Measuring Inequality and Poverty in Bangladesh
An Assessment of the Survey Data

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Abstract

The paper analyzes the usefulness of the Bangladesh Household Income and Expenditure Survey data in measuring inequality and poverty trends by comparing the four such surveys between 1991/92 and 2005. It concludes that the survey data provide reasonable measurements of income inequality that shed useful light on the sources of increasing inequality that has characterized the process of growth since the beginning of the 1990s. The surveys, however, do not provide reliable estimates of personal income (or consumption) and their changes over time. Since poverty measurement requires estimates of both income/consumption and their distribution, the survey data do not constitute an adequate basis for reliable measurement of trends in poverty.

I. INTRODUCTION

While multidimensional indices of poverty have featured in development literature for quite some time, the unidimensional indicators, measured with reference to a minimum acceptable threshold of income or consumption, are still the main indicators in use. These poverty indices measure the number and other characteristics of those below the acceptable minimum income/consumption threshold.

Once the income/consumption threshold (the poverty threshold or the poverty line) is decided, these poverty indices are completely determined by two things: (a) the average level of income/consumption; and (b) the distribution of income/consumption (henceforth simply called 'income' for brevity). These two pieces of information are usually obtained from household surveys. Indeed such surveys are indispensable sources of information on income distribution. Average income can also be obtained from other sources, such as expenditure accounts of GDP, if these accounts are in necessary detail.[2] But in most cases they too are at least partly derived from information obtained from household surveys.

Well-designed household surveys would thus provide measurements of both the variables that are indispensable for poverty estimates: the level of income and the distribution of income. The latter, for which the household survey is usually the only source of data, is of importance for itself. Knowledge of the degree of inequality in the distribution of income, especially the disaggregation of overall inequality into its various components for the estimation of which a household survey provides necessary information, is indispensable for the making of economic and social policy.

Since the most important purpose of estimating poverty is to gauge changes in its incidence over time, one has to find a way to keep unchanged the real living standard represented by the poverty threshold. This requires an income deflator to adjust the

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[2] For income poverty, the threshold needs to be defined in terms of per capita personal income, and for consumption poverty it needs to be defined in terms of per capita private consumption. One therefore needs sufficiently detailed national expenditure accounts. As discussed later, expenditure accounts of Bangladesh GDP published by the BBS do not provide estimates of personal income; nor do they divide up private consumption into rural and urban consumption.

benchmark poverty threshold for price changes in subsequent years. If household surveys record the details of unit prices of components of income then such deflators can also be constructed from the survey data. In most cases, however, one has to do with deflators estimated from independent data although weights of different components of income or consumption in such deflators are periodically adjusted from information obtained from household surveys.

Beginning with the fiscal year 1991/92, the Bangladesh Bureau of Statistics (BBS) has implemented four household surveys using broadly comparable methodology, the others being for the fiscal year 1995/96 and calendar years 2000 and 2005.[3] These surveys should have provided a firm statistical basis for the estimation of inequality and poverty indices over nearly the decade and a half covered by them. This was a period of accelerating overall growth of the economy. It is important to analyze the extent to which the steadily accelerating growth in per capita GDP benefited the poor and the extent to which it made the distribution of income more or less equal. It would be particularly interesting to identify the sources of change in the distribution of income that were unleashed by the particular pattern of growth that the country opted for.

Indeed the four HIES have been widely used to make estimates of inequality and poverty. Instead of the expected convergence of the findings of different researchers using the same sources of data, the results have often differed widely especially in the measurement of the change in poverty. It is not hard to see why this can be the case. Each of the components of data used in the measurement of poverty – the level of income/consumption; the degree of inequality in distribution; and the deflator to update the poverty threshold – can be estimated differently by different analysts. For example, the indicator of living standard can either be per capita consumption or per capita income. Furthermore, the definition of income/consumption employed by different analysts can differ and this can result in difference in both their levels and distributions. The deflator can be based on the price information in the HIES or on independently estimated consumer price indices.

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[3] The first two were called Household Expenditure Surveys and the last two Household Income and Expenditure Surveys. We shall refer to them as HIES.

The purpose of this paper is to analyze the four surveys to determine how useful are the HIES data in making estimates of the levels and distributions of the indicators of living standard that are employed to measure poverty and inequality. Section II is concerned with the estimates of the levels of the indicators of living standard. Section III considers the estimates of inequality and its sources. Section IV focuses on the implications of the use of the estimates of the levels and the distributions of the indicators of living standard in making poverty estimates.

II. MEASURING INCOME AND CONSUMPTION

Should poverty be measured with reference to income or consumption? One can make a case for and against each of them. The usual argument for using consumption in preference over income is that income is subject to many transitional elements while consumption is a better indicator of "permanent income". The argument in favor of using income in preference to consumption is that consumption of the poor, especially in a developing country, is an unsatisfactory indicator of sustainable standard of living because the poor are often forced to finance current consumption by borrowing or liquidating assets. In this situation current income is a better indicator of sustainable living standard than is current consumption. The volatility of income matters far more for the poor than for the rich because, compared to the rich, the poor are far less able to resort to borrowing and, when they can borrow, their cost of doing so is substantially higher than the cost for the rich to borrow. A wealthy person can withstand a temporary loss of income far better than can a poor person.

Whichever of the two indicators is chosen, there will be errors in identifying the poor. For example, assuming that measurements are accurate, a number of rich people with temporary loss of income would be classified as poor if income is chosen while those of the poor who have managed to finance consumption by liquidating assets that are crucial for their long-term survival, would be classified as non-poor if consumption is chosen. It thus appears to the present writer that the use of income would enhance the chance of overcounting the poor by including some non-poor among the poor, while the use of consumption would increase the chance of undercounting the poor by failing to

count some of the poor as poor. The indices of poverty would be subject to these errors in a world of perfect measurement of the levels of the indicators chosen. From the standpoint of public policy the first type of error would result in some leakage of resources meant for the poor to benefit the non-poor while the second type of error would result in some of the poor to fall through the safety net. A priori, it is hard to make a clear case for preferring one indicator to the other although it seems to us that the issue of the sustainability of the consumption of those whose current consumption is above the poverty threshold should be a matter of greater concern than the transient nature of the low income of those usually-nonpoor who have current income below the poverty threshold. In other words, from the policy standpoint, it is preferable to tolerate some leakage of resources to the non-poor than to let some of the poor to fall through the safety net. Be that as it may, we would take the view that one should use the indicator that is better measured and, generally, one should use both the indicators if their measurements are equally good or equally bad.

Which of the indicators is easier to measure more accurately and is better measured in a survey like the HIES? Once again, there does not appear to be an a priori reason why it should be easier to estimate the one than the other. The most difficult components to enumerate are the directly consumed items of income that are produced by the households themselves and they are common to both income and consumption estimates. How well these indicators are measured is usually an empirical question to be resolved by going over the actual estimates. This is what we shall try to establish.

The BBS defines personal or household income and private consumption in ways that do not entirely conform to standard definitions. For example, the BBS includes in its definition of income several kinds of capital receipts such as: revenue from sale of assets and *stock* of livestock (other than the *growth* of livestock which is included in the value of farm output); withdrawal from working capital, saving deposits and provident funds; receipt of loan repayment from those in debt to the household concerned; and borrowing.[4]

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[4] See Khan and Sen 2001 for the details.

