

Poverty and inequality trends in Bangladesh: Insights from the 2005 Household Income and Expenditure Survey

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(based on collaborative work with Ambar Narayan, Nobuo Yoshida, Apichoke Kotikula (World Bank) and a team from Bangladesh Bureau of Statistics)

Bank-Bangladesh Bureau of Statistics collaboration on poverty

- Partnership dates back to 1990
- Every five years or so Bank co-finances the Household Income and Expenditure Survey and provides staff time/expertise in analyzing the data to obtain poverty numbers
- Hence these poverty estimates are cited as BBS/World Bank numbers
- Bank staff worked closely with BBS from March 2006 on poverty measurement using HIES 2005

How to estimate poverty: Cost of Basic Needs (CBN) approach

Poverty lines represent the level of per capita expenditure at which members of households can be expected to meet their basic needs:

1. A basic food basket of eleven items is selected
2. The quantities in the basket are scaled accordingly to correspond to the nutritional requirement of 2122 kcalories per person per day
3. The cost of acquiring the basket is calculated

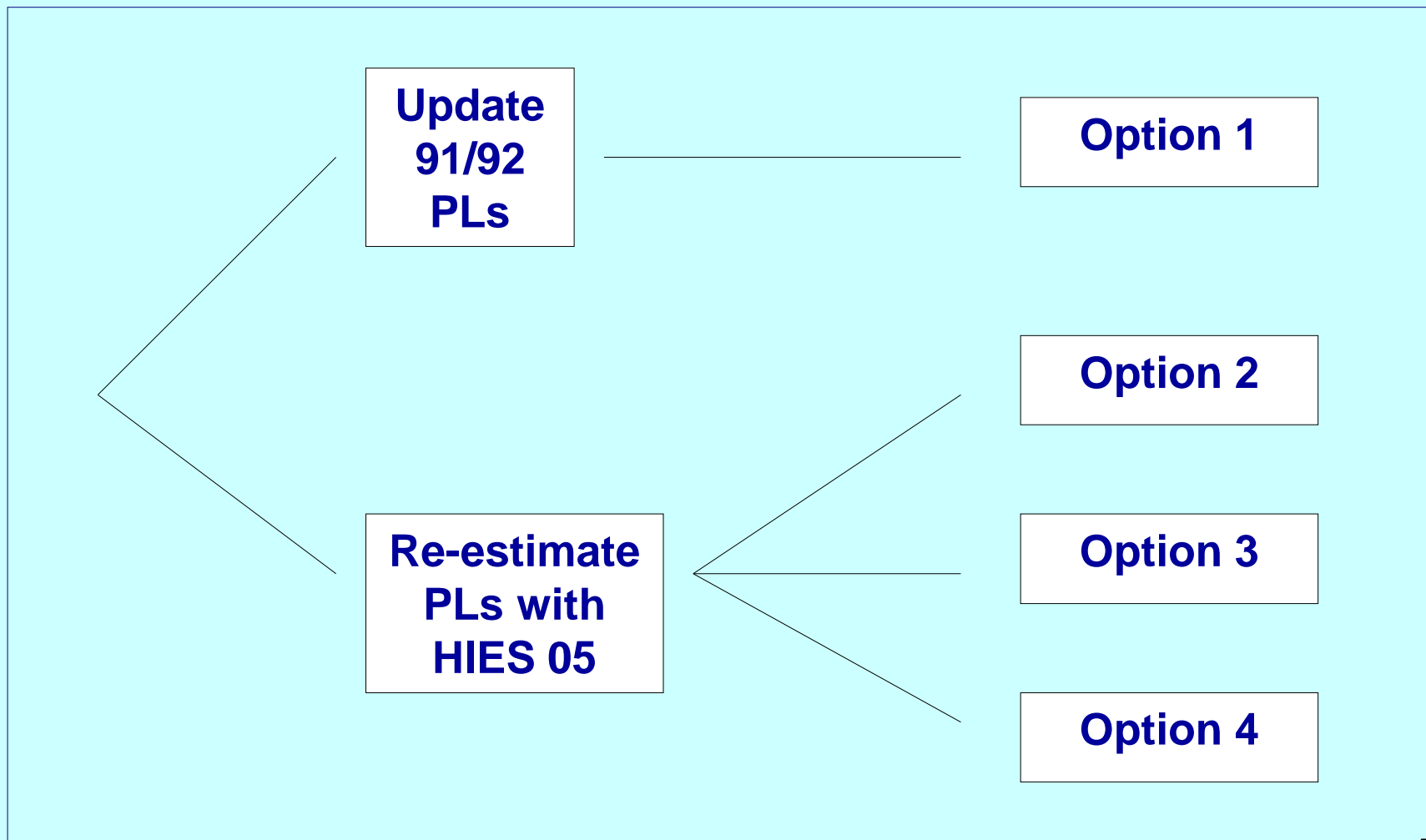
This results in the food poverty line.

