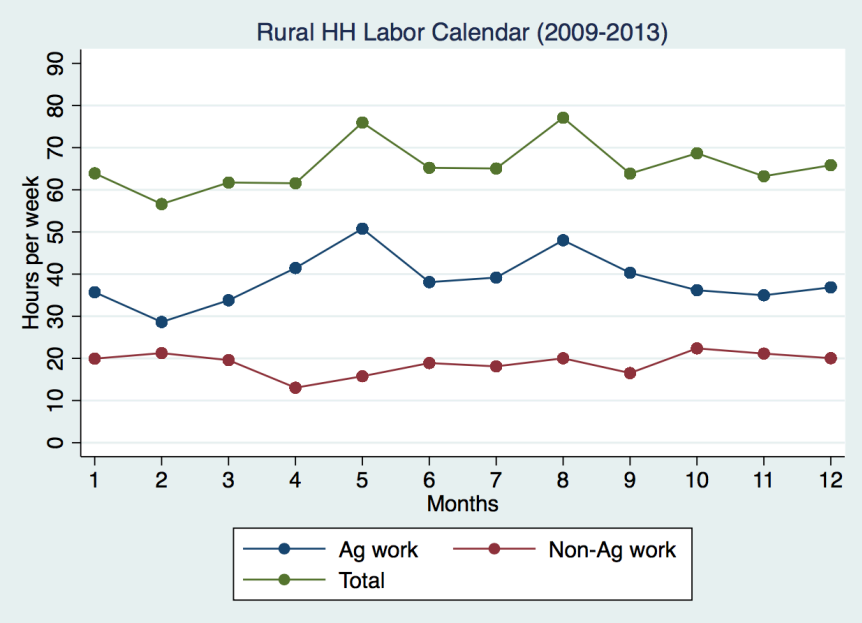
Malawi 2004 labor calendars for rural individuals, hrs/week

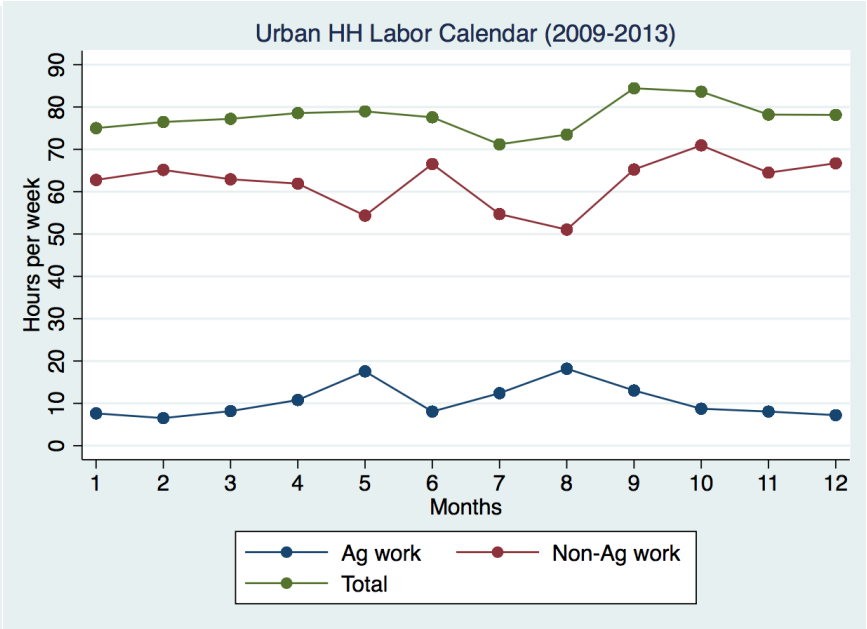




Seasonality of labor calendars even larger for **women**, with much lower Non-Ag business and wage work opportunities

Uganda, 2009-13 LSMS-ISA data at the household level





- For **rural households**, high seasonality in agriculture, with insufficient off-farm employment opportunities to smooth out labor calendars
- **Urban households** work more and have access to some counter-cyclicality, resulting in smoother labor calendars (and less poverty)

Hours worked per hh/week

Month	Rural hh	Urban hh	Difference
2	-6.9***	-9.4	
3	-6.3**	-6.9	
4	-7.2**	2.2	
5	7.1**	8.4	
6	-7.2**	-4.3	
7	-6.6**	4.1	
8	7.7**	0.1	
9	3.5	9.9	
10	0.7	9.2	
11	-1.3	1.8	
12	2.4	1.5	
Base month = 1	65.7	77.2	
Av hours worked	64.4	78.7	22%

LSMS-ISA 2009-13 panel data with hh fixed effects

Compared to urban, rural households in Uganda have more erratic work calendars (hours worked relative to base month) and work on average 22% less

6. Policy implications

- **Gains in agriculture land/labor productivity key for poverty reduction**, but AGRA (A Green Revolution for Africa = land productivity growth in staple foods) necessary but not sufficient. GR can help increase the **productivity of work** in agriculture, but does not directly address the low **annual labor productivity** issue
- First-order of importance to reduce rural poverty is smoothing out **labor calendars** across the year. This requires an **Agricultural Transformation** (AT) and a **Rural Transformation** (RT) beyond a Green Revolution
  - **AT**: smooth out labor calendars through the **diversification** and **intensification** of agricultural production systems
  - **RT**: smooth out labor calendars through **complementary employment** in an emerging rural non-farm economy

Agricultural Transformation

- An **example of AT** is introduction of short-duration rice varieties such as NERICA that free land for an additional crop. The shift from field crops to horticulture and **high value crops** is also ideal for this. Both require water control
- **Intensification of farming systems** to smooth out labor calendars requires:
  - Integrated **year-around** land use management: complementarities across crops
  - **Infrastructure** investments to link farmers to deep markets to avoid local **technological treadmill** and capture **producer surplus**
  - The development of **land markets**, especially in support of rental, and **labor markets** to allow the emergence of commercial/medium size farms

Rural Transformation

- **RT** to smooth out labor calendars requires**:**
  i. **Local endogenous ADLI** (Agriculture Development-Led Industrialization) and **ADLS** (Services), where income growth in Ag creates effective demand for non-tradables
  ii. **Decentralization** of economic activity to rural areas
  iii. Population **relocation** away from areas with low agricultural potential and excessively remote from markets
  iv. Helping labor **migrate** (reach other labor markets) during the lean season
  v. Social protection to help rural households take risks in engaging in AT/RT
  vi. Observe a strong cross-country correlation between greater participation in **RNFE** and **less rural poverty** (Davis, LSMS-ISA data)

How can this be done?

- Countries need a **strategic plan/coordinating group** (e.g., China's Leading Group on Poverty Alleviation) that goes from national to local level, logically under CAADP for SSA
  - **Comprehensive space-based/territorial approaches** to the transformations, with concertation mechanisms
  - Manage **political economy** of AT/RT
- **AT**: Key role of PO to facilitate **contracting** with smallholder farmers, and **labor market** for others
- **ST**: Focus on producers with **proximity/infrastructure** to urban demand, and **labor mobility** for others. In RNFE, focus on industries linked to agriculture and services (ADLS)

→ Much progress, but additional **research/experimentation** needed on how to achieve GR (incomplete), AT, and RT for SDG1

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