Components of the Income Aggregate:

"Living Standards Survey, Ghana 2013"

Prepared for the Rural Income Generating Activities (RIGA) Project[1]

of the Agricultural Development Economics Division,

Food and Agriculture Organization

July, 2016

This document provides the survey-specific details associated with the income aggregate construction. For more information about the RIGA project, please refer to http://www.fao.org/es/esa/riga. For additional detail regarding the overall RIGA income aggregate construction approach, please refer to Carletto, et al (2007), "Rural Income Generating Activities Study: Methodological note on the construction of income aggregates," found on the RIGA website.

The Ghana Living Standards Survey, Round 6 (GLSS6) is a nationally representative household survey, carried out over a period of 12 months from October 18, 2012 until October 17, 2013 as part of the Ghana Statistical Service (GSS) regular data collection activities. This round of the data collection took place seven years after the fifth round of the GLSS and incorporated new modules to probe detailed information on child labour force participation, governance, peace and security, and household access to financial services, in addition to the standard set of living standards survey modules that collect details on income and expenditures. Although additional modules and indicators were obtained by the GLSS6, the data collected is comparable to that of the previous survey waves.

Using the household listing from the 2010 population and housing census conducted by the GSS, the GLSS6 employed a multi-stage stratified random sampling design[2]. First the Enumeration Areas (EAs) within regions were selected with probability proportional to size. Then, within the EAs, stratification into the 10 administrative regions and by urban/rural areas took place. The secondary sampling unit was the listing of households within each selected EA; 15 households were randomly selected from each EA for participation in the survey. The survey objective was to interview 18,000 households in 1,200 EAs; the survey succeeded in obtaining completed interviews for 16,772 households. This final sample contains 9,327 rural households and 7,445 urban households. In the original datasets, URBRUR is the variable distinguishing urban from rural households. In the calculation of the income aggregate, URBRUR is renamed to URBAN in order to use the same variable name across different surveys.

---

[1] The RIGA Project is a collaboration between FAO, the World Bank and American University in Washington, D.C. Original data can be obtained from the World Bank's Living Standards Measurement Study by visiting the LSMS website at: http://www.worldbank.org/lsms

The GLSS6 can yield representative estimates at the regional and national levels. In order to obtain such nationally representative estimates, sampling weights must be applied so that estimates account for the complex survey design in which households have different probabilities of selection into the survey in different areas of the country. The sampling weights variable in the original and RIGA data is called "WEIGHT".

The various household-level modules of this survey can be linked using the two variables that create the unique household identifier: CLUST and NH. These variables are combined to create the unique identifier HH for consistency across countries within the study.

All monetary amounts are in the local currency, Cedi. In 2013, the official exchange rate was 12 Cedi = 1.0 USD.[3] **The income aggregates are calculated at the household level and all aggregates are annualized**.

Regarding income from different sources, revenues and costs were disaggregated when such information was available. The disaggregated sources for each income component are summarized in output variables column of Table 1. The net variables and the data files included in the final total income aggregate are in **bold**. **All variables included in the aggregate income variable are net of costs, unless otherwise noted.**

Comments

- In all sections, the raw data undergoes a transformation (it is annualized, aggregated, taken from person to household level, etc) before a check for outliers takes place.
- The original data codes responses such as "don't know," "ignored," "not sure", and so on, with a "99", "999", "9999" etc. These values are recoded to missing "." in all files.
- In the Crop Production section, the reference period is the previous 12 months. Two total crop income variables are created: c*ropincome1* and c*ropincome2*. *Cropincome1* includes estimates of own crop consumption based on the agricultural production module of the household questionnaire. *Cropincome2* includes estimates of own crop consumption based on the food expenditure section of the questionnaire in which household consumption was recorded and updated periodically over a given time frame.
- Own consumption from crop production is calculated using two approaches, the first using production information from the agricultural module of the survey to deduce the quantity of harvest allocated to household consumption (as input to the variable CROPINCOME1) and the second utilizing the data on own consumption from the expenditures module of the survey (input to CROPINCOME2). In both cases the value of own consumption is imputed using median prices calculated at various administrative and crop-unit levels where prices are obtained based on sales and purchase values from the production module, the expenditures module and the market prices modules.
- Own consumption from the food expenditures module (input to CROPINCOME2) is estimated as the annual consumption of home-produced food items, by the enumerator for the period elapsed between visits to the household from the second and seventh visits to the household. A total of six entries are reported for the seven visits to the household that take place over the course of 31 days; these are annualized according to the number of months (of the previous 12 months) that the food item is reported as consumed by the household.
- For Transfer income, two estimates are calculated: gross and net. The household income aggregate, however, considers the gross value rather than net.