A non-food poverty line is calculated by estimating the cost of consuming a basic set of non-food goods for (i) extreme poor households whose total expenditures equals the food poverty line (Lower poverty line) (ii) moderate poor households whose food expenditure is at the food poverty line (Upper poverty line)

Poverty measurement in Bangladesh from previous rounds of HIES

- The base year for the previous poverty line was 1991-92
- Poverty lines (PLs) were estimated using CBN approach
 - Separate upper and lower PLs estimated for 14 strata from HIES 1991-92 – to adjust for differences in prices and consumption patterns between geographic regions
 - Food basket: same for all strata, comprising of 11 composite items, as described in Ravallion/Sen (1996), based on Alamgir (1974)
 - Nutritional requirement: 2122 kcal. per person per day
- PLs updated for 1995-96 and 2000 for changes in the cost of living using a price index
 - Ensures that PLs reflect the same real value over time
 - Composite price index: weighted average of survey based food price index (strata specific) and CPI non-food index (urban/rural)

Poverty lines: key options considered for 2005



Key options: 1 and 2

- Option 1: updating previously used PLs by inflation during 2000-2005
 - Update using strata-specific composite price indices: weighted average of Tornqvist survey price indices for food items and non-food CPI (urban/rural) for non-food items
 - To make comparisons between 2000 and 2005, poverty lines for 14 strata have to be mapped on to 16 strata
- Option 2: re-estimating PLs for 16 strata using HIES 2005 and deflating to get 2000 poverty nos.
 - To make comparisons between 2000 and 2005, PLs for 16 strata have to be mapped on to 14 strata
 - Deflated to 2000 poverty lines using price indices similar to above
- In both options, PLs reflect regional differences in prices and consumption patterns

Sensitivity analysis of poverty incidence: national PL with current food basket (Option 3)

- National (not stratum-specific) Upper and Lower PLs using CBN; consumption exp adjusted for regional price differences
 - Derive a spatial price index to adjust consumption for regional price differences
 - Derive national (Upper and Lower) PLs with the price adjusted consumption exp and the existing food basket
 - Identify the poor by comparing the price adjusted consumption exp. with the national PLs
 - Update over time using a single price index (a composite price index of survey based food price index and non-food CPI)
- **Advantage:**
 - Easy to communicate and update PLs over time (changes in the no. of strata do not matter)
- **Disadvantage:**
 - Cannot fully control for differences in consumption pattern between regions
 - Very difficult to include non-food items in spatial price index

More sensitivity analysis: national PL with new food basket (Option 4)

- Identical to Option 3 with one change
 - Food basket re-estimated to reflect the current consumption pattern of the poor
 - The basket comprises of average food consumption of the reference group (consisting of the price adjusted consumption expenditure decile 2nd to 6th)
 - However, does not take into account any normative judgment on balanced nutrition, unlike the existing food basket
- For BD, Option 4 has obvious appealing attributes
- But, more careful work and consensus-building needed before adopting such a radical change
 - To change the food basket, consensus needs to be built to take into account any normative judgment
 - More analysis needed on spatial price indices to appropriately reflect nonfood prices

Recommended: Option 2

- Re-estimated using HIES 2005 which uses the latest available sampling frame
 - Since this frame will be used until the next Census, easy to update PL (using just price indices) for the next few surveys
- Reflects changes in consumption pattern between 1991-92 and 2005
- Unlike options 3 and 4, does not imply radical changes in methodology
- Estimates using option 1 are also presented to allow direct comparison with existing/PRSP numbers
- Estimates using options 3 and 4 used to check robustness of trends to different methodologies

Poverty headcount rates (%) using Upper PLs from Options 1 and 2

	Option 1*				Option 2 (recommended)**		
	1991-92	1995-96	2000	2005	2000	2005	% change
National	58.8	51.0	49.8	40.6	48.7	40.0	-21.8
Urban	44.9	29.4	36.6	28.8	34.9	28.4	-22.9
Rural	61.2	55.2	53.0	44.5	52.2	43.8	-19.2

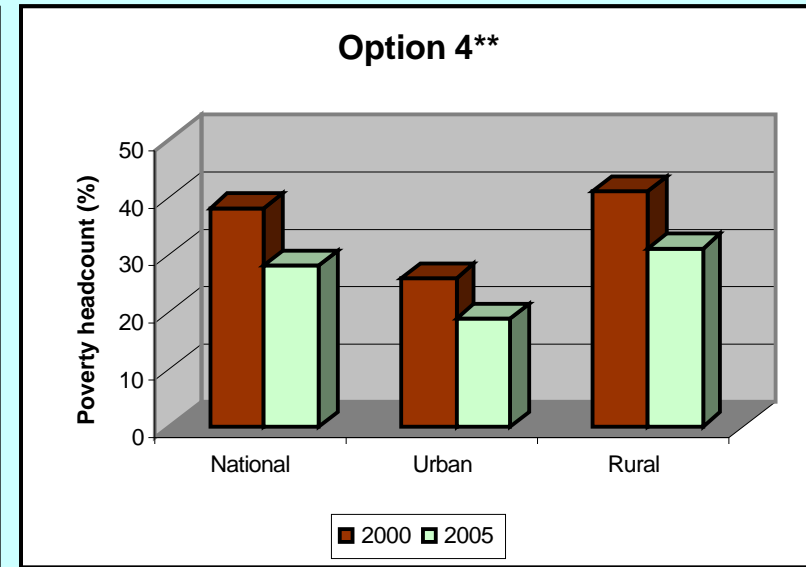
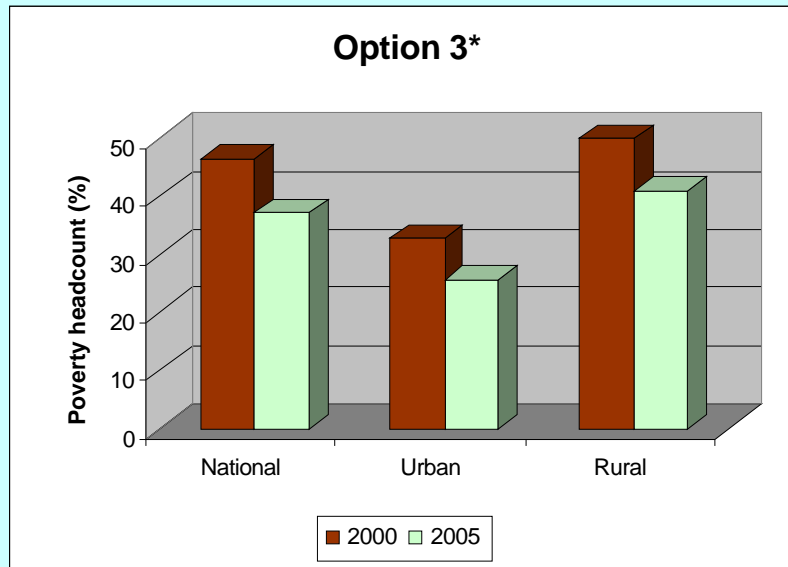
Notes: *Using (Upper) PLs estimated from HIES 91-92 and updated for 95-96, 2000 and 2005 by composite price indices. Estimates from 91-92 to 2000 are identical to those in Poverty Reduction Strategy of Bangladesh (2005).