Table 1

Comparative Indicators of Income and Consumption:
HIES and National Accounts

	1991/92	1995/96	2000	2005

Estimates Based on HES/HIES Data

Per Capita Personal Income: Current Taka/Year				
BBS: Rural	6972	8361	11136	14952
Urban	10857	18051	23112	26604
National	7494	9960	13536	17820
Ours: Rural	6744	7583	10464	13720
Urban	10566	14846	20717	22721
National	7470	8963	12720	15945
Per Capita Personal Consumption: Current Taka/Year				
BBS: Rural	6060	7831	8969	12675
Urban	9614	16039	16667	21140
National	6533	9185	10510	14756
Ours: Rural	6057	7832	9158	11827
Urban	9810	14811	15944	16704
National	6770	9158	10651	13033
Per Capita Personal Income: 1991/92 Constant Price				
BBS: Rural	6972	6743	7138	7551
Urban	10857	14881	14911	14032
Ours: Rural	6744	6115	6708	6929
Urban	10566	12239	13366	11984
Per Capita Personal Consumption: 1991/92 Constant Price				
BBS: Rural	6060	6315	5749	6402
Urban	9614	13223	10753	11150
Ours: Rural	6057	6316	5871	5973
Urban	9810	12210	10286	8810

Memo Items: BBS CPI Deflators (1991/92=1.000)				
Rural	*1.000*	*1.240*	*1.560*	*1.980*
Urban	*1.000*	*1.213*	*1.550*	*1.896*
Urban-Rural Ratio (Nominal)				
Income: BBS	*1.56*	*2.16*	*2.08*	*1.78*
Ours	*1.57*	*1.96*	*1.98*	*1.65*
Consumption: BBS	*1.59*	*2.05*	*1.86*	*1.67*
Ours	*1.62*	*1.89*	*1.74*	*1.41*

Estimates Based on GDP Accounts (BBS)

Per Capita GDP: Current Taka/Year	10579	13768	19017	28515
Per Capita Private Consumption: Current Taka/Year	8642	11136	14742	21215
1995/96-Based GDP Deflator	0.8588	1.0000	1.1661	1.4245

Using 1995/96-Based GDP Deflator:				
Index of Per Capita Real GDP	100	112	132	163
Index of Per Capita Real Consumption	100	111	126	148

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6

(Continuation of Table 1)

Comparison between Estimates from GDP Accounts and from HES/HIES

At Current Prices:

HIES Personal Income: BBS/Per Capita GDP	70.8	72.3	70.9	62.5
HIES Personal Income: Ours/Per Capita GDP	71.0	66.7	66.9	55.9
HIES Personal Consumption: BBS/Private Consumption in GDP Accounts	75.6	82.4	71.3	69.6
HIES Personal Consumption: Ours/Private Consumption in GDP Accounts	78.8	84.1	72.3	61.4
HIES Personal Consumption: BBS/GDP: National Accounts	61.8	66.7	55.3	51.7
HIES Personal Consumption: Ours/GDP: National Accounts	64.0	66.5	56.0	51.7

Note: BBS average of national per capita personal income and consumption from HIES data are the actual values shown by the surveys. Ours are based on weights of rural and urban population that refer to actual population in these locations according to the latest available population data (BBS overestimates rural population share especially in earlier years). This makes our estimates of national personal income/consumption higher than what they would be if BBS population shares were used. GDP deflator is estimated by comparing GDP at current prices and GDP at constant 1995/96 prices shown in various issues of *Economic Survey*. Estimates of HIES-based income and consumption at constant 1991/92 prices are obtained by using a deflator that is constructed by using the percentage changes in rural and urban CPI published by the BBS. These show a much faster rate of increase than in the GDP deflator. Many compromises were made in making these calculations, for example, for 2000 and 2005 the values of GDP and price indices in adjacent fiscal years were averaged to obtain calendar-year estimates; and the fact that the base years of CPIs differed was ignored. The results should thus be considered as approximations which hopefully serve the purpose of the arguments made in the text.

It is, however, possible to redefine income by excluding all these items if one works with the unit record data, as we did for all the four surveys. Similarly we redefined consumption to exclude certain non-consumption components of expenditure and add back certain components of consumption excluded from the BBS definition. Table 1 shows the estimates of income and consumption based on the HIES data both according to the BBS definition and our definition.[5] In addition the Table shows per capita GDP and per capita private consumption *from the GDP accounts* both at current and constant

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[5] It should be noted that our redefinition of income and consumption was based on the examination of components of the questionnaire for the 1991/92 Survey for which we had access to the necessary details. We applied these revised definitions to all the subsequent surveys to ensure comparability. As is obvious from the comparison of the BBS estimates and our estimates, the proportionate difference between the two varies a great deal from one year to another. We were not able to explain this.

prices (consumption at constant prices is obtained by using the GDP deflator because separate deflator for consumption is not available). The HIES estimates of per capita personal income and per capita personal consumption are also shown at constant 1991/92 prices, the conversion having been made by using the percentage change in the official CPIs for rural and urban areas.[6]

The data in Table 1 bring out a number of serious inconsistencies in the measurement of the variables. First, consider the BBS estimates and the estimates according to our redefinition of variables, both based on the HIES data. Difference between the two is to be expected because our definitions include components of income and expenditure that are different from the components included in the definitions used by the BBS. Furthermore we classify as rural households those that the HIES identifies as having strictly rural location (location 1) whereas the BBS definition of rural, at times at least (as in the 2005 Survey), includes households that have some categories of semi-rural/semi-urban location. It is nevertheless puzzling that our estimates are not only different from those of the BBS, the difference between the two sets of estimates often behaves in ways that are not intuitively obvious. Thus, for example, the difference varies rather widely between years. This difference is greater for income than for consumption which probably has the plausible explanation that the BBS definition of income on balance includes more of inadmissible items than does the BBS definition of consumption. While our income estimates are always lower than the BBS estimates, it is not so for consumption in two cases, rural 1991/92 and urban 2000. Finally, while our estimates are at least 90 per cent of the corresponding BBS estimates in all other cases, in the case of urban income and consumption for 2005 they are more drastically lower. As explained above, our estimates stick to the same definition throughout and, from an examination of available details it seems that the BBS estimates do the same. The explanation of these phenomena must therefore lie in one or more of the following: a change from one year to another in the magnitude of the components that we exclude; changes in the method that the BBS has followed in applying the definitions of different

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[6] Note that the comparison of the constant price estimates of the variables measured from the HIES and the constant price estimates of the variables from the GDP accounts should be avoided because of the use of deflators that are not the same.

components; changes in the composition of locations for urban and rural areas in the BBS definition; and some other kinds of error in one or both sets of estimates.

There are also question marks about the violent changes in urban/rural inequality over relatively short periods of time. It seems likely that this inequality increased sharply in the early 1990s. But it is not entirely clear that it increased by as much as is indicated by the change in the ratio of per capita urban income to per capita rural income, especially according to the BBS definition. Even more questionable is the sharp fall in urban/rural inequality between 2000 and 2005. Little convincing evidence is available to support a change of this proportion. Almost certainly this is due to an underestimation of urban income and consumption in 2005, an issue to which this paper returns below.

A comparison between the HIES estimates of personal income and consumption on the one hand and the relevant components of the GDP accounts on the other reveals even more serious problems. In the available GDP accounts estimates of *personal* income are not available and there is no necessary reason why movements in personal income and GDP would always be synchronized. In an economy which keeps growing steadily, as that of Bangladesh during the period under consideration, the elasticity of personal income with respect to GDP would in all likelihood be less than one, signifying that over time the sum of the shares in GDP accruing to claimants other than the households - the government, business and the rest of the world – would rise. It is however highly implausible that personal income as a proportion of GDP would undergo wild fluctuation, as is the case between 2000 and 2005 for both the BBS and our estimates.

The GDP accounts do have estimates of private consumption though not separately for rural and urban areas. We have therefore estimated the weighted average of rural and urban private consumption derived from the HIES data for comparison with the private consumption in the GDP accounts. As Table 1 shows, not only are the HIES estimates – according to both the BBS and our definitions – way lower than the GDP estimates, the ratio of the two fluctuates erratically from one year to another. The inconsistency between the GDP accounts and survey estimates of consumption is not a phenomenon peculiar to Bangladesh. This has been found to be the case in other countries, notably India where there has been a lot of research on the relative reliability of the data from the two sources in the context of poverty trends estimated with reference to

the consumption threshold.[7] The findings for India seem to suggest that consumption estimates in the GDP accounts are not necessarily more reliable than those derived from the household surveys. The basic method used in the GDP accounts relates to commodity balance in which individual goods and services are allocated to different kinds of intermediate and final use on the basis of information that is often derived from past surveys, frequently ones that need updating. While we do not know the exact method used in the preparation of the expenditure accounts of the GDP in Bangladesh, it seems that it too uses some variant of the commodity balance method.[8] There is no reason to believe that they themselves are particularly reliable. This prompted us to compare private consumption estimates from the HIES with GDP itself in the hope that the latter, being derived from the GDP production account – the basic and most reliable of the national accounts relatively speaking – should warrant greater confidence. The ratio of private consumption (both according to the BBS and our definition) to GDP from national accounts fluctuates erratically between any two consecutive surveys in a way that hardly inspires confidence.

