

# Components of the Income Aggregate: Bangladesh “Household Income and Expenditure Survey 2005”

*Prepared for the Rural Income Generating Activities (RIGA) Project<sup>1</sup>*

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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.*

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The 2005 Bangladesh Household Income and Expenditure Survey (HIES) is an income and expenditure household survey carried out nationwide. This survey builds upon a previous and similarly structured HIES undertaken in 2000.

The sample for this survey was drawn using a two-stage stratified design based on the 2001 Population and Housing census. The sample comprises 504 primary sampling units (PSU) selected from 16 strata (6 rural; 6 urban; and 4 statistical metropolitan areas (SMA)). These selected PSUs were further sub-sampled and 20 households were selected from each PSU<sup>2</sup>. The full sample size is thus 10,800 households (6,400 rural and 3,680 urban).

In the original datasets, “rmo” is the variable that identifies whether households are urban, rural, or SMA. The variable “urban” is created in sample.do and is equal to one for urban and SMA households. (The variable “urban” is consistent across RIGA datasets.) Likewise, the unique household identifier in the raw data—hhcode—is renamed to hh in the do files to promote consistency across modules and other RIGA datasets.

Since the sample is not self-weighting, household weights were calculated based upon the probability of selection. All money amounts are in the local currency, Taka. In 2005, the official

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<sup>1</sup> 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>.

<sup>2</sup> The PSU identifier was not made available to the RIGA team with the release of the raw data.

exchange rate was 64.32 Tk = 1.0 USD. **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 (Income.dta) are in **bold**. **Unless otherwise noted, all variables included in the aggregate income variable are net of costs**

## Comments

- 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.
- In the Crop Production section (Cropincome.do, Rentagric.do); the reference period is the previous 12 months. Two total crop income variables are created: Cropincome1 and Cropincome2. 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 module of the survey.
- For the Livestock, Other Income, Wage income, and Transfers sections, the reference period is also the previous 12 months
- Other Income (Otherincome.do) includes income from non-labor sources, miscellaneous sources, the rental of household land, and interest received from banks and other sources.
- For Transfer income net pensions are used. Other components are gross because there was no information on outgoing transfers.
- The classification of wage employment activities into industries following the International Standard Industrial Classification (ISIC), Rev. 3.1 by which the sectors of employment can be divided into ten categories: (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. These industries are disaggregated into skilled/unskilled/unknown skill level employment following the United Nations International Standard Classification of Occupations (ISCO) 88 codes.
- Earnings from wage employment are net and include all in-cash and in-kind benefits received from the employer.
- The Self Employment (Selfemp.do) section accounts for income from non-farm enterprises owned by the household. The reference period is the previous 12 months. Income from non-farm enterprises is disaggregated by industry (following the ISIC coding described above) in order to convey information regarding the diversity of household activities.
- 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.
- Although we would normally compute the income aggregate using information based on present household members (defined as having lived in the dwelling a minimum 6 of the previous 12 months), this information is not available in this survey, therefore the full sample is kept for the income aggregate construction.
- Participation and income share variables are also included in the final income aggregate.

- 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 this criteria 19 households are dropped for this survey.

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. This table can also be viewed, with the individual components disaggregated, in Microsoft Excel from the file *Income.xls*.