** Using new (Upper) PLs estimated from HIES 2005 and deflated for 2000 by composite price indices between years.

To measure changes in poverty headcount over time, estimates for different years based on the same option should be compared

Poverty headcounts for 2000 and 2005 with re-estimated PLs (option 2) are very close to those with previous PLs (option 1)

Robustness of poverty trends using Upper PLs from options 3 and 4



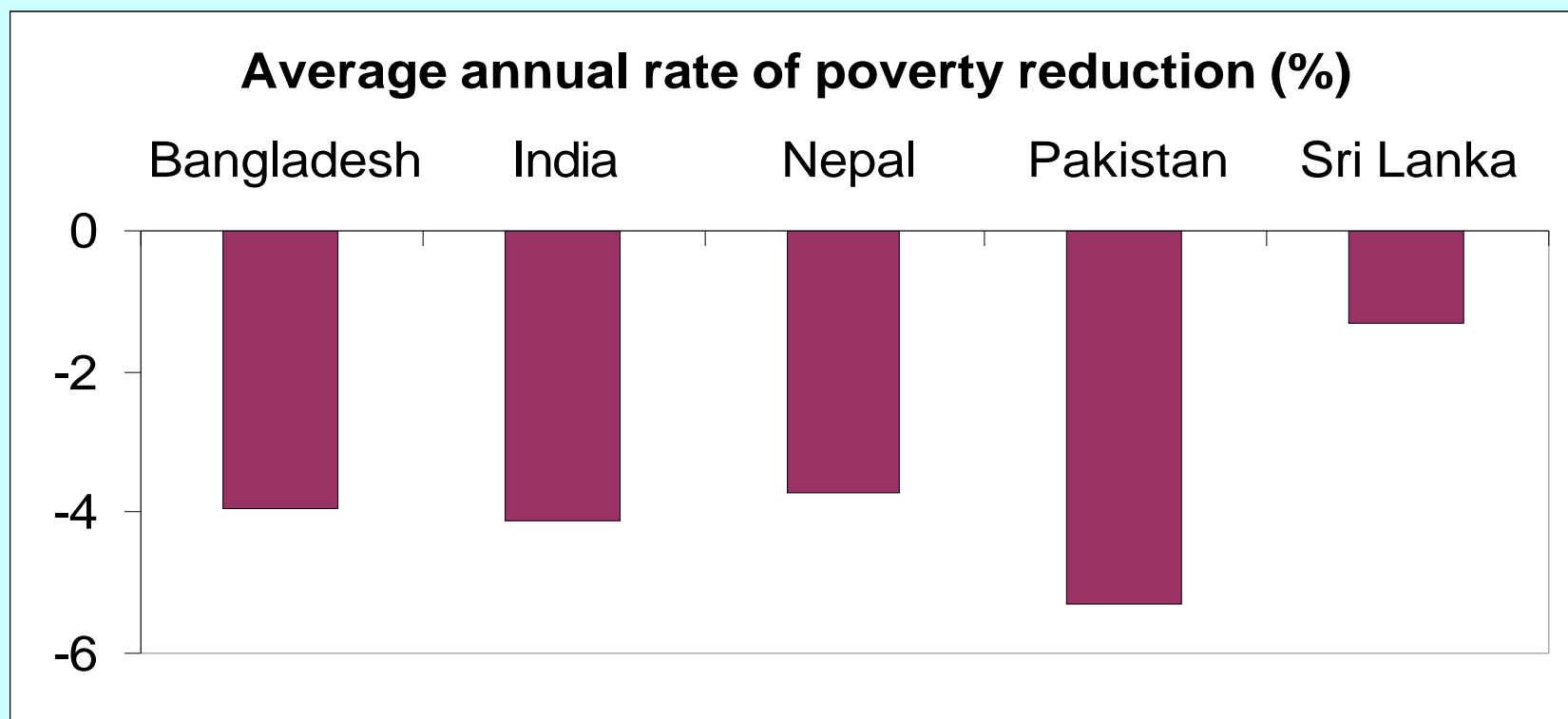
Notes: *Based on new (Upper) PLs estimated using HIES 2005 and deflated for 2000 using composite price indices between years.