Finally, consider the rate of change in real personal income and consumption by converting the HIES estimates into constant prices. The obvious issue is the choice of the appropriate deflator. The deflators used in Table 1 are based on the rates of change in the rural and urban CPIs estimated by the BBS. Since much of personal income – perhaps all of it for the poor – and all the personal consumption are spent on consumer goods and services, the CPI seems to be the appropriate deflator to use.[9] Some of the outcomes

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[7] See Deaton and Kozel 2004 for a summary of the debate in India including references to the work of other participants in the debate.

[8] We know that the "primary" GDP estimates relate to the production account, the aggregate of values added in different production activities. Published methodology of GDP accounts (for example, BBS 2001) does not provide the details of estimating private consumption and other components of the expenditure account of GDP. It would seem that the only feasible way would be some kind of commodity balance method. Although these estimates do not demonstrate inconsistency with the overall GDP and its growth, or erratic changes in their own growth, they themselves may be subject to errors. Indian case studies strongly suggest this possibility in the case of the commodity balance method.

[9] Even if this is true, there can be problems in using the CPI as the deflator. One issue is the relevant time period. Depending on the months in which different households in the sample were enumerated, the weights of different months in the CPI would vary. We have used the average CPI for fiscal 1991/92 and 1995/96 and calendar 2000 and 2005. Note that the CPIs show a faster rate of increase than does the implicit GDP deflator, derived from the BBS estimates of GDP at current and constant prices. This is of course possible if consumer prices rise faster than the prices of non-consumption goods. We are, however, unable to judge the plausibility of the extent of the difference between the two.

simply do not make intuitive sense: real rural personal income fell between 1991/92 and 1995/96 according to both the BBS and our estimates although real per capita consumption increased according to both estimates and, more remarkably, real per capita urban income fell between 2000 and 2005 according to both the BBS and our estimates, a period over which real per capita GDP according to national accounts increased sharply!

Table 2

Per Capita Annual Income of Rural Households (Current Taka)

	1991/92		1995/96		2000		2005	
	Amount	Per Cent	Amount	Per Cent	Amount	Per Cent	Amount	Per Cent
Income from Farming	2794.57	41.44	2656.59	35.04	2189.58	20.92	3042.15	22.17
Crop Production	…	…	…	…	1674.96	16.01	2286.19	16.66
Livestock	…	…	…	…	153.36	1.47	261.76	1.91
Fishery	…	…	…	…	169.61	1.62	340.94	2.49
Forestry	…	…	…	…	191.65	1.83	153.26	1.12
Wages and Salaries	1372.23	20.35	1870.16	24.66	3261.85	31.17	4415.11	32.18
Agricultural Wage	732.41	10.86	838.39	11.06	1076.78	10.29	1116.08	8.13
Non-Agricultural Wage	285.43	4.23	488.46	6.44	766.77	7.33	1317.72	9.60
Non-Agricultural "Salary"	354.39	5.25	543.31	7.17	1418.31	13.55	1981.31	14.44
Non-Farm Enterprise	1034.04	15.33	1448.32	10.10	2031.52	19.41	2276.28	16.59
Property Income	59.79	0.89	103.73	1.37	429.02	4.10	526.37	3.84
Rent from Land	…	…	…	…	357.22	3.41	422.07	3.08
Return to Other Assets	…	…	…	…	71.81	0.69	104.30	0.76
Remittances and Transfer	735.00	10.90	724.71	9.56	1273.42	12.17	1984.59	14.47
Domestic Remittance	…	…	…	…	348.13	3.33	484.70	3.53
Foreign Remittances	…	…	…	…	788.06	7.53	1299.56	9.47
Other Transfers	…	…	…	…	137.24	1.31	200.33	1.46
Rental Value of Housing	522.10	7.74	425.37	5.61	481.91	4.61	223.44	1.63
Other Income	226.57	3.36	353.75	4.67	797.05	7.62	1251.64	9.12
TOTAL INCOME	6744.30	100.00	7582.63	100.00	10464.35	100.00	13719.58	100.00

Table 3

Per Capita Annual Income of Urban Households (Current Taka)

| | 1991/92 | | 1995/96 | | 2000 | | 2005 | |
	Amount	Per Cent	Amount	Per Cent	Amount	Per Cent	Amount	Per Cent
Income from Farming	643.25	6.09	860.57	5.80	499.20	2.41	1350.15	5.94
Wages and Salaries	3862.29	36.55	5320.64	35.84	7877.52	38.02	8269.42	36.40
Non-Agricultural Wage	1058.00	10.01	1204.16	8.11	1662.95	8.03	1908.46	8.40
Non-Agricultural Salary	2155.74	20.40	3043.06	20.50	6029.67	29.11	5990.02	26.36
Other Wage	648.54	6.14	1073.43	7.23	184.90	0.89	370.94	1.63
Non-Farm Enterprise	3003.30	28.42	5597.56	37.70	5962.47	28.78	7704.68	33.91
Property Income	396.95	3.76	507.62	3.42	1647.21	7.95	1367.08	6.02
Rent from Land	…	…	…	…	329.55	1.59	521.04	2.29
Return to Other Assets	…	…	…	…	1317.66	6.36	846.04	3.72
Remittances and Transfer	979.01	9.27	1068.52	7.20	2092.05	10.10	1878.60	8.27
Domestic Remittance	…	…	…	…	399.30	1.93	450.71	1.98
Foreign Remittance	…	…	…	…	808.00	3.90	1214.54	5.35
Other Transfers	…	…	…	…	884.75	4.27	213.35	0.94
Rental Value of Housing	970.73	9.19	1006.64	6.78	1328.50	6.41	439.78	1.94
Other Income	710.33	6.72	484.47	3.26	1309.96	6.32	1711.56	7.53
TOTAL INCOME	10565.86	100.00	14846.01	100.00	20716.91	100.00	22721.27	100.00

Even more convincing evidence of inaccurate estimate can be documented by considering individual components of income/consumption (Tables 2 and 3). Thus the *rental value of housing*, information on which is collected by simple and identical questions in the successive HIES, shows a decline in the nominal value by well over half over the period under consideration both in rural and urban areas. In real terms it would reveal a far more drastic decline, most of which is concentrated between 2000 and 2005. While the average housing standard may have deteriorated, there is no reason to believe that the rate of decline has been nearly as disastrous as indicated by these data. Other components that have declined for urban areas between 2000 and 2005 in nominal terms are: non-agricultural salaries; returns to non-land assets (sharply); and "other" transfers, mostly public transfers and private charities (very sharply). Some of these reductions may

have been real; but it seems more likely that in 2005 urban household incomes and consumptions related to these components have been under-enumerated, the degree of understatement being likely to be concentrated among the high-income groups, to whom larger shares of incomes from most of these sources accrue.

There are therefore important reasons to doubt the accuracy of the HIES estimates of the *levels* of personal income and consumption. Their definitions suffer from the inclusion of inappropriate elements and possibly the exclusion of some legitimate elements. Their growth rates are inconsistent with most other indicators of growth. They are inconsistent with the GDP accounts, even with those elements of the GDP accounts that appear to be relatively reliable. These considerations render the personal income and consumption estimated from the HIES unreliable as indicators of change in average living standard.

III. MEASURING INEQUALITY AND ITS SOURCES

What can we say about the usefulness of the estimates of the distribution of income and consumption made from the HIES data? While the estimates of distribution can be affected by errors in the estimates of the levels (e.g., when the error is due to the underestimation or overestimation of components that accrue disproportionately to the high or low income groups), it is not necessary for this to be the case (e.g., when the error is due to the underestimation or overestimation of components that are distributed not too differently from the distribution of total income and consumption). As we argue below, estimates of distribution may be far less affected by these errors than the estimates of levels. One would hope that this better be true in view of the fact that the HIES is the only source of distributional data in Bangladesh.

