Components of Income Aggregate: "Nigeria General Household Survey 2012-2013¹"

Prepared for the Rural Income Generating Activities (RIGA) Project²

of the Agricultural Development Economics Division,

Food and Agriculture Organization

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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 Nigeria General Household Survey – Panel (NGHS-P) is a nationally representative household survey, carried out over twelve months from 2012 to 2013 as part of the Nigerian National Bureau of Statistic's project for collecting longitudinal data on households. The survey is the second wave of a panel for which the first round of data collection took place in 2010-2011. It collected data using five modules (socio-economic; agricultural; community; market; and qualitative), obtaining information at the individual, household, plot, business and community levels.

The sample for the NGHS-P is a subset of the sample drawn for the General Household Survey (NGHS), an annual, nationally representative cross-sectional survey of 22,000 households from 2,220 enumeration areas within each of Nigeria's 37 states. From the NGHS sample, 5,000 households from 500 enumeration areas were selected for the NGHS-P in 2010. Of those, 4,716 households were revisited in the second wave of the NGHS-P. Of the households revisited, completed questionnaires in both parts of the second wave of the NGHS-P were obtained from 4,565 households.

The survey was sampled to be representative at the state level. In order to obtain nationally representative statistics from the NGHS-P data, it is necessary to apply the sampling weights

¹ The information in this document relies substantially upon the UNHS 2005/2006 Report on the Socio-Economic Module, available from: http://catalog.ihsn.org/index.php/catalog/2348.

² 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.

provided in the data. The sampling weights variable in the original and RIGA data is called "WEIGHT".

The various modules of the NGHS-P RIGA data can be linked by the variable HH. The variable "SECTOR" differentiates urban from rural households in the original data. The variable "URBAN" in the RIGA datasets is constructed based on that variable, flagging households residing in urban versus rural areas. There are 4,706 households - 3,209 rural and 1,497 urban in the RIGA NGHS-P dataset.

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. Unless otherwise noted, all variables included in the aggregate income variable are net of costs.

An average rural household size in Nigeria is comprised of 6.4 persons³. All monetary values are reported in Nigerian Naira. In 2013, the official exchange rate⁴ was Naira 157.30 = \$1.00. The income aggregates are calculated at the household level and all aggregates are annualized.

Comments

- Since the NGHS-P data was collected in post-planting season and post-harvest season questionnaires, the annualization of income and expenditures required information from both parts of the survey. When information on a certain activity was reported in both parts, annualization factored in the number of months elapsed since the previous wave of data collection.
- 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 community market prices module. In the case of own consumption from the agricultural module, the quantities are based upon the share of total harvest allocated to household consumption.
- Own consumption from livestock production is calculated from the information provided in the expenditures module. Missing values are imputed using own consumption data from the production module.
- Quantities of crop production were collected in standard metric and local measurement units.
 Conversion factors provided with the raw data allowed non-standard units to be converted into standard units.
- Rental and transfer income are calculated as gross variables.

³ RIGA project calculations.

⁴ Official exchange rate (period average) obtained from the World Bank World Development Indicators database.

- 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 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 classification of this employment.
- The classification of non-farm enterprise activities (self employment income) into industries categories follows the same classification system as the employment section.
- In all sections, the raw data undergoes a transformation (it is annualized, aggregated, taken from person household level, etc) before a check for outliers takes place. Outlier checks were performed by a relevant sorting category (e.g. crop code if dealing with crop income) and by an administrative level (district), provided at least 30 observations per sorting group.
- 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%) are dropped from the final income aggregate. Using these criteria, 84 households are dropped from this survey.
- Participation and income share variables for all income components are 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 final income aggregate.