**Based on new (Upper) PLs estimated with a new food basket from HIES 2005 and deflated for 2000 by composite price indices between years.

To measure changes in poverty headcount over time, estimates for different years based on the same option should be compared

Both options indicate the same direction and magnitude of poverty reduction as options 1 and 2, although the levels of poverty headcount are different

International Comparison with Other South Asian Countries (using option 2 for Bangladesh)



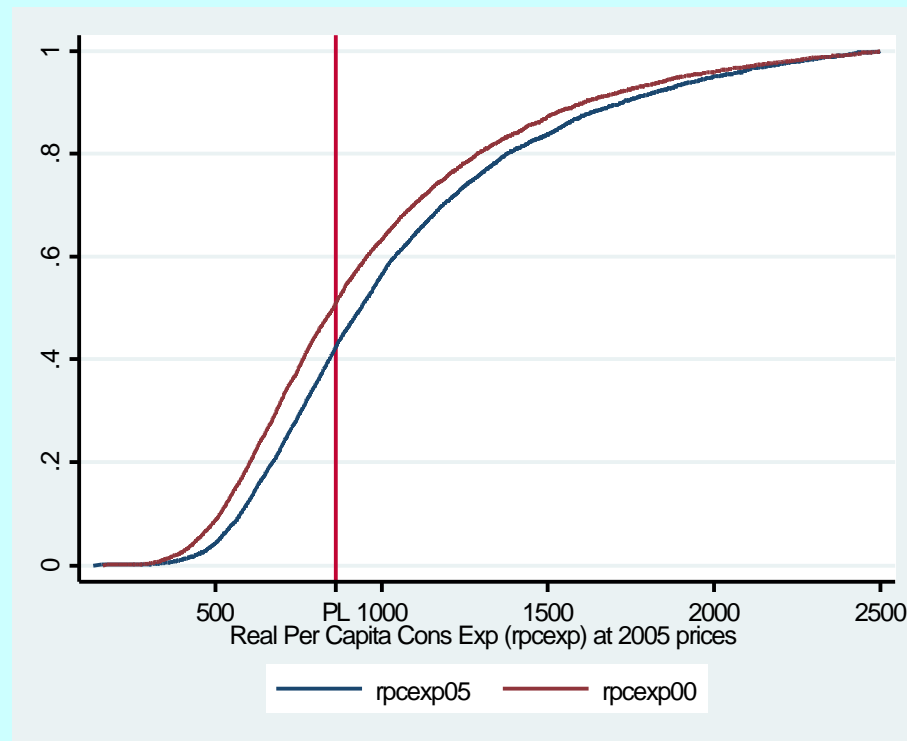
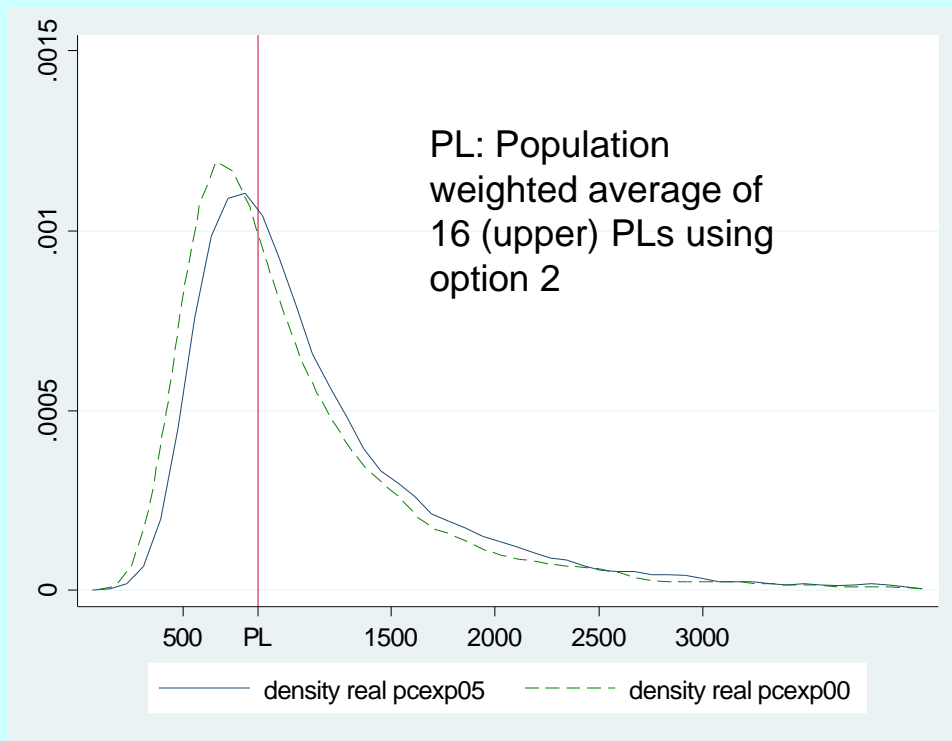
Source: Bangladesh HIES 2000 & 2005; India NSSO 93/94 and 99/00 (based on Deaton and Dreze (2002)); Nepal NLLS 95/96 & 2003/04; Pakistan PIHS 2001/02 & 2004/05; Sri Lanka HIES 1990/91 & 2000.