We begin with an analysis of the distribution of income, the estimation of the Gini ratio of income and the "decomposition" of the Gini ratio into "concentration" or

"pseudo-Gini" ratios of the individual components of income.[10] The analysis of the
relationship between the distribution of the components and the overall distribution is
intended to examine the plausibility of the story that they tell about the evolution of
inequality over time, not to digress into irrelevant details. We concentrate on the
distribution of income, rather than consumption, because, while it is of interest in itself,
consumption inequality is less useful a guide than income inequality in understanding the
causes of a change in overall distribution. The disaggregation of consumption Gini into
concentration ratios for individual items of consumption would not provide policy
guidance that the concentration ratios for income components provide. The reason is that
the concentration ratios for individual items of consumption are nothing more than the
indicators of their expenditure elasticities. They indicate the *effect* of increased aggregate
consumption on the individual items of consumption, the so-called Engel relations. They
do not provide insights into the causes of increased inequality. The concentration ratios of
the components of income, on the other hand, provide a causal analysis of the sources of
inequality because the Gini ratio is simply their weighted average the weights being the
income shares of the components (see the preceding footnote).

Tables 4, 6 and 7 show the estimates of Gini ratios of income distribution for
rural, urban and entire Bangladesh for the four survey periods, along with their
"disaggregation" into "concentration" or "pseudo-Gini" ratios for all the different
components of income. Unlike the estimates of their levels, the estimates of the
distribution of income and its components show certain regularity.

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[10] As is well known, the Gini ratio can not be directly decomposed to make it possible to derive the overall
Gini ratio from the Gini ratios of the components. But indirect "decomposition" is possible in so far as the
Gini ratio is the weighted average of the "concentration" or "pseudo-Gini" ratios of the components:
$G = \sum q_i Ci$ where G = the Gini ratio; C_i = the concentration ratio of the i-th component of income which is
calculated for the distribution of the i-th component among individuals who are ranked by their per capita
overall income, *not* per capita income from the i-th source; and q_i = the share of the i-th component in
overall income. If $C_i > G$ then the i-th component is disequalizing; a rise in q_i would increase the overall
Gini ratio. Conversely, if $C_i < G$ then the i-th component is equalizing; a rise in q_i would reduce the overall
Gini ratio. For more on this see the references cited in Khan and Sen 2001.

Table 4

Rural Income Shares and Inequality Indices

	Share of Total Income (%): $100q_i$				Gini/Concentration Ratio (C_i or G)			
	1991/92	1995/96	2000	2005	1991/92	1995/96	2000	2005
Farm Income	41.44	35.03	20.92	22.17	0.332	0.338	0.347	0.387
Crop Farming	…	…	16.01	16.66	…	…	0.349	0.387
Livestock	…	…	1.47	1.91	…	…	0.236	0.322
Fishing	…	…	1.62	2.49	…	…	0.397	0.398
Forestry	…	…	1.83	1.12	…	…	0.367	0.463
Wages & Salaries	20.34	24.67	31.17	32.18	0.090	0.141	0.208	0.253
Agricultural Wage	10.86	11.06	10.29	8.13	- 0.113	- 0.078	-0.147	-0.123
Non-Agricultural Wage	4.23	6.44	7.33	9.60	0.138	0.126	0.071	0.095
Non-Agricultural "Salary"	5.25	7.17	13.55	14.44	0.472	0.492	0.551	0.570
Non-Farm Enterprise	15.33	19.10	19.41	16.59	0.224	0.329	0.477	0.513
Property Income	0.89	1.37	4.10	3.84	0.552	0.572	0.558	0.566
Rent from Land	…	…	3.41	3.08	…	…	0.560	0.556
Rent from other assets	…	…	0.69	0.76	…	…	0.551	0.604
Remittances and Transfer	10.90	9.56	12.17	14.47	0.364	0.599	0.552	0.605
Domestic Remittances	…	…	3.33	3.53	…	…	0.394	0.430
Foreign Remittances	…	…	7.53	9.47	…	…	0.707	0.741
Other Transfers	…	…	1.31	1.46	…	…	0.064	0.141
Rental Value of Housing	7.74	5.61	4.61	1.63	0.351	0.276	0.300	0.242
Other Income	3.36	4.67	7.62	9.12	0.393	0.281	0.286	0.422
TOTAL INCOME	100.00	100.00	100.00	100.00	0.276	0.310	0.356	0.404

Note: q_i = the share of the i-th component of total income; C_i = the concentration ratio of the i-th source of income; and G = the Gini ratio of income distribution. Column totals, values shown in the Total Income row, do not always add exactly up to the amounts shown due to rounding error.

Table 5

Access to Land in Rural Bangladesh

	1991/92	1995/96	2000	2005
Gini ratio of landownership	0.649	0.649	0.765 (0.682)	0.686
Concentration ratio of operational landholding (Individuals ranked by per capita landownership)	0.529	0.466	0.471 (0.223)	0.507
Concentration ratio of landownership (Individuals ranked by per capita income)	0.360	0.368	0.372	0.355
Concentration ratio of operational landholding (Individuals ranked by per capita income)	0.320	0.270	0.192	0.227

Note: Figures in parentheses for 2000 refer to estimates based on the exclusion from the sample of those households for which there is no entry for land. See the text for further explanation.

Table 6

Urban Income Shares and Inequality Indices

	Share of Total Income (%): $100q_i$				Gini/Concentration Ratio (C_i or G)			
	1991/92	1995/96	2000	2005	1991/92	1995/96	2000	2005
Farm Income	6.09	5.80	2.41	5.94	0.115	0.226	0.220	0.309
Wage/Salary	36.55	35.84	38.02	36.40	0.276	0.266	0.304	0.332
Non-Agric. Wage	10.01	8.11	8.03	8.40	0.087	0.030	-0.182	-0.115
Non-Agric. "Salary"	20.40	20.50	29.11	26.36	0.406	0.421	0.458	0.507
Other Wage	6.14	7.23	0.89	1.63	0.157	0.092	- 0.345	-0.206
Non-Farm Enterprise	28.42	37.70	28.78	33.91	0.306	0.464	0.503	0.611
Property Income	3.76	3.42	7.95	6.02	0.643	0.644	0.643	0.629
Rent from Land	…	…	1.59	2.29	…	…	0.509	0.531
Other Rental Income	…	…	6.36	3.72	…	…	0.676	0.689
Remittance and Transfer	9.27	7.20	10.10	8.27	0.427	0.581	0.616	0.527
Domestic Remittance	…	…	1.93	1.98	…	…	0.305	0.372
Foreign Remittance	…	…	3.90	5.35	…	…	0.593	0.642
Other Transfer	…	…	4.27	0.94	…	…	0.777	0.199
Rental Value of Housing	9.19	6.78	6.41	1.94	0.434	0.410	0.488	0.405
Other Income	6.72	3.26	6.32	7.53	0.424	0.442	0.417	0.596
TOTAL INCOME	100.00	100.00	100.00	100.00	0.327	0.389	0.437	0.475

Note: See note to Table 4 for an explanation of the notation. Due to error in rounding, the sums of the components do not always exactly match the totals.

Table 7

Income Shares and Inequality Indices for Bangladesh as a Whole

	Share of Total Income (%):$100q_i$				Gini/Concentration Ratio (C_i or G)			
	1991/92	1995/96	2000	2005	1991/92	1995/96	2000	2005
Memo Items:								
Total Rural Income	71.89	68.22	64.00	64.77	0.196	0.213	0.250	0.344
Total Urban Income	28.11	31.78	36.00	35.23	0.578	0.672	0.680	0.610
Farm Income	31.50	25.74	14.11	16.95	0.261	0.261	0.262	0.340
Wage/Salary	24.09	27.13	33.90	33.61	0.222	0.261	0.300	0.306
Agricultural Wage	8.72	8.76	6.98	5.83	-0.140	-0.081	-0.233	-0.171
Non-Agric. Wage	5.86	6.97	7.65	9.15	0.230	0.179	0.064	0.055
Non-Agric. "Salary"	9.51	11.40	19.27	18.63	0.549	0.575	0.587	0.578
Non-Farm Enterprise	19.01	25.01	23.00	22.72	0.319	0.462	0.519	0.593
Property Income	1.69	2.02	5.37	4.59	0.674	0.663	0.654	0.613
Rent from Land	…	…	2.65	2.80	…	…	0.530	0.548
Other Rental Income	…	…	2.72	1.80	…	…	0.773	0.715
Remittance and Transfer	10.44	8.81	11.69	12.32	0.371	0.590	0.570	0.578
Domestic Remittance	…	…	2.85	2.99	…	…	0.370	0.410
Foreign Remittance	…	…	6.46	8.06	…	…	0.675	0.709
Other Transfer	…	…	2.38	1.27	…	…	0.522	0.147
Rental Value of Housing	8.15	5.98	5.28	1.74	0.390	0.362	0.424	0.326
Other Income	5.09	5.30	6.65	8.06	0.483	0.319	0.337	0.457
TOTAL INCOME	100.00	100.00	100.00	100.00	0.303	0.359	0.405	0.438

Note: See note to Table 4 for an explanation of the notation. Due to error in rounding, the sums of the components do not always exactly match the totals.