- The classifications of wage employment activities into industry categories follow the United Nations International Standard Industrial Classification of all Economic Activities (ISIC) codes. Given these standards, the employment sectors include: (1) Agriculture, Livestock, Hunting and Fishing, (2) Mining, (3) Manufacturing, (4) Electricity and Utilities, (5) Construction, (6) Commerce, (7) Transportation, Storage and Communications, (8) Finance, Insurance and Real Estate, (9) Services and (10) Other Industries. Each job was then classified as being skilled, unskilled or unknown based on the occupational code.
- Earnings from wage employment include all in-cash and in-kind benefits in cash received from the employer.
- For the Self Employment (Selfemp), the classification of non-farm enterprise activities into industries categories follows the ISIC categories listed above.
- For all sections, whenever information was available regarding the share of a business, enterprise, or any other income activity owned by the household, the income earned from that activity was weighted by the share owned by the household.
- A final outlier check is imposed at the end of the Aggregateincome.do file in which households with income shares from any given activity greater than or less than 3 (300% of total income) are dropped from the final income aggregate. Using these criteria, 278 households are dropped.
- Only present household members who are not heads are kept in the final income aggregate. Present is defined as a having been absent from the households for 6 or fewer months in the previous 12 months for non-head household members. Household heads are included regardless of their location status because in their position they can still serve as primary income sources.
- Participation and income share variables are also included in the final income aggregate.

The programs that calculate each household's income aggregate component are summarized in Table 1. Tables 2 and 3 summarize the results from the created income aggregate.

Table 1

Do file	Input data files IN= household questionnaire	Output data files	Main variables constructed	Notes/Decisions
Sample.do	$IN/sec0.dta	**Sample.dta**	hh	HH=clust*100 + nh
Prices.do	IN/sec8h.dta	price_purch_ea.dta	price_purch_ea	Created median prices for each crop at different administrative levels (enumeration area, region, locality) using the reported expenditures in the consumption module and the reported sales from the agricultural module.
		price_purch_region.dta	price_purch_region	It is not possible to estimate food prices based upon the food expenditure module of the survey because that module only asks for the amount spent on individual food items and

				quantity purchased.
		price_purch_urb.dta	price_purch_urb	Purchase prices represent the what it would cost to purchase on the market the consumption of own production as estimated by the household. Production prices are based upon the price received for sold output from the main outlet of sales.
		price_purch_unit.dta	price_purch_unit	
	IN/sec8c1.dta	price_prod_ea.dta	price_prod_ea	
	IN/sec8c2.dta	price_prod_region.dta	price_prod_region	
		price_prod_urb.dta	price_prod_urb	
		price_prod_unit.dta	price_prod_unit	
	PRI/national prices.dta	price_mkt_region.dta	price_mkt_region	National level market prices obtained for each of Ghana's 10 regions.
		price_mkt_unit.dta	price_mkt_unit	
Foodown.do	INHH\SEC_K1.dta	Food.dta	foodgift	
	price_purch_XX.dta (from prices.do)	Foodonw_crop.dta	foodown	
	price_prod_XX.dta (from prices.do)	Foodown_livestock.dta	foodpurch	
			foodcons	
			foodown_crop	
			foodown_livstock	
Agrent	IN/sec8a3.dta	Agrent.dta	agrent	Income from the rental of agricultural assets owned by the household
Rentagric.do	IN/sec8a1.dta	agrrentinc.dta	farmrntinc	Annual income from rental of farm land.
			shrcropinc	Annual income from sharecropping out land (valued by respondent)
	IN/sec8b.dta	agrrentexp.dta	farmrntexp	Annual expenditure on renting in of farmland.
		agrshareexp.dta	sharecropexp	Annual expenditure on sharecropping in of land. Sharecropping expenditure that is reported fro the previous 2 weeks is multiplied by 4 in order to scale up to the length of the harvest season.
		Rentagric.dta	farmrnt	Annual income from rental of