Note: 1) The rate of reduction for India are quite different (lower) when estimates from other sources are used, e.g. Kijima and Lanjouw (2003)

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2) The graph shows % reduction in poverty headcount per year.

Density and distribution of consumption



Density of per capita consumption

- Rightward shift in density curve – showing rising average consumption
- Cumulative distribution shows that for a very large range of poverty lines, poverty reduction (2000-05) will be of similar magnitude
- Such robustness explains why all 4 options show similar poverty reduction

Other measures of poverty

using Upper PLs from (recommended) Option 2

	Poverty gap		Sqd. poverty gap	
	2000	2005	2000	2005
National	12.8	9.0	4.6	2.9
Urban	9.0	6.5	3.3	2.1
Rural	13.7	9.8	4.9	3.1

Note: computed using Option 2

Poverty headcount rates (%) using *Lower PLs* from Options 1 and 2

	Option 1*		Option 2 (recommended)**	
	2000	2005	2000	2005
National	33.7	25.5	34.3	25.1
Urban	19.1	13.7	19.9	14.6
Rural	37.4	29.3	37.9	28.6

Notes: *Using (Lower) PLs estimated from HIES 91-92 and updated for 95-96, 2000 and 2005 by composite price indices.

** Using new (Lower) PLs estimated from HIES 2005 and deflated for 2000 by composite price indices.

To measure changes in poverty headcount over time, estimates for different years based on the same option should be compared

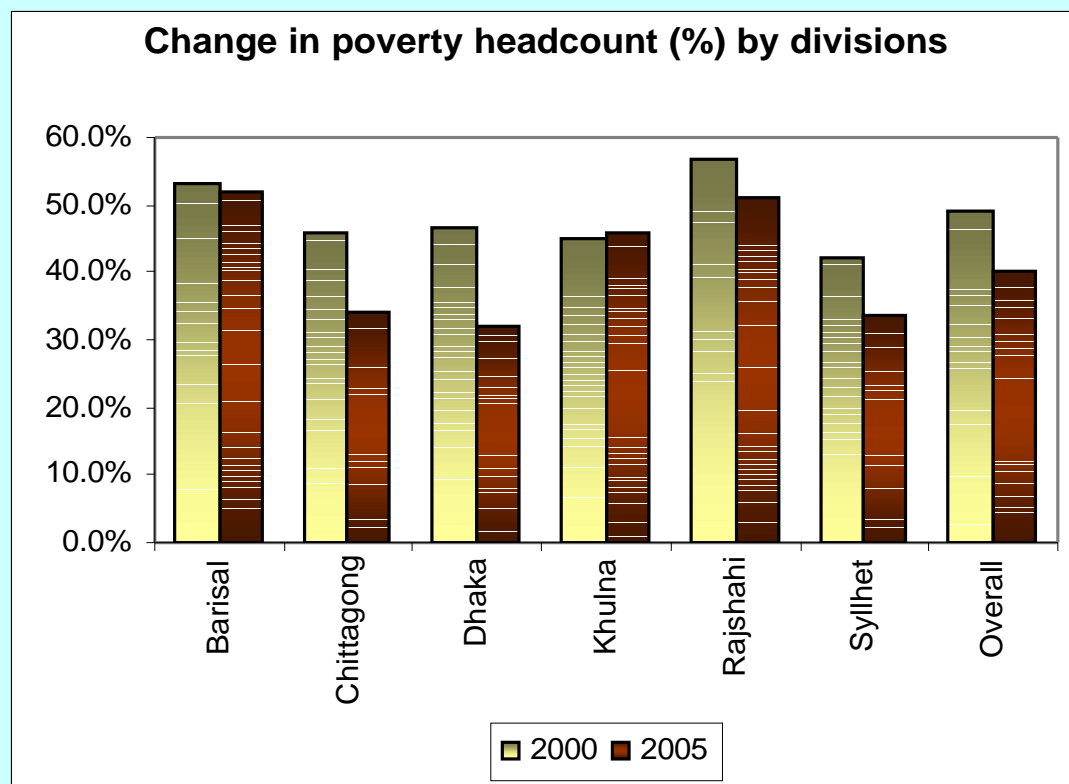
Poverty headcounts based on Lower PLs for 2000 and 2005 derived from Option 2 are very close to those from Option 1

Changes in regional poverty headcounts

Division	2000	2005
Barisal	53.1%	52.0%
Chittagong	45.7%	34.0%
Dhaka	46.7%	32.0%
Khulna	45.1%	45.7%
Rajshahi	56.7%	51.2%
Syllhet	42.4%	33.8%
Overall	48.9%	40.0%