**Table 1.**

| Do file        | Input data files                   | Output data files       | Main variables constructed  | Notes/Decisions  |
|----------------|------------------------------------|-------------------------|---|--|
| Sample.do      | s1a                                | Sample.dta              |   | <ul style="list-style-type: none"> <li>Create household listing of roster.</li> </ul>  |
| Prices.do      | s9a2<br>s9b<br>s7bc2<br>Sample     | Prices.dta              | price_prod_tha<br>price_prod_dis<br>price_prod_div<br>price_prod_reg<br>price_prod_urban<br>price_prod_item<br>price_purch_tha<br>price_purch_dis<br>price_purch_div<br>price_purch_reg<br>price_purch_urban<br>price_purch_item<br>price_gift_tha<br>price_gift_dis<br>price_gift_div<br>price_gift_reg<br>price_gift_urban<br>price_gift_item | <ul style="list-style-type: none"> <li>Created median prices for each crop at different administrative levels (village, district, division, region, urban) using the reported expenditures in the consumption module and the reported sales from the agricultural module.</li> </ul> |
| Food.do        | s9a2<br>s9b<br>s7c2<br>Sample      | Food.dta<br>Foodown.dta | foodpurch<br>foodgift<br>foodown<br>foodowncrop<br>foodownlivestock   | <ul style="list-style-type: none"> <li>Performed two outlier checks: one by crop code, and one by region.</li> </ul>   |
| Otherincome.do | s8b<br>Sample                      | Otherincome.dta         | otherinc<br>nonfarmrnt  | <ul style="list-style-type: none"> <li>Includes profit as shareholder, interest received from bank or other source, and other cash and in-kind receipts not reported elsewhere.</li> </ul>   |
| Rentagric.do   | Sample<br>s7a<br>s8b<br>s7d<br>s7e | Rentagric.dta           | farmrntinc<br>farmrentexp   | <ul style="list-style-type: none"> <li>Outlier checks by plotsize and region.</li> </ul>   |

|               |                                       |                |   |  |
|---------------|---------------------------------------|----------------|---|--|
| Cropincome.do | s7b<br>s9a2<br>s9b<br>Sample          | Cropincome.dta | cropincome1<br>cropincome2  | <ul style="list-style-type: none"> <li>• Outlier by item code and region.</li> </ul>   |
| Livestock.do  | s7d<br>s7c1<br>s7c2<br>s7c3<br>Sample | Livestock.dta  | livstinc1<br>livstinc2  | <ul style="list-style-type: none"> <li>• Livestock includes fish production/consumption</li> <li>• Quantities valued according to median unit prices estimated as in prices.do</li> <li>• Outliers checked by item code (where relevant) and by region.</li> <li>• Reported “Total value” question in agriculture module does not correspond to the figures arrived at by summing individual items/ observations. For consistency and accuracy, the latter are preferred and used for all calculations.</li> <li>• Fish production expenses are not included b/c it is 443 % higher than the mean of other livestock expenditures. It is assumed that this is due to the irregular purchase of costly durables, such as boats or fuel</li> </ul> |
| Selfemp.do    | s61<br>s62<br>Sample                  | Selfemp.dta    | self1<br>self2<br>self3<br>self4<br>self5<br>self6<br>self7<br>self8<br>self9<br>self10 | <ul style="list-style-type: none"> <li>• The survey only includes questions on gross and net revenues; 6 questions on expenditures. Therefore, the net revenue variable is exploited after first checking consistency (i.e., by asking: do summed expenditures minus gross revenue equal net revenue?). In all but 3 cases the calculations match. 1 hh did not match; 2 are missing expenditure info. The former is replaced with missing values; the latter are replaced with the calculated figure.</li> <li>• Outliers checked by industry and by region.</li> </ul>   |
| Employment.do | s5a                                   | Employment.dta | wge1_3  |  |