The principal findings about income inequality and its sources can be summarized as follows. Inequality has increased in rural, urban and entire Bangladesh steadily over the period under review. By using the Gini ratio as the yardstick for comparison, Bangladesh was a developing country with relatively low inequality in the early 1990s. By the middle of the first decade of the 21st century it had become a developing country with moderately high inequality. This increase has been steady, uninterrupted and

pervasive. There are clearly discernible patterns to the trend increase in inequality whose sources have been stable or have undergone transformation in a systematic manner. There is little that is erratic about them. Together they explain the disequalizing nature of the growth that has occurred as well as provide guidelines for policies for a more inequality-averse growth.

Sources of Rural Inequality

Let us begin with the rural economy. Income from farming as a proportion of total income fell by a half between the early 1990s and 2000 but has very slightly increased since.[11] It was a disequalizing component of income to start with; but its disequalizing effect steadily moderated during the 1990s until it became a mildly equalizing source of income. The change can largely be explained by the improving access to landholding through share-cropping and other forms of tenancy until 2000 (see Table 5) even though the distribution of landownership remained unchanged.[12] Between 2000 and 2005, however, this trend towards greater access to landholding seems to have faced some reversal. The increased access to land through tenancy, however, had an ambiguous effect on income distribution: while it made farm income less disequalizing (more equalizing), the higher land rent that it generated came to be very unequally distributed due to the highly unequal and undiminished inequality of the distribution of landownership.[13] To summarize: farm income has gradually turned from a disequalizing to an equalizing component although its effect on overall distribution was blunted (offset) partly by the declining share of farming in total income and partly by the highly unequal distribution of rental income.

By 2000 wages and salaries had replaced farming as the largest source of personal income in rural Bangladesh, accounting for close to a third by 2005. Wages and salaries have very different effect on overall income distribution: wages are highly equalizing

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[11] Income from farming includes return to land, family labor, entrepreneurship and other inputs but excludes payments for hired labor which are shown under wages.

[12] This is shown by the declining concentration ratio for landholding among individuals ranked according to landownership.

[13] For years prior to 2000 information on the amount of land rent can not be separated from total income from property although a look at the data makes it clear that its share of income must have increased sharply until 2000 whence it fell a little with the decline in the access to tenanted land.

while salaries are strongly disequalizing. The exact difference between them is hard to establish from the survey and, as a matter of fact the distinction between them has been made only since 2000. The wage-earners are paid on a daily or weekly basis and they seem to represent relatively unskilled workers whose employment is often casual in nature. Salaried workers, paid monthly, seem to represent those with higher skills often in regular formal employment. Wages as a proportion of personal income has remained invariant since the mid 1990s while salaries as a proportion of income have increased steadily and sharply since the early 1990s, almost tripling by 2005. Wages have a strongly equalizing effect on overall income distribution. This is especially the case for (casual) wage employment in agriculture. In contrast, salaries have a strongly disequalizing effect on the distribution of income. This is by and large the case for all the other components of rural income with the exception of the rental value of housing - which turned from being a disequalizing component in 1991/92 into an equalizing component in later years - and residual category of transfers - consisting of public transfers and private charities - which are highly equalizing. Note that in the process of becoming equalizing over time, the rental value of housing has rapidly dwindled in importance to such an extent that the estimates for recent years have lost credibility; and public transfers have a tiny weight in total income.

Non-farm enterprise is the third most important source of rural income after farming and labor earnings. At the beginning, in 1991/92, it was a mildly equalizing source of income. Thereafter it turned into a disequalizing source of income, this disequalizing effect becoming stronger over time. This is a rather discouraging finding in view of the emphasis that is placed on this sector as a potential source of poverty reduction and the concentration of programs like micro-credit in these activities. This finding is however quite consistent with the distributional effect of these activities in other developing countries.[14]

Remittances and transfers account for the next most important and growing source of income. These consist of three elements: remittances from abroad; domestic remittances, presumably principally from those who have migrated to urban areas; and

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[14] For example, successive surveys have established that this is the case in China. See Khan and Riskin, 2001.

other remittances, largely accounting for public social-safety-net programs and private charities. Foreign remittances, by far the largest and rapidly growing of the components, are also the most disequalizing. Indeed these are the most disequalizing of all components of rural income. Domestic remittances are moderately disequalizing. Other transfers are strongly equalizing. The last category can be disaggregated to separate out the public social-safety-net programs, like vulnerable group feeding, which have a very strong equalizing effect, their concentration ratio being -0.123.[15] It is rather reassuring that despite all the inefficiency and corruption that besets public administration, much of these expenditures actually reaches the target groups. They, however, account for less than a fifth of one per cent of personal income.

Income from property has grown quite sharply as a proportion of personal income although its share is still relatively low at about 4 per cent. Much of it consists of rent from land which is strongly disequalizing. Return from other assets is even more strongly disequalizing.

The feature that stands out is that the few equalizing components of rural income – farming, wages and rental value of housing - have either remained stagnant or fallen as a proportion of total income while the disequalizing components – salaries, non-farm enterprise, remittances and property income - are all growing components of total income.[16] Furthermore, some of the rapidly growing components – notably foreign remittances and salaries – have become increasingly more disequalizing over time.

Sources of Urban Inequality

There is broad similarity between urban and rural areas in terms of the classification of income components into equalizing and disequalizing sources, their differences being very minor. Farm income and wages have an equalizing effect on income distribution. Both these components have gradually declined as a proportion of income.

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[15] This is not shown in Table 4.
[16] Public transfers and private transfers are equalizing and have grown a little, but together they remain and are likely to remain insignificant as a source of income.

Unlike rural areas, domestic remittances received by urban households have been equalizing. Our tentative hypothesis is that domestic remittances received by the rural households are largely the remittances made by the migrants from rural to urban areas to the members of households left behind and these exclude the very poor households who are unable to send members that become viably employed in urban areas to make remittances back home. In contrast, domestic remittances received by the urban households are made by the rural households, relatively better off in the rural context, to their members who have migrated to urban areas and are looking for jobs or receiving training and hence are relatively poor in the urban context.

Two other components, "other" transfer (public transfer and private charity) and the rental value of housing, have traditionally been disequalizing (strongly so for the former) but became equalizing (strongly so for the former) in 2005. Note, however, that this metamorphosis has in each case been accompanied by a drastic decline in the value of income from these sources. As already stated, the decline is inexplicable in the case of the rental value of housing. In the case of other transfers, it could conceivably be explained by a drastic change in the composition of transfers, e.g. by a dramatic fall in the formerly disequalizing public transfers to the urban middle class. Available information does not, however, provide a basis for such a conclusion. It is highly likely that the seeming reduction in the contribution of these two components in 2005 is illusory; the failure to capture the receipts of the high income groups of these components has simultaneously led to a reduction in their disequalizing effect and their drastically lower levels. It is worth noting, however, that a further disaggregation of other transfers shows that social-safety-net outlays by the government, though insignificant at less than one-fifth of one per cent of income, are extremely equalizing with a concentration ratio of -0.247 in 2005.[17]

All other sources of urban income – salaries; non-farm entrepreneurial income; property income both from land rent and other assets; remittances received from abroad; and the aggregate of the unspecified residual sources of income – are all disequalizing. They have become more disequalizing over time while their income shares – with minor exceptions – have increased.

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[17] This is not shown in Table 6.