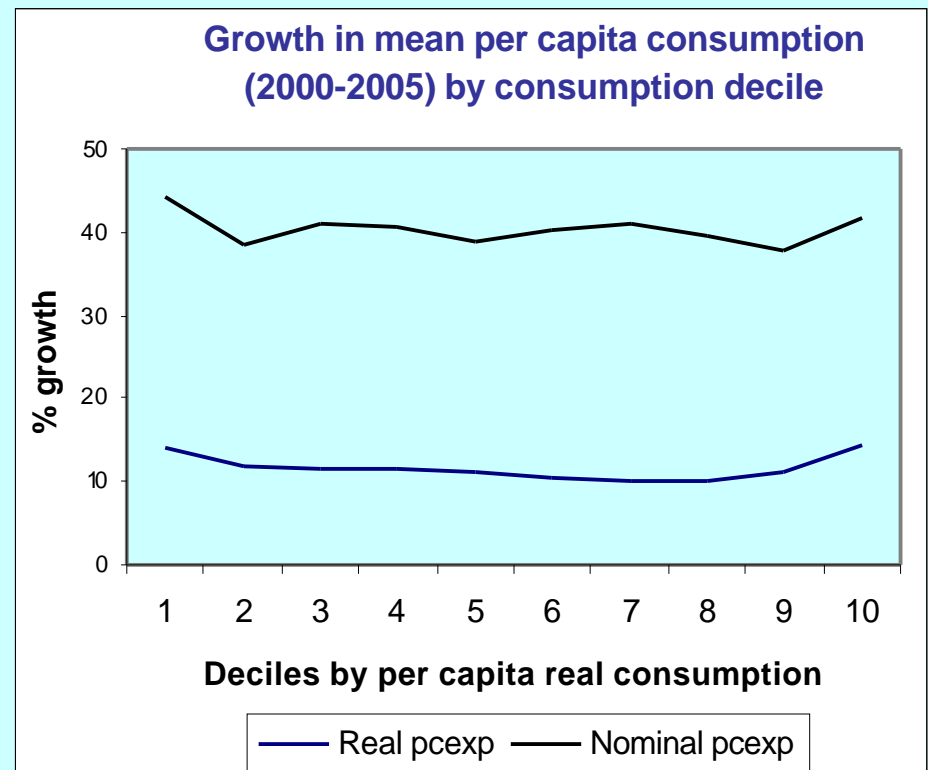
Largest poverty reductions: Dhaka, Chittagong, Sylhet divisions

Significant reductions for all divisions except Barisal and Khulna



Consumption growth across deciles

Growth in mean real monthly per capita consumption exp (2005 taka)			
decile	2000	2005	Growth (%)
1	435	497	14.2
2	565	631	11.8
3	651	727	11.7
4	733	817	11.4
5	823	913	11.0
6	926	1022	10.5
7	1062	1169	10.1
8	1253	1380	10.2
9	1571	1747	11.3
10	2799	3198	14.3
National	1082	1210	11.9



- Annual growth in real per capita consumption (2.3% nationally) is somewhat *lower* than average annual growth rates of per capita real GDP *and* private consumption (around 3.8% nationally) – *consistent with macro trends*

Consumption inequality has remained stable since 1995-96

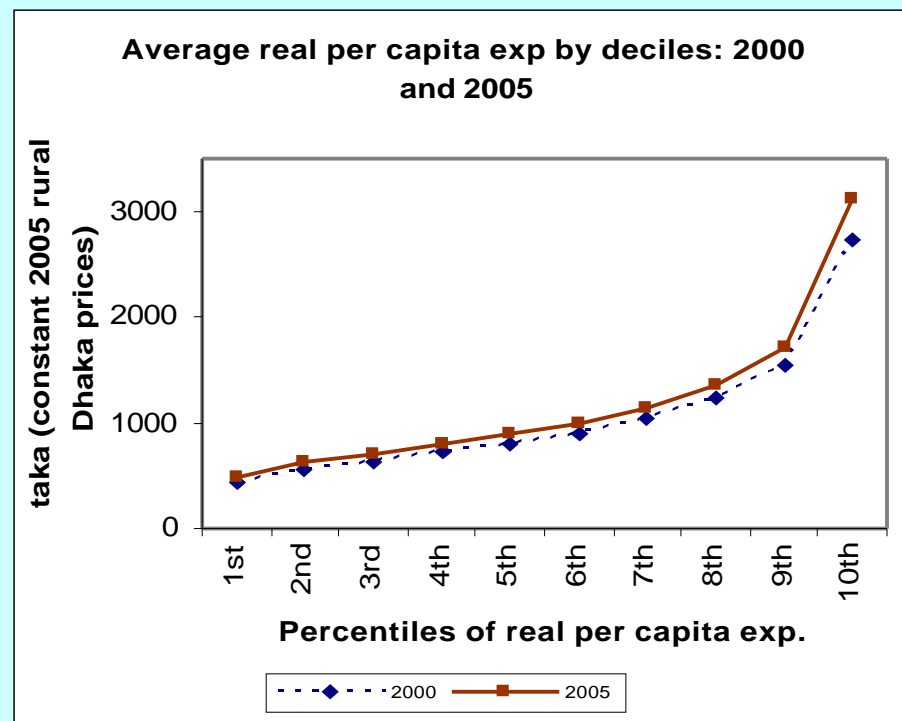
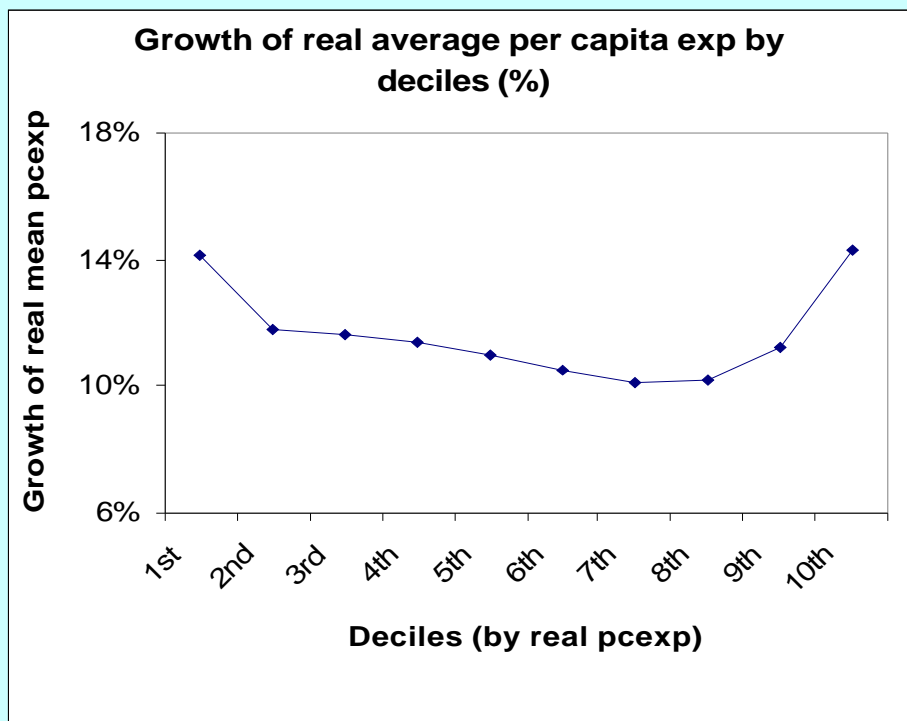
	1991-92	1995-96	2000	2005
National	0.26	0.30	0.31	0.31
Urban	0.31	0.36	0.37	0.35
Rural	0.24	0.27	0.27	0.28