Table 1

Do file	Input data files	Output data files	Main variables	Notes/Decisions
	ppcommdata2= Post-planting (PP) community questionnaire phhhdata2= PP household questionnaire		constructed	
	ppagdata2= PP agricultural questionnaire phcommdata2= Post-harvest (PH) community questionnaire phhhdata2= PH household questionnaire phagdata2= PH agricultural questionnaire			
Sample2.do	phhhdata2/secta_harvestw2.dta pphhdata2/secta_plantingw2.dta	Sample.dta		Creates household listing of roster. Only households for which data was collected in both visits (post- planting and post-harvest questionnaires) are kept in the RIGA sample. This is done so to ensure the income aggregates are constructed based on households for which all sections were completed, necessary given that different modules of agricultural and non-agricultural income were asked in the separate seasons.
Interper2.do	phhhdata2/secta_harvestw2.dta pphhdata2/secta_plantingw2.dta	Interper.dta	date1 (date of first interview) date2 (date of second interview) period (months between interviews)	Given that households were interviewed 2 times over the course of the year of fieldwork, this do file calculates the number of months between post planting and post harvest interviews.
Prices.do	ppcommdata2/sectc2_plantingw2.dta	price_prod_ric_plantg2 price_prod_ea_plantg2 price_prod_lga_plantg2 price_prod_state_plantg2 price_prod_zone_plantg2 price_prod_sector_plantg2 price_prod_unit_plantg2	price_prod_ric_plantg price_prod_ea_plantg price_prod_lga_plantg price_prod_state_plantg price_prod_zone_plantg price_prod_sector_plantg price_prod_unit_plantg	Created median prices for each crop at different administrative levels (RIC; EA; LGA: State; Zone; Sector; Unit) using data on crop and by-product sales from the post planting and post harvest modules; purchases from the

			expenditures module; and community-level market prices at post-planting and post-harvest periods.
ppagdata2/sect11h_plantingw2.dta	price_prod_ric_harvest2 price_prod_ea_harvest2 price_prod_lga_harvest2 price_prod_state_harvest2 price_prod_zone_harvest2	price_prod_ric_harvest price_prod_ea_harvest price_prod_lga_harvest price_prod_state_harvest price_prod_zone_harvest	Post-planting prices for items reported in non-standard units are dropped out from the prices calculation
	price_prod_sector_harvest2 price_prod_unit_harvest2	price_prod_sector_harvest price_prod_unit_harvest	
phagdata2/secta9a2_harvestw2	price_purch_ric_plantg2 price_purch_ea_plantg2 price_purch_lga_plantg2 price_purch_state_plantg2 price_purch_zone_plantg2 price_purch_sector_plantg2	price_purch_ric_plantg price_purch_ea_plantg price_purch_lga_plantg price_purch_state_plantg price_purch_zone_plantg price_purch_sector_plantg	Post-harvest sale prices are converted to standard units using conversion factors provided with the raw data.
phagdata2/secta8_harvestw2	price_purch_unit_plantg2 price_purch_ric_harvest2 price_purch_ea_harvest2 price_purch_lga_harvest2 price_purch_state_harvest2 price_purch_zone_harvest2 price_purch_sector_harvest2 price_purch_unit_harvest2	price_purch_unit_plantg price_purch_ric_harvest price_purch_ea_harvest price_purch_lga_harvest price_purch_state_harvest price_purch_zone_harvest price_purch_sector_harvest price_purch_unit_harvest	Food conversion factors provided with the raw data are utilized for converting post-harvest consumption quantities into standard units (grams, then kgs) for estimating prices from the post harvest food expenditures module.
phagdata2/secta3_harvestw2	price_comm_ea_plantg2 price_comm_lga_plantg2 price_comm_state_plantg2 price_comm_zone_plantg2 price_comm_sector_plantg2 price_comm_unit_plantg2	price_comm_ea_plantg price_comm_lga_plantg price_comm_state_plantg price_comm_zone_plantg price_comm_sector_plantg price_comm_unit_plantg	
RawData_wave2/w2agnsconversion	price_comm_ric_harvest2 price_comm_ea_harvest2 price_comm_lga_harvest2 price_comm_state_harvest2 price_comm_zone_harvest2 price_comm_sector_harvest2 price_comm_unit_harvest2	price_comm_ric_harvest price_comm_lga_harvest price_comm_state_harvest price_comm_zone_harvest price_comm_sector_harvest price_comm_unit_harvest	
pphhdata2/sect7b_plantingw2.dta			