For Bangladesh taken together the patterns are again very similar. Farming and wages, both agricultural and non-agricultural, are the two major sources of income that are equalizing, wages having a very strong equalizing effect.[18] Farm income has dwindled over time as a proportion of total income. Agricultural wages, the most equalizing source of income with a negative concentration ratio, has fallen as a proportion of income while non-agricultural wages have risen. Together wages as a proportion of income have barely changed over the period under review. The only remaining equalizing sources are domestic remittances; "other" transfers; and the rental value of housing. By 2005 they had all become small in relation to total income. Domestic transfers are only moderately equalizing and their equalizing effect became weaker over time. Other transfers and the rental value of housing have been losing their shares of income over time and did so at an accelerated rate after the turn of the century.

The other sources of income – salaries; non-farm entrepreneurial income; property income from both land and non-land assets; and remittances received from abroad – are all disequalizing. With the exception of the return from non-land assets, incomes from all these sources as proportions of total have increased over time.[19] An interesting point to note is, as pointed out above, that the trend towards increased access to operational landholding, despite an unchanged distribution of landownership, was halted after 2000. This is presumably due to some degree of reversal in the increasing incidence of tenancy that characterized the decade until 2000, a fact that is confirmed by a decline in the share of land rent in rural income (see Table 2) and a decline in land rent as a proportion of income from farming from 16.3 per cent in 2000 to 13.9 per cent in 2005 in the rural area. Note, however, that the share of land rent in urban income has actually increased (see Table 3) and land rent as a proportion of total farm income has

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[18] Farm income for Bangladesh as a whole has been equalizing right from the beginning even though for rural areas it was disequalizing in the 1990s. This is because, in the overall Bangladesh context, rural households themselves are concentrated among the lower income groups.

[19] The residual sources of income taken together have been disequalizing in 1991/92 and 2005 and equalizing in other years. They have become steadily more disequalizing (less equalizing) since 1995/96.

increased from 12.3 per cent in 2000 to 14.3 per cent in 2005.[20] This almost certainly indicates an increase in absentee landownership (i.e. ownership of agricultural land by households resident in urban areas).

How Credible are the HIES Estimates of Income Inequality?

The purpose of the above discussion of the estimates of income inequality and its sources in some detail is to show that on balance they tell a credible story which contradicts little of the established knowledge about the economy. First, the direction of overall inequality seems to be consistent with what most analysts believe and other available observations and indicators suggest to have been the case.[21] There is nothing erratic in the trend of overall inequality or its relative magnitudes in rural and urban areas.

Secondly, the distributional effects of different sources of income and the change of these effects over time all make sense. These have been discussed in some detail in the preceding sub-section. There is nothing of significance that stands out as inexplicable or implausible.

Thirdly, the estimates bring out the essential dilemma in reining in what seems to have been an inexorable rise in inequality in the distribution of income since the beginning of the 1990s, a phenomenon that does not appear to have been characteristic of Bangladesh during the prior years from whatever information is available for that period. The sources of income that have a high elasticity with respect to overall income and GDP are disequalizing and have increased their weight over time. The few equalizing sources of income have experienced a reduction in their share of total income. Had the individual sources of income become no more disequalizing over time, the changing composition of income would by itself have pushed up inequality. The distributional outcome in reality is, however, worse because of the fact that most of the disequalizing sources of income

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[20] For the urban area these refer to rent received by urban households as a proportion of total national (i.e. the aggregate of rural and urban) farm income received by all households.
[21] We are keenly aware of the danger of using "casual observations" as supporting evidence of a hypothesis. But the supporting evidence – the remarkable increase in the skewness of the distribution of housing in favor of the luxury category in major cities; the spread of private automobiles of increasingly luxury variety; the rapid rise in the range and volume of luxury goods and their retail outlets being some of them – amounts to more than just casual observation.

have become increasingly disequalizing over time. While not particularly encouraging, they provide a reasonable basis for policy making: attention needs to be focused on making individual components less disequalizing (more equalizing) and, to the extent it is consistent with the criteria of efficiency, shift the incentive structure in a way that equalizing activities grow faster. Since this is rather far from the central concern of this paper, we shall not pursue this further.

Fourthly, can one take the view that the data that fail to estimate the levels of income adequately still provide usable estimates of the distribution of income? This is a tricky issue. In principle, an inaccurate estimation of the level should affect the estimate of the distribution unless the inaccuracy in the estimation of the level is limited to the components that have a neutral effect on overall distribution, i.e., they are distributed similarly as the average of the rest of the components. It is too much to hope that inaccuracies in the measurement of levels would be limited to distribution-neutral components and one can be sure that this was not the case. But how worried should one be about the usefulness of the inequality measurements? Let us try to make some conjectures by looking at the most serious error in the estimation of the level, that of the change in urban income between 2000 and 2005. According to the BBS definition the HIES shows a 15 per cent increase in per capita nominal income. According to our estimate the increase is even lower, just 10 per cent. By using any plausible deflator, either of the estimates would indicate a fall in real per capita urban income in a period of most rapid growth that the country has ever experienced over any half-decade period and no evidence that the growth bypassed the urban economy. There is no doubt that the HIES underestimates urban income for 2005. A look at Table 3 suggests that this underestimation was concentrated in the rental value of housing; non-remittance transfers; returns to non-land assets; and *possibly* non-agricultural salaries. These are components for which the shares of total income fell substantially. Indeed for the first three the fall is so drastic as to cross the limit of credulity. Of these four components, returns to non-land assets and non-agricultural salaries have been disequalizing in every period. Rental value of housing and residual transfers were also disequalizing prior to 2005. There are reasons to believe that their underestimation in 2005 and the decline in their disequalizing effect were related. It is likely that their correct estimation in 2005

would have restored their concentration ratios to values similar to what they were until 2000. Thus, it would appear that underestimation was concentrated in the disequalizing components; their correct estimation would have increased the overall measure of inequality. A closer look at the rental value of housing, not presented in any table, shows that while for the 5th decile of income groups the decline in the nominal value was 59 per cent between the two years, it was 75 per cent for the top, 10th, decile group for which the rental value of housing constituted just 1.4 per cent of total income in 2005, an absurdly low figure. There is little doubt that for some of these components the 2005 HIES estimates simply went wrong.[22]

Thus the first attempt at the detailed examination of the most glaring case of inadequate measurement of the level strongly suggests the possibility that a more accurate estimation of the levels would have given a higher estimate of the increase in inequality. Note, however, that the overall inequality could not have been *significantly* affected by the underestimation of these components. Take for example the extreme possibility that the shares of the rental value of housing, other transfers and non-land property income were the same in 2005 as in 2000 and that their *concentration ratios had actually changed to what has been measured for 2005*. The Gini ratio for 2005 for urban Bangladesh would have been 0.469 instead of 0.475. If the share of salaries is assumed to be the same as in 2000, then the revised Gini ratio would be even closer to 0.475.[23] On balance we would therefore argue that the estimates of the Gini ratio and the concentration ratios from the HIES remain useful, if somewhat flawed, guides to the understanding of the trend in inequality and for the formulation of policies for inequality-averse growth. The compelling case for using them derives from the fact that these are the only comprehensive set of distributional data that are available for Bangladesh. There is nothing else that one can use as substitutes.

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[22] We satisfied ourselves that the questionnaire made no change in the enumeration of the rental value of housing. We stuck to the same definition as in the earlier years. The error must be in the different interpretation of the question by the enumerators, or in the tabulation or in the processing of the survey data. While we did our best to ensure accurate processing, we can not entirely rule out error in our own calculations.
[23] These are derived by using the 2005 concentration ratios with 2000 weights for the underestimated components and the 2005 weights for the remaining components reduced proportionately.

Table 8 shows the estimates of consumption inequality for the HIES years. They indicate that inequality in consumption is lower than inequality in income, a finding that is consistent with the established relationship between the two. But a remarkable feature of these estimates, brought out in Table 9, is that the difference between the two sets of inequality estimates has widened over time, dramatically so since 2000. We need to emphasize at the outset that this is not due to any overestimation of income inequality caused by our amendment in the income definition. Indeed the BBS' own estimates of income Gini, or for that matter the World Bank's estimates of income Gini based on the BBS data, are higher than our estimates of income Gini.[24]

Table 8

Gini Ratios of the Distribution of Consumption Expenditure

HIES Year	Rural	Urban
1991/92	0.249	0.311
1995/96	0.277	0.361
2000	0.281	0.364
2005	0.280	0.347

Some widening of the difference between the consumption Gini and the income Gini is possible. The kind of decline for 2000 and 2005 over preceding years, however, seems precipitous. It is particularly suspicious that consumption inequality fell between 2000 and 2005 when income inequality, according to every available estimate, rose. For the urban area the fall in consumption inequality, amounting to a 5 per cent decline in the

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[24] BBS' estimates are shown in successive HIES reports. The World Bank income Gini estimates, available to us for Bangladesh as a whole, can be found in World Bank 2006.