|                    |   |               |   |   |
|--------------------|---|---------------|---|---|
|                    | s5b<br>Sample   |               | wge2_3<br>wge3_3<br>wge4_3<br>wge5_3<br>wge6_3<br>wge7_3<br>wge8_3<br>wge9_3<br>wge10_3                           | <ul style="list-style-type: none"> <li>• Outliers checked by industry and region.</li> <li>• Chose to use reported values for daily in-kind values (not enough observations/corresponding items in prices.do to use imputed medians)</li> </ul>   |
| Transfers.do       | s8b<br>s8c1<br>s8c2<br>Sample   | Transfers.dta | transfergross<br>pubtransfer<br>socialtransfer<br>pensions  | <ul style="list-style-type: none"> <li>• Outliers checked by region</li> </ul>  |
| Aggregateincome.do | Sample.dta<br>Rentagric.dta<br>Agbyprod.dta<br>Cropincome.dta<br>Livestock.dta<br>Employment.dta<br>Otherincome.dta<br>Selfemp.dta<br>Transfers.dta | Income.dta    | agr_wge<br>nonagr_wge<br>crop1<br>crop2<br>livestock<br>other<br>selfemp<br>transfers<br>totincome1<br>totincome2 | <ul style="list-style-type: none"> <li>• For each income source, participation variables are constructed (prefixed by "p_") as well as share variables (prefixed by "sh1" or "sh2")</li> <li>• Different aggregations of income sources are also constructed such as onfarm (crop and livestock), offarm (agr_wge nonagr_wge, other, selfemp, transfers), non-farm (non-agrwge and selfemp) nonag (nonagr_wge, other, selfemp, trnsfers) and agricultural (agr_wge, crop and livestock).</li> <li>• 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%. 19 observations are dropped as a result.</li> </ul> |
|                    |   |               |   |   |

**Table 2.**

| <i>Bangladesh 2005</i>   |                              | 6,400 Rural HH Observations | Rural, Weighted, Taka     |  |  |  |  | Rural, Weighted, USD                             |  |  |
|--|------------------------------|-----------------------------|---------------------------|--|--|--|--|--|--|--|
| <i>Variable</i>  |                              | <i># Participants</i>       | <i>Participation Rate</i> | <i>Returns to Participation- Participant HHs</i> | <i>Returns to Participation- All HHs</i> | <i>Share of Total Income- All HHs (Mean of Shares)</i> | <i>Share of Total Income- All HHs (Share of Means)</i> | <i>Returns to Participation- Participant HHs</i> | <i>Returns to Participation- All HHs</i> |  |
| <b>agr_wge</b>   | Wage Employment- Agriculture | 1,819                       | 29%                       | 19,203   | 5,506                                    | 16.74%   | 11%  | 299  | 86                                       |  |
| <b>nonagr_wge</b>  | Wage Employment- Nonfarm     | 2,237                       | 35%                       | 38,937   | 13,574                                   | 22.76%   | 26%  | 605  | 211                                      |  |
| <b>crop1</b>   | Crop Production              | 4,154                       | 65%                       | 10,441   | 6,799                                    | 16.35%   | 13%  | 162  | 106                                      |  |
| <b>livestock</b>   | Livestock Production         | 4,646                       | 73%                       | 4,839  | 3,538                                    | 8.75%  | 7%   | 75   | 55                                       |  |
| <b>selfemp</b>   | Non-ag Self Employment       | 1,403                       | 22%                       | 46,960   | 10,395                                   | 13.51%   | 20%  | 730  | 162                                      |  |
| <b>transfer</b>  | Total Transfers              | 2,687                       | 42%                       | 13,269   | 5,537                                    | 9.10%  | 11%  | 206  | 86                                       |  |
| <b>other</b>   | Other Income Sources         | 3,760                       | 59%                       | 10,619   | 6,242                                    | 12.78%   | 12%  | 165  | 97                                       |  |
| <b>totincome1</b>  | Total Household Income-crop1 | 6,382                       | 100%                      | 51,682   | 51,592                                   | 100.00%  | 100%   | 804  | 802                                      |  |
| <b>Percent Rural (Weighted)</b>  | <b>74.64%</b>                |                             |                           |  |  |  |  |  |  |  |
| <b>Taka/USD 2005</b>   | <b>57.76</b>                 |                             |                           |  |  |  |  |  |  |  |
| Notes:   |                              |                             |                           |  |  |  |  |  |  |  |
| 1. Source data: 2005 Household Income-Expenditure Survey (HIES)  |                              |                             |                           |  |  |  |  |  |  |  |
| 2. Exchange rate used is the period average official exchange rate from the World Development Indicators.  |                              |                             |                           |  |  |  |  |  |  |  |
| 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 calculated from the question in the agricultural production section of the household questionnaire that asks about household consumption of agricultural production. For crop2, owncons is calculated from the Food Expenditure section of the household questionnaire. Total household income "totincome1" and "totincome2" are therefore calculated with the corresponding crop |                              |                             |                           |  |  |  |  |  |  |  |
| 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.**