Note: national Gini is not a weighted average of urban and rural ginis

Nominal consumption are adjusted for spatial/regional price differences (deflated by Upper PL) to obtain “real” ginis for each year

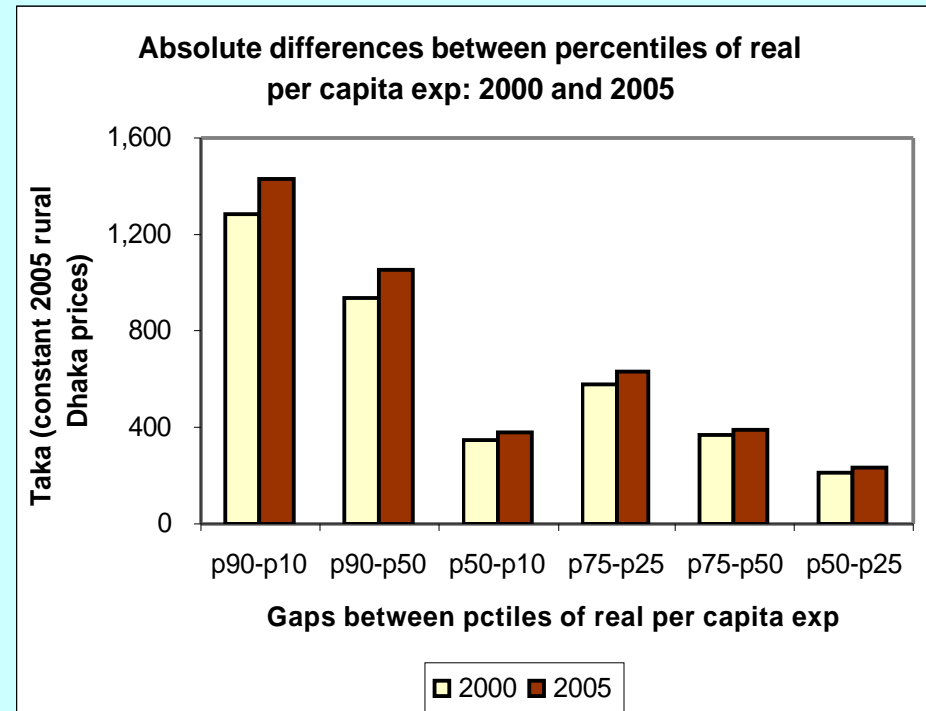
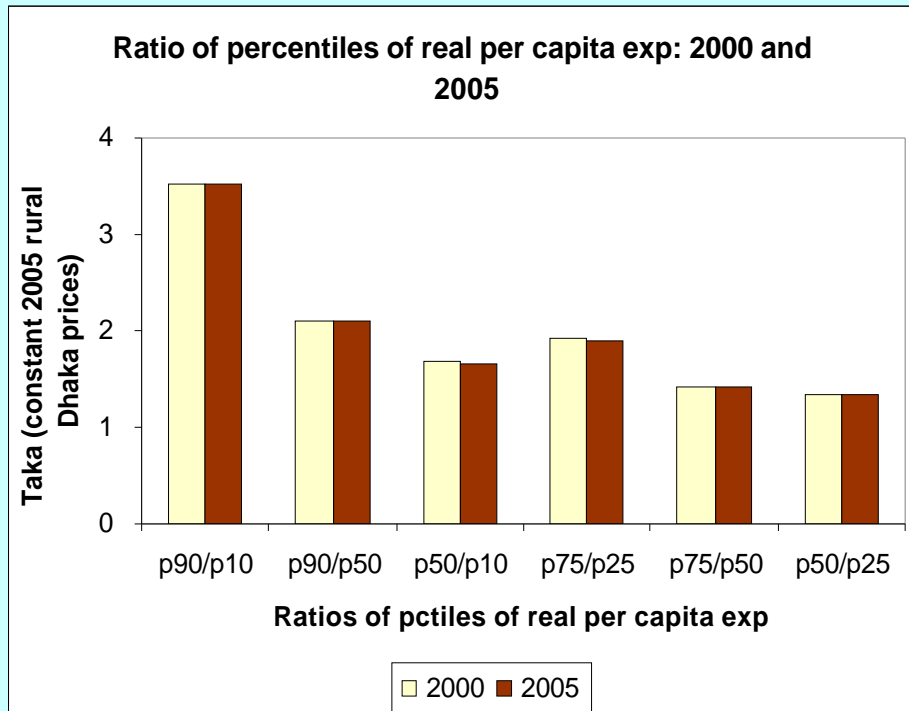
- Since 1995-96, changes in national and sectoral Ginis are statistically insignificant (at 5% level)
- Between 2000 and 2005, both the slight decline in urban gini and rise in rural gini are statistically insignificant