Gini ratio, particularly strongly challenges the credulity of the observers of economic and social scene in Bangladesh.

Table 9

Ratio of Consumption Gini to Income Gini

HIES Year	Rural	Urban
1991/92	0.90	0.95
1995/96	0.89	0.93
2000	0.79	0.83
2005	0.69	0.73

Our ability to explain changes in consumption inequality is much more limited than in explaining changes in income inequality. This is because we do not have the distribution of consumption expenditure disaggregated into the distribution of expenditure on individual items of consumption.[25] The reason, as explained earlier, is that the disaggregation of the consumption Gini into concentration ratios for individual items of consumption does not provide any insight into the cause of change in overall inequality. We are thus unable to see the possible sources of underestimation of consumption inequality in 2000 and 2005. One possibility seems to be inherent in the HIES procedure for collecting information. In collecting information for food consumption, the items that dominate the consumption of the lower income groups, the questionnaire goes into great details and adopts a diary method of recording consumption over a 14-day period. Information on luxury expenditure, especially on services, is collected for the year as a whole on the basis of single recall. Given the inherent difficulty of enumerating the expenditure on these items, the system could easily end up underestimating the expenditure by the higher income groups by more than it

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[25] Indeed we made these estimates for 1991/92 and 1995/96 (See Khan and Sen 2001). This was not done for the subsequent years because of the reason cited in the main text. Note that for 1991/92 and 1995/96 the problem of very different rates of change in income and consumption inequality did not occur.

underestimates the average expenditure. There is, however, nothing that we can say why this problem became more serious in later years as compared to the earlier years.

IV. POVERTY ESTIMATES BASED ON THE HIES DATA

As discussed in the introduction, poverty measurements in Bangladesh have often used the HIES estimates for both the indicators – the level of income/consumption; and the distribution of income/consumption – needed to calculate them. [26] The CPI used to adjust the poverty threshold over time has usually been obtained from other sources; but some poverty comparisons have at least partly measured the CPI from the HIES data as well.[27]

Table 10 shows three different sets of poverty estimates which are all based on the HIES data. The one by the World Bank uses consumption while the other two use income to measure the levels and distributions of living standard. While our estimates and the official estimates both use income, the official estimates seem to be based on the BBS income definition which is different from ours. There are other differences that are described more fully in the sources cited: the poverty lines and the CPIs to adjust poverty lines are different.[28] The difference in the poverty line can affect the estimates of both the levels and changes in poverty; but it is likely that its effect would mainly be on the estimated *levels* of poverty and much less on the *rates of change* in the incidence of poverty over time. The difference between the CPI used by the World Bank and the CPI used by us is relatively minor; but we have no information on the deflator that the official estimates used.

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[26] Examples are Ravallion and Sen 1996; Sen 1998; World Bank 1998; World Bank 2006; Khan and Sen 2006; and Government of Bangladesh 2008.
[27] World Bank 2006 shows that its CPI for food is based on the HIES data.
[28] Methodologies are discussed in some detail in the sources cited for the World Bank and our estimates. For the Official estimates the source cited does not provide as complete descriptions of methodology.

Table 10

Alternative Estimates of Headcount Rates of Poverty (Percent of Population)

		1991/92	1995/96	2000	2005
World Bank:	Urban	45	29	37	29
	Rural	61	55	53	45
Ours:	Urban	30	31	25	36
	Rural	47	53	45	48
Official:	Urban	45	n.a.	35	29
	Rural	61	n.a.	52	44

Note: World Bank estimates are from World Bank 2002 and World Bank 2006. Our estimates are from Khan and Sen 2006 for the period up to 2000; for 2005 an improvisation of the same method has been used for updating. The Official estimates are from Government of Bangladesh 2008; these estimates are not available for 1995/96.

We have argued above that income/consumption measured by the successive HIES do not serve as reliable indicators of change in average living standard. The consequences of their use are starkly illustrated by Table 10 in conjunction with the data in Table 1. Compare first the World Bank estimates with ours. The main source of the difference in the estimated *change* in poverty over time between the two sets of estimates is due to the fact that the World Bank uses consumption as the indicator of living standard while we use income. The problem of using consumption estimates from the HIES is demonstrated by the fact that per capita real urban consumption turns out to be lower in 2005 than in 1995/96 using any reasonable deflator. The consequence is that urban headcount poverty rate in 2005 is about the same as in 1995/96, despite a decade of accelerated growth.[29] Thus the use of the HIES consumption estimates for poverty

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[29] How can consumption poverty in 2005 remain about the same as in 1995/96 if per capita real consumption fell? As just stated, the fall in real consumption is premised on the use of what we consider a reasonable deflator; the World Bank's deflator gave a lower increase in cost of living. Furthermore, the World Bank estimates show a fall in urban inequality between 2000 and 2005.

comparison by the World Bank gives the rather startling result that during a decade over which real per capita income in Bangladesh increased by 45 per cent, and there was no evidence of a slower per capita growth of the urban economy than the economy as a whole, the proportion of population in poverty in urban Bangladesh changed little and the absolute number of urban population in poverty actually increased! There is the further problem that between 2000 and 2005 the inequality in the distribution of urban consumption fell and the inequality in the distribution of consumption for Bangladesh remained unchanged according to World Bank estimates underlying their poverty estimates shown in the Table. These are highly implausible findings. The same World Bank report shows that inequality in income distribution increased between 2000 and 2005.[30] We have noted above that the vastly increased divergence between income inequality and consumption inequality, measured from the HIES, raises greater doubt about the (non-increasing) change in consumption inequality than in the (increasing) change in income inequality whose plausibility we have been able to test with reference to disaggregated analysis of components.

On the other hand our use of income per capita has to face the contentious issue that, on any reasonable estimate of the rise in CPI, the level of real per capita urban income in 2005 was lower than what it was not only in 2000 but also in 1995/96. Consequently urban poverty would be, as is actually shown according to our estimates, higher in 2005 than both a decade and a half-decade before despite all the growth that is claimed for the period. This would be the outcome even if the distribution of income over the period had remained unchanged, an obviously implausible finding.[31]

How does one explain the difference between our estimates and the official estimates which, like ours, measure income poverty?   It is worth noting that these official estimates of income poverty indicate changes that are inconsistent with those indicated by the World Bank estimates of consumption poverty: while the official estimates indicate an increase in urban poverty between 1991/92 and 2000, the World Bank estimates show a significant fall. They however agree that both urban and rural

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[30] They show it for Bangladesh as a whole. Estimates for rural and urban income inequality are not shown in the document cited.

[31] Our estimates also show that urban poverty in 2005 was higher than in 1991/92. This is because the favorable effect of the small (obviously underestimated) increase in real per capita income on poverty over this period was outweighed by the unfavorable effect of increased inequality in the distribution of income.

poverty fell significantly between 2000 and 2005. Note that the difference in the *direction* of change in income poverty as measured by us and the official sources can not be explained by the difference in the definition of income between the BBS (which is presumably used by the official estimates) and us. Per capita real urban income fell by 6 per cent between the two years according to the BBS estimate of income from the HIES if we use the official CPI as the deflator. Urban inequality also increased and, most importantly, the income share of the "poverty deciles" – the bottom three or four deciles – fell between the two periods according to the BBS estimates.[32] It is therefore not possible for urban income poverty to fall between 2000 and 2005 *unless the official estimates used a deflator which showed a slower increase in cost of living than their official CPI which we have used.*

These are just examples of some of the problems of erratic change that the HIES estimates of living standard indicate, an issue that we have discussed above at some length. While there are serious problems with the estimated change in the *levels* of both income and consumption, there is the additional problem of using consumption in that the HIES estimates of its distribution do not seem to capture the increase in inequality accurately. Admittedly this is more of a hypothesis based on "circumstantial evidence" than a conclusion based on concrete evidence. Our judgment is based partly on the divergence between the change in consumption inequality and the change in income inequality, for which the estimates based on the HIES data seem to stand the test of consistency and plausibility when the distribution of individual components are examined. Partly it is based on the implausibility of the direction of change in urban consumption inequality between 2000 and 2005.