			shrcrop	Annual net income from sharecropping activities
Otherincome.do	IN/sec11c.dta"	othinc1.dta	otherinc1	Annual income from financial interests, other miscellaneous sources
	Agrent.dta	othinc2.dta	otherinc2	Annual income from sales of water. Income from water sales reported for 2 week period; it is multiplied by 26 to obtain annual estimates.
		Otherincome.dta	otherinc	Total annual income from water sales, financial interests, rental income from assets, and other miscellaneous sources.
Transfers.do	IN/sec11a.dta	transferprivout.dta	transfersent	Annual value of remittances sent in cash, in food and in-kind.
	IN/sec11b.dta	transferprivinc.dta	transferinc	Annual value of remittances received in cash, in food and in-kind. Transfers that require repayment are dropped from the calculation.
	IN/sec11c.dta	pensions.dta	socialtrans	Annual transfers from the LEAP program.
			pensions	Annual income from social security, state pensions and other retirement benefits.
		Transfers.dta	pubtrans	Total annual pensions and social transfer income
			privtrans	Total annual gross remittance income.
			transferstot	Total net annual transfers (public private)
			transfergross	Total gross annual transfers (public, private)
Cropincome.do	IN/sec8c1.dta	cropinc.dta	cropsold	The value of harvest quantities paid out to landlord, labourers, processed, saved as seed and harvested overall valued using a set of median crop-unit prices calculated at various administrative levels in CropPrices.do.
			cropinput	Quantities/values reported for cultivation of roots, fruits, vegetables, etc (non cash, non field crops) reported for 2 week reference period. Annualization obtained multiplying by 4.
			sharecropexp	Own consumption from agricultural module is estimated as the value of harvest minus sales, crop used as input and paid out for sharecroppping or labour and is valued using median sales prices from the agricultural module, calculated in CropPrices.do.
			totharvestexp	
			cropown1	
			laborexp	

	IN/sec8f.dta	cropexp.dta	cropexpimp	Annual expenditure on agricultural inputs
	IN/sec8e.dta	otheraginc.dta	otheraginc	Annual income from sales of foraged fruits, berries, mushrooms.
	IN/sec8g.dta	byprodinc.dta	byprodinc	Annual net income from crop by product sales
	Foodown_crop.dta			
	agrent.dta	Cropincome.dta	cropincome1	Net annual income from crop activities.
			cropincome2	
Livestock.do	IN/sec8a2.dta	livstinc.dta	livstsold	Income from livestock sales; expenditure on livestock purchases; annual income from renting out farm animals.
	IN/sec8f.dta	livstexp.dta	livstrent	Annual expenditure from livestock and fishing input costs.
	IN/sec8e.dta	livstbyprod.dta	livstpurch	Annualization of 2-week net income from meat/fish processing obtained based upon number of months processing took place by household.
	IN/sec8g.dta	livstbyproduct.dta	livstexp	Outliers checked by item code (where relevant) and by region.
	Foodown_livestock.dta	Livestock.dta	byprodinc1 byprodinc2	
			livstinc	Livestock income includes income from fishing activities.
Selfemp.do	IN/sec10a.dta	Selfemp.dta	selfimp1	Net annual income calculated for first and second enterprises owned by the household, whether or not they were operating in the previous two weeks.
	IN/sec10c1.dta		selfimp2	Annualization based upon the number of months in operation during the previous year and all revenues and costs were scaled down according to the parentage of income retained by the household when jointly owned.
	IN/sec10d11.dta		selfimp3	Estimates account for household consumption of output produced by the enterprise.
	IN/sec10d3.dta		selfimp4	
	IN/sec10d5b.dta		selfimp5	
	IN/sec10f1.dta		selfimp6	

	IN/sec10d11.dta IN/sec10d12.dta IN/sec10d3.dta IN/sec10d4.dta IN/sec10d5a.dta IN/sec10e.dta IN/sec10e1.dta IN/sec10c2.dta IN/sec10d21.dta IN/sec10d3.dta IN/sec10d6b.dta IN/sec10f2.dta IN/sec10d21.dta IN/sec10d22.dta IN/sec10d3.dta IN/sec10d4.dta IN/sec10d6a.dta IN/sec10e.dta IN/sec10e2.dta IN/sec10h.dta		selfimp7 selfimp8 selfimp9	
Employment.do	IN/sec4a.dta IN/sec4b.dta IN/sec4e.dta	Employment.dta	wge1_3 wge2_3 wge3_3	Income from main and secondary jobs in the last 7 days, and the main and secondary jobs from the previous 12 months are annualized according to the number of months worked in the previous year in that job. Income from the main job of the previous 7 days considered from in cash and in kind sources and is net of job training expenditure. All other jobs are based upon in cash and in kind earnings. Outliers checked by industry and region.