	phhhdata2/sect10b_harvestw2 ppcommdata2/sectc2_plantingw2 phcommdata2/sectc8_harvestw2			
Foodown.do	pphhdata2\sect7b_plantingw2	foodown2.dta	foodown	Outlier checks by item code on the post-planting and post-harvest consumption values are performed prior to calculating annual own consumption.
		cropwon2.dta	cropown	Since post-planting and post- harvest consumptions are reported for 7-day periods, annualization is achieved by multiplying by 26.
	phhhdata2/sect10b_harvestw2.dta	livstown2.dta	livstown	After applying all post-harvest consumption conversion factors and prices, 558 observations (5.6%)of post harvest own consumption could not be valued. 209 of these observations are instead valued using post-planting prices. The remainder (3.5% of all post harvest own-consumption quantities from the expenditures module) cannot be valued.
		fishown2.dta	fishown	
Agrent.do	ppagdata2/sect11b1_plantingw2	1/6/16	farmrntexp	In cash and in kind expenditure made for plots in post-planting and post-harvest seasons on rental of agricultural land.
	\$ppagdata2/sect11a1_plantingw2.dta			
	phagdata/secta42_harvestw1.dta		agrent	Income from renting out agricultural assets
	ppagdata2/sect11b1_plantingw2.dta		farmrntinc sharecropinc	Income from renting out agricultural land Income from sharecropping out
			Sharecropine	medine from sharecropping out

	1			land
			farmrnt	Gross annual income from renting out agricultural land and assets, from sharecropping out land
Cropincome1.do	ppagdata2/sect11a1_plantingw2	cropexpenses2.dta	inputcost1	Input expenditures considers cost of pesticides, herbicides, animals rented in for traction, and machines rented in. Annualization of costs (for animal rental) assumes 8 hour workday, 30-day month. Daily expense on animal rental expense is multiplied by the number of days rented in over the reference period. When rental expenditure was reported in terms of areas (Naira per acre, for example), the cost is scaled up according to the size of the plot. Inputs acquired by gift (pesticides, herbicides) are treated as income and netted out from the total input expenditure variable.
	ppagdata2/sect11c2_plantingw2			
	ppagdata2/sect11d_plantingw2		fert_cost	Fertilizer expenditure considers the value of purchased fertilizer, transportation costs incurred in purchasing fertilizer, net of the value of fertilizer received for free.
	\$ppagdata2/sect11e_plantingw2.dta		seed_cost	Seed expenditure considers the value of purchased seeds transportation costs incurred in purchasing seeds, net of the value of seeds received for free.
	\$phagdata2/secta5b_harvestw2.dta		ext_cost	Expenditure on extension services in the post-planting and post-harvest seasons.

	ppagdata2/sect1112_plantingw2 phagdata2/secta2_harvestw2.dta		labor_cost cropexp	Expenditure on male, female and child agricultural labour hired in. Annual expenditure on pesticides, herbicides, fertilizers, animal labour, machinery rental, seeds, extension and labour.
Cropincome2.dta	phagdata2/secta3_harvestw2		totharvestval1imp	The total value of crop harvest (and its various allocations) is obtained by computing a set of median prices at a series of administrative levels, based on the value of crop sales and quantities of crop sold.
			cropsales1imp	Value of crop sold in the post planting period.
			sharecropexpimp	
	\$ppagdata2/sect11h_plantingw2.dta		cropsales2	Value of crop sold in the post harvest period.
			transpexp	Transportation expenditure for selling crops.
			giftgiven2	Value of harvest gifted out
			reimbursmt	Value of harvest paid as reimbursement for inputs received.
			processexp2	Value of harvest allocated to by product production
			lost2	Value of harvest lost
			stored2	Value of harvest stored.
	ppagdata2/sect11k_plantingw2.dta		agbyprodinc	Annual crop by product income (mushrooms, palm oil, wine. Etc.)
	phagdata2/secta8_harvestw2.dta			
		cropincome2.dta	cropincome1	The agricultural module does not ask for households to report the value of harvest allocated to own consumption (essential for estimating cropincome1);