| <i>Bangladesh 2005</i>  |                              | 6,400 Rural HH Observations | Rural, Weighted, Taka     |  |  |  |  | Rural, Wiegthed, USD                             |  |
|---|------------------------------|-----------------------------|---------------------------|--|--|--|--|--|--|
| <i>Variable</i>   |                              | <i># Participants</i>       | <i>Participation Rate</i> | <i>Returns to Participation- Participant HHs</i> | <i>Returns to Participation- All HHs</i> | <i>Share of Total Income- All HHs (Mean of Shares)</i> | <i>Share of Total Income- All HHs (Share of Means)</i> | <i>Returns to Participation- Participant HHs</i> | <i>Returns to Participation- All HHs</i> |
| <b>agr_wge</b>  | Wage Employment- Agriculture | 1,819                       | 29%                       | 19,203   | 5,506                                    | 16%  | 11%  | 299  | 86                                       |
| <b>nonagr_wge</b>   | Wage Employment- Nonfarm     | 2,237                       | 35%                       | 38,937   | 13,574                                   | 22%  | 26%  | 605  | 211                                      |
| <b>crop2</b>  | Crop Production              | 4,154                       | 85%                       | 9,461  | 6,799                                    | 18%  | 13%  | 147  | 106                                      |
| <b>livestock</b>  | Livestock Production         | 4,646                       | 73%                       | 4,839  | 3,538                                    | 9%   | 7%   | 75   | 55                                       |
| <b>selfemp</b>  | Non-ag Self Employment       | 1,403                       | 22%                       | 46,960   | 10,395                                   | 13%  | 20%  | 730  | 162                                      |
| <b>transfer</b>   | Total Transfers              | 2,687                       | 42%                       | 13,269   | 5,537                                    | 9%   | 11%  | 206  | 86                                       |
| <b>other</b>  | Other Income Sources         | 3,760                       | 59%                       | 10,619   | 6,242                                    | 12%  | 12%  | 165  | 97                                       |
| <b>totincome2</b>   | Total Household Income-crop2 | 6,382                       | 100%                      | 52,887   | 51,592                                   | 100%   | 100%   | 822  | 802                                      |
| <i>Percent Rural (Weighted)</i>   |                              |                             |                           |  |  |  |  |  |  |
| <i>Taka/USD 2005</i>  |                              |                             |                           |  |  |  |  |  |  |
|   |                              | <b>74.64%</b>               |                           |  |  |  |  |  |  |
|   |                              | <b>57.76</b>                |                           |  |  |  |  |  |  |
| Notes:  |                              |                             |                           |  |  |  |  |  |  |
| 1. Source data: 2005 Household Income-Expenditure Survey (HIES)   |                              |                             |                           |  |  |  |  |  |  |
| 2. Exchange rate used is the period average official exchange rate from the World Development Indicators.   |                              |                             |                           |  |  |  |  |  |  |
| 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 calculated from the question in the agricultural production section of the household questionnaire that asks about household consumption of agricultural production. For crop2, owncons is calculated from the Food Expenditure section of the household questionnaire. Total household income "totincome1" and "totincome2" are therefore calculated with the |                              |                             |                           |  |  |  |  |  |  |
| 4. All values reported are annual and net of costs (with the exception of income from transfers and land rent, which are gross receipts).   |                              |                             |                           |  |  |  |  |  |  |