	IN/sec4f.dta		wge4_3 wge5_3 wge6_3 wge7_3 wge8_3 wge9_3 wge10_3	
Aggregateincome.do	Sample.dta	Income.dta	agr_wge	For each income source, participation variables are constructed (prefixed by "p_") as well as share variables (prefixed by "sh1" or "sh2")
	Rentagric.dta		nonagr_wge	Different aggregations of income sources are also constructed such as onfarm (crop and livestock), offfarm (agr_wge nonagr_wge, other, selfemp, transfers), non-farm (non-agrwge and selfemp) nonag (nonagr_wge, other, selfemp, trnasfers) and agricultural (agr_wge, crop and livestock).
	Agbyprod.dta		crop1	A final outlier check is incorporated that drops households that end up with income shares from the major categories (sh2agr_wge, sh2nonagr_wge, sh2crop2, etc) as greater than 300%. 278 observations dropped as a result.
	Cropincome.dta		crop2	
	Livestock.dta		livestock	
	Employment.dta		other	
	Otherincome.dta		selfemp	
	Selfemp.dta		transfers	
	Transfers.dta		totincome1	
			totincome2	

Table 2

Ghana 2013	**9,129 Rural HH Observations**	**Rural, Weighted, Cedi**						**Rural, Weighted, USD**	
Variable		*# Participants*	*Participation Rate*	*Returns to Participation - Participant HHs*	*Returns to Participation- All HHs*	*Share of Total Income- All HHs (Mean of Shares)*	*Share of Total Income- All HHs (Share of Means)*	*Returns to Participation- Participant HHs*	*Returns to Participation- All HHs*
agr_wge	Wage Employment- Agriculture	283	3%	2200	65	1.5%	0.4%	1,100	32
nonagr_wge	Wage Employment- Nonfarm	1,463	18%	4508	823	12.0%	5.6%	2,254	412
crop1	Crop Production	7812	82%	842	689	40.2%	4.7%	421	344
livestock	Livestock Production	4741	46%	128	59	4.0%	0.4%	64	29
selfemp	Non-ag Self Employment	3220	37%	34915	12,767	32.5%	87.6%	17,457	6,384
transfer	Total Transfers	3116	36%	436	159	9.3%	1.1%	218	79
other	Other Income Sources	307	3%	455	15	0.4%	0.1%	227	7.6
totincome1	Total Household Income- crop1	8894	97%	15023	14,577	100%	100%	7,511	7,288

Percent Rural (Weighted)	**44%**
Cedi/USD (2013 period average)	***2.00***

1. Source data: 2013 Living Standards Survey
2. Exchange rate is the official rate of LCU per US dollar, end-2012 (Source: IMF International Financial Statistics)
3. Crop2 own consumption is calculated from the "Food expenditure" module of the household questionnaire.
4. All values reported are annual and net of costs (with the exception of income from transfers and land rent, which are gross receipts).

Table 3

Ghana 2013	9,129 Rural HH Observations	Rural, Weighted, Cedi						Rural, Weighted, USD	
Variable	*Variable definition*	*# Participants*	*Participation Rate*	*Returns to Participation - Participant HHs*	*Returns to Participation- All HHs*	*Share of Total Income- All HHs (Mean of Shares)*	*Share of Total Income- All HHs (Share of Means)*	*Returns to Participation- Participant HHs*	*Returns to Participation- All HHs*
agr_wge	Wage Employment- Agriculture	283	3%	2200	65	1.5%	0.4%	1,100	32
nonagr_wge	Wage Employment- Nonfarm	1,463	18%	4508	823	11.9%	5.7%	2,254	412
crop2	Crop Production	7904	83%	716	593	38.5%	4.1%	358	297
livestock	Livestock Production	4741	46%	128	59	4.4%	0.4%	64	29
selfemp	Non-ag Self Employment	3220	37%	34915	12,767	31.6%	88.2%	17,457	6,384
transfer	Total Transfers	3116	36%	436	159	9.0%	1.1%	218	79
other	Other Income Sources	307	3%	455	15	0.4%	0.1%	227	7.6
totincome2	Total Household Income- crop2	8915	97.3%	14889	14,481	97.3%	100%	7,444	7,241

Percent Rural (Weighted)	**44%**
Cedi/USD (2013 period average)	***2.00***

1. Source data: 2013 Living Standards Survey
2. Exchange rate is the official rate of LCU per US dollar, end-2012 (Source: IMF International Financial Statistics)
3. Crop2 own consumption is calculated from the "Food expenditure" module of the household questionnaire.
4. All values reported are annual and net of costs (with the exception of income from transfers and land rent, which are gross receipts).