			cropincome2	therefore, this is calculated by netting out from the value of total harvest, the value of harvest allocated to non-consumption uses (processing; storage; lost; reimbursements; gifts; sales; sharecropping).
Fish.do	phagdata2/secta9a2_harvestw2.dta	fishinc.dta	fishinc	Annualization of fisheries income based upon the time elapsed between survey visits. Fish income considers income from fish captures and sold, harvested and sold, and processed and sold.
	phagdata2/secta9b2_harvestw2		cost1	Captures expenses on boat rental, fuel expenditure and maintenance of fishnets. Fuel and maintenance costs are annualized based upon the average number of weeks the household spent fishing since the previous interview, and the time elapsed between interviews. Boat rental expenses are reported for the previous year.
	phagdata2/secta9b3_harvestw2	fishexpenses2.dta	cost2	Labour expenditure in cash, in kind; other fishing expenditures
	fishexpenses2.dta fishexpenses1.dta fishinc.dta	fishinc2.dta	fishinc	Net income from fishing activities
Livestock.do	phagdata2\secta7_harvestw2.dta	livestexpenses2	livstexp	Annual (based upon post-planting and post-harvest questionnaire

ppagdata2\sect11j_plantingw2.dta phagdata2\secta6_harvestw2.dta	livstinc2	livstrev	reporting) expenditure on livestock including labour, fodder, salt, vet services, herding labour, pens/stables maintenance; transport of animal feed, commissions on animal sales; compensation for damage by animals; other related livestock costs. Post planting questionnaire expenditures are reported on for a 12 months reference period whereas post-harvest questionnaire expenditures reported with respect to the time passed since the previous interview. In order to obtain annual (12 month) estimates, the post-planting questionnaire figures are downscaled according to 12 months minus the time lapse between the post planting and post harvest questionnaires. Annual value of livestock revenues from sales of live or slaughtered animals, and from livestock received as gift or payment for services rendered. Annual value of livestock expenditure in terms of purchased animals, animals given out as gift, and animals paid for services received.
phagdata2/secta8_harvestw2.dta	byprodinc2	born lost livstbyprod	Livestock by products captures revenues from production of milk, eggs, hides, skins, honey and hunting.

	livestexpenses2 livstinc2 byprodinc2	livestock2.dta	livstine	By product income is reported in the post harvest survey as the earnings from sales since the last interview. Annual revenue calculated based upon on the time period lapsed between post planting and post harvest surveys. Net annual income from livestock activities (includes livstrev, livstexp, livstexp2, livstbyprod, livstownimp)
Otherincome.do	phhhdata2/sect13_harvestw2.dta	otherincome2	otherinc nonfarmrnt	Annual income from financial sources, and from other non-specified regular income sources Annual income from rental of non-farm assets.
Selfemp.do		selfemp2.dta	selfimp1 selfimp2 selfimp3 selfimp4 selfimp5 selfimp6 selfimp7 selfimp8 selfimp9	Net annual income from household non-farm enterprises, reported in the post-harvest and post-planting questionnaires.
Employment.do	phhhdata2/sect3a_harvestw2.dta	employment2.dta	wge1_1 wge1_2 wge1_3 wge2_1 wge2_2 wge2_3	Calculates income from primary and secondary wage jobs for individuals who worked for someone outside the household.

•	1	ī	1	1
			wge3_1 wge3_2 wge3_3	
			wge4_1 wge4_2 wge4_3	
			wge5_1 wge5_2 wge5_3	
			wge6_1 wge6_2 wge6_3	
			wge7_1 wge7_2 wge7_3	
			wge8_1 wge8_2 wge8_3	
			wge9_1 wge9_2 wge9_3	
			wge10_1 wge10_2 wge10_3	
Transfers.do	phhhdata2/sect6_harvestw2	privtransfer2	privtransfer	Private transfers as remittances. Transfers reported in Naira and in foreign currencies (USD; EUR: GBP). Exchange rates used: 150Naira/USD; 233Naira/GBP; 199Naira/EUR.
	phhhdata2/sect14_harvestw2.dta	publictrans2	pubtransfer	Public transfers capture income from social safety net programs from governments, IOs or NGOs during the past 12 months.
	privtransfer2	transfers2	transfer	Net annual public and private transfer income.
	publictrans2		pubtrans	
			privtrans	
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), nonfarm (non-agrwge and selfemp) nonag (nonagr_wge, other, selfemp, transfers) and agricultural

		(agr_wge, crop and livestock).
cropincome2.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%. 84 observations dropped as a result.
employment2.dta	crop2	
livestock2.dta	livestock	
otherincome2.dta	other	
selfemp2.dta	selfemp	
transfers2.dta	transfers	
fishinc2.dta	totincome1	
	totincome2	