Does the fact that the distribution of income measured from the HIES data appears to be a reasonable indicator of inequality and its change over time mean that one can combine this with an alternative estimate of growth in personal income to measure the change in the incidence of poverty? As we have stated earlier, the expenditure accounts of the GDP do not provide an estimate of personal income. To serve as an alternative to the HIES, the expenditure accounts of GDP need to be expanded in a way

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[32] For levels of income see Table 1 and for decile shares of income see Table 13.6 in Government of Bangladesh 2008.

that is credible. Furthermore, these estimates would have to be divided into urban and rural personal income. It is hard to imagine that this would be an easier task than to improve the HIES methods to make their income estimates more reliable and intertemporally comparable.

We are thus led to conclude that there is no way to settle disputes about the magnitudes or even directions of change in poverty between specific time periods by using the HIES data or supplementing them with other available data. In view of the uncertainty about the measurement of the levels of income and consumption by the HIES and the absence of an alternative source of measuring their levels more accurately, it is impossible to make reliable quantitative estimates of the change in the incidence of poverty or to meaningfully quantify the progress towards the achievement of the first Millennium Development Goal.

It is, however, unwarranted to conclude that the HIES data are useless. The analysis above suggests that it can be very useful in understanding the changing dynamics of inequality and poverty and in making policies for inequality-averse and poverty-alleviating growth. Estimates of income distribution and the sources of change in income distribution, made from the HIES data, provide very useful guides to these issues. We are unable to say the same about the HIES estimates of the distribution of consumption. To take the contemporary HIES estimates of both the distributions as valid – a high degree of inequality in the distribution of income coexisting with a low inequality in the distribution of consumption with a steady increase in the divergence between the two – one would have to conjure up the world of Adam Smith's model of growth with vengeance, a world in which income gets increasingly concentrated in the hands of the capitalists, because wage rates can not rise, but there is no correspondingly high concentration of consumption among the capitalists, because they are single-mindedly driven by the passion for accumulation and frugal living. No one would seriously characterize the rich in Bangladesh as conforming to that model of capitalism. We have instead attributed the growing divergence between the two sets of inequality indices to the failure of the HIES to adequately capture the consumption of the higher income groups, admittedly a hypothesis rather than an explanation based on evidence.

Problem arises in finding a reasonable set of data on the level of living to be combined with the distributional data to obtain poverty estimates. We have argued that the change over time indicated by the HIES data on income/consumption is misleading. Nor can one substitute those with better indicators derived from the national accounts or some other source. This means that reliable estimates of change in the incidence of poverty can not be made. This does not rule out *illustrative* estimates based on either the HIES data or some substitute derived from the GDP accounts once the results are properly qualified and alternative estimates of trend in poverty incidence are obtained by combining data from different sources.

What all these measurements can be made to show, by simulation exercises, is that the rising inequality in the distribution of income has deprived Bangladesh of much of the potential poverty reduction that would have resulted from the growth that took place.[33] An illustrative exercise by us showed that between 1991/92 and 2000 the increase in inequality robbed Bangladesh of more than three-quarters of the potential decline in the headcount index of poverty.[34]

V. CONCLUSIONS

Estimates of income distribution from the four HIES serve as useful guides to the understanding of the sources of rising inequality and for the design of policies for poverty-alleviating, inequality-averse growth in Bangladesh. Estimates of consumption inequality in any case are limited guides to deal with such issues and, in the case of the four HIES, they seem to be subject to downward bias especially for the last two HIES.

The HIES do not provide sufficiently accurate estimates of living standard, and its change over time, that could be combined with the estimates of distribution to obtain reliable estimates of the incidence of poverty and its change over time. Nor can one find

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[33] A qualification needs to be made. Any increase in the summary index of inequality like the Gini ratio, will not result in this outcome. For example, an increase in the Gini index due entirely to redistribution from the ninth decile to the top decile, with an unchanged or increased share for the proportion of population in poverty, will not lead to this outcome. Usually, and for all the HIES, income shares of the relevant poverty groups moved inversely with the Gini ratio. This was not the case with the consumption share for the 2005 HIES.

[34] See Khan and Sen 2006 for the illustrative exercise which measures poverty with reference to income measured from the HIES.

alternative estimates of living standard from other sources, such as the GDP accounts, to be substituted for the imperfect HIES measurements. Given the present state of data, one can not therefore expect to make reliable quantitative estimates of change in the incidence of poverty. There is little empirical basis to support the position of the one or the other of the protagonists in the ongoing debate about the actual magnitude of change in poverty.

Reasonable illustrative and simulation exercises can of course be made. When such exercises explore all major alternatives and are duly qualified, they can shed useful light. Such exercises that exist strongly suggest that over the period under review there was some reduction in poverty. They also suggest that the major proportion of the potential reduction in poverty, defined as the rate of reduction in poverty that would have obtained in the event of unchanged inequality in the distribution of living standard, was lost due to increased inequality.

Careful attention must be given to improve the quality of the HIES, as well as the expenditure accounts of GDP, to create the basis for sufficiently accurate estimates of the incidence of poverty that the policy makers need to judge such things as the progress towards the attainment of the first of the Millennium Development Goals. While such improvements can be comprehensively made only for the future HIES, it is worth looking into the possibility of going back to the past four HIES to see if the anomalies in their measurements can be reduced by redefining variables; adjusting the locational coverage and geographical composition of urban and rural areas; and such other ways to promote inter-temporal comparability.[35]

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[35] In section II we have shown that for some apparently unambiguous components, for which information has been collected by straightforward questions, values wildly varied from one HIES to the next. This suggests that the possibility of improving the inter-temporal comparability of income/consumption estimates from the past HIES is at best limited.

REFERENCES

BBS 2001. Bangladesh Bureau of Statistics, *National Accounts Statistics (Gross Domestic Product, 2000-2001)*, Dhaka.

Deaton and Kozel 2004. Deaton, Angus and Valerie Kozel, *Data and Dogma: the great Indian poverty debate*, Macmillan, New Delhi.

Government of Bangladesh 2008. Government of Bangladesh, Ministry of Finance, *Bangladesh Economic Survey 2008* (Bengali version), Dhaka.

Khan and Riskin 2001. Khan, A. R. and C. Riskin, *Inequality and Poverty in China in the Age of Globalization,* Oxford University Press, New York.

Khan and Sen 2001. Khan, A. R. and B. Sen, "Inequality and Its Sources in Bangladesh, 1991/92 to 1995/96: An Analysis Based on Household Expenditure Surveys", *The Bangladesh Development Studies*, March.

Khan and Sen 2006. Khan, A. R. and B. Sen, "The structure and distribution of personal income and poverty reduction: a case study of Bangladesh during the 1990s", in Boyce, J., S. Cullenberg, P. K. Pattanaik and R. Pollin (editors), *Human Development in the Era of Globalization, Essays in Honor of Keith B. Griffin*, Edward Elgar, Cheltenham, U.K. and Northampton, MA, USA.

Ravallion and Sen 1996. Ravallion, M. and B. Sen, "When Methods Matter: Monitoring Poverty in Bangladesh", *Economic Development and Cultural Change*, Vol.44, No.4, July, pp. 761-792.

Sen 1998. Ben, B., "Politics of Poverty Alleviation", in Centre for Policy Dialogue, *Crisis in Governance: A Review of Bangladesh's Development 1997,* University Press Dhaka, June.

World Bank 1998. *Bangladesh: From Counting the Poor to Making the Poor Count*, Washington D.C. and Dhaka.

World Bank 2002. *Poverty in Bangladesh: Building on Progress*, World Bank, Washington, D.C.

World Bank 2006. "Poverty trends and patterns: preliminary results from the HIES 2005", August 13 (Transcript from PowerPoint presentation), World Bank, Washington, D.C.

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