Table 2

Nigeria 2013	3,209 Rural HH Observations	Rural, Weighted, Naira					Rural, We		
Variable		# Participants	Participati on Rate	Returns to Participation - Participant HHs	Returns to Participati on- All HHs	Share of Total Income- All HHs (Mean of Shares)	Share of Total Income- All HHs (Share of Means)	Returns to Participati on- Participant HHs	Returns to Participa tion- All HHs
agr wge	Wage Employment- Agriculture	40	1.13%	311,337	3,515	0.62%	0.82%	1,979	22
nonagr_wge	Wage Employment- Nonfarm	446	14.23%	731,050	104,061	11.56%	24.23%	4,647	662
crop1	Crop Production	2,490	74.53%	292,214	217,792	71.22%	50.71%	1,858	1,385
livestock	Livestock Production	2,538	75.59%	34,194	25,848	4.66%	6.02%	217	164
selfemp	Non-ag Self Employment	1,851	59.11%	121,179	71,630	9.38%	16.68%	770	455
transfer	Total Transfers	138	4.50%	9,069	408	0.34%	0.09%	58	3
other	Other Income Sources	462	14.81%	42,125	6,240	2.22%	1.45%	268	40
totincome1	Total Household Income- crop1	3,099	95.35%	450,431	429,495	100.00%	100.00%	2,864	2,730

Percent Rural	
(Weighted)	57.90%
Naira/USD	
2013	157.30

- 1. Source data: Nigeria General Household Survey, Wave 2 (2013)
- 2. Exchange rate used comes from the World Bank World Development Indicators (official exchange rate for the survey year)
- 3. The variable "crop1" is distinguished from "crop2" in the way home consumption of own production of crops (owncons) is calculated. In crop1, owncons is based upon production quantities reported in the crop section of the questionnaire. For crop2, owncons is calculated from "Consumption of Own Produce" in the expenditures section of the household questionnaire. Total household income "totincome1" and "totincome2" are therefore calculated with the corresponding crop income variable.
- 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

Nigeria 2013	3,209 Rural HH Observations	Rural, Weighted, Naira						Rural, Weighted, USD	
Variable		# Participants	Participati on Rate	Returns to Participation - Participant HHs	Returns to Participati on- All HHs	Share of Total Income- All HHs (Mean of Shares)	Share of Total Income- All HHs (Share of Means)	Returns to Participati on- Participant HHs	Returns to Participa tion- All HHs
agr wge	Wage Employment- Agriculture	40	1.13%	311,337	3,515	0.61%	0.88%	1,979	22
nonagr_wge	Wage Employment- Nonfarm	446	14.23%	731,050	104,061	10.81%	26.11%	4,647	662
crop2	Crop Production	2,671	80.37%	232,580	186,918	43.95%	46.89%	1,479	1,188
livestock	Livestock Production	2,538	75.59%	34,194	25,848	6.85%	6.48%	217	164
selfemp	Non-ag Self Employment	1,851	59.11%	121,179	71,630	31.84%	17.97%	770	455
transfer	Total Transfers	138	4.50%	9,069	408	0.34%	0.10%	58	3
other	Other Income Sources	462	14.81%	42,125	6,240	1.93%	1.57%	268	40
totincome2	Total Household Income- crop2	3,121	96.31%	413,882	398,621	96.31%	100.00%	2,631	2,534

Percent Rural (Weighted)	57.90%
Naira/USD 2013	157.30

- 1. Source data: Nigeria General Household Survey, Wave 2 (2013)
- 2. Exchange rate used comes from the World Bank World Development Indicators (official exchange rate for the survey year)
- 3. The variable "crop1" is distinguished from "crop2" in the way home consumption of own production of crops (owncons) is calculated. In crop1, owncons is based upon production quantities reported in the crop section of the questionnaire. For crop2, owncons is calculated from "Consumption of Own Produce" in the expenditures section of the household questionnaire. Total household income "totincome1" and "totincome2" are therefore calculated with the corresponding crop income variable.
- 4. All values reported are annual and net of costs (with the exception of income from transfers and land rent, which are gross receipts).