Rich-poor gaps based on indicators of relative and absolute inequality



- Growth rate of mean exp >10% for all deciles; ~14% for bottom and top deciles – the ratio between mean per capita exps of top and bottom deciles remained 6.44
- But the gap between mean exps of top and bottom deciles increased from 2310 tk in 2000 to 2640 tk in 2005 (constant 2005 tk at rural Dhaka prices)
- Thus the curve on the right has become steeper in 2005, even as growth rates were quite evenly distributed across deciles

Rich-poor gaps (contd.)



- Ratios of percentiles of per capita exp have remained mostly unchanged between 2000 and 2005 (e.g. p90:p10, p50:p10) – little change in relative inequality
- But gaps between percentiles have increased (e.g. p90-p10, p50-p10) – increase in absolute inequality

Changes in distribution of household income

Deciles by per capita income	2005	2000	1995-96	1991-92
Total (National)	100	100	100	100
Lowest 5%	0.77	0.93	0.88	1.03
Decile-1	2.00	2.41	2.24	2.58
Decile-2	3.26	3.76	3.47	3.94
Decile-3	4.10	4.57	4.46	4.95
Decile-4	5.00	5.22	5.37	5.94
Decile-5	5.96	6.10	6.35	7.08
Decile-6	7.17	7.09	7.53	8.45
Decile-7	8.73	8.45	9.15	10.09
Decile-8	11.06	10.39	11.35	12.1
Decile-9	15.07	14.00	15.4	15.64
Decile-10	37.64	38.01	34.68	29.23
Top 5%	26.93	28.34	23.62	18.85
Gini Co-efficient	0.47	0.45	0.43	0.39

Characteristics of the Poor

Characterisitics of the Poor				
	Poverty Rate (%)		Population Distribution (%)	
	2000	2005	2000	2005
Division				
Barisal	53.1	52.0	7.1	6.4
Chittagong	45.7	34.0	20.1	19.3
Dhaka	46.7	32.0	31.4	32.2
Khulna	45.1	45.7	11.7	11.7
Rajshahi	56.7	51.2	23.4	24.1
Sylhet	42.4	33.8	6.4	6.3
Highest Level of Education				
No Education	63.2	54.7	57.3	53.5
Primary	40.3	35.1	15.4	15.5
Secondary	30.0	21.4	19.9	22.1
Higher Secondary	8.8	8.5	5.9	3.6
Graduate and above	3.1	4.3	1.6	5.3
Landownership				
Landless <0.05	63.5	56.8	48.0	45.8
Functionally Landless 0.05 to 0.5	59.7	48.8	13.0	15.9
Marginal 0.5 to 1.5	47.2	35.1	17.5	18.8
Small 1.5 to 2.5	35.4	23.7	9.2	8.8
Medium and Large 2.5 or more	20.7	12.8	12.4	10.7

Characteristics of the Poor				
	Poverty Rate (%)		Population Distribution (%)	
	2000	2005	2000	2005
Construction Material of Roof				
Brick/cement	6.5	5.2	6.9	8.1
C.I. Sheet/wood	47.2	40.1	70.6	82.4
Tile/wood	38.7	62.1	3.8	1.9
Hemp/hay/bamboo	73.3	71.3	18.1	6.8
Other	57.1	70.4	0.6	0.8
Electricity Connection				
Yes	24.0	20.8	32.6	45.4
No	60.8	55.9	67.5	54.6
Landline or cellphone				
Yes	1.7	3.7	1.8	14.2
No	49.7	46.0	98.2	85.8
Domestic Remittances				
Yes	42.5	37.5	18.5	21.6
No	50.3	40.2	81.5	78.4
Remittances from abroad				
Yes	26.2	17.1	9.7	10.4
No	51.3	42.2	90.3	89.6

Characteristics of the Poor: 2005		
	Poverty Rate (%)	Population Distribution (%)
Major Activity of Household Head		
Ag-Day Laborer	71.6	16.8
Ag-Self Employed	33.0	26.1
Non Ag-Day Laborer	61.3	15.6
Non Ag-Self Employed	32.8	23.2
Non Ag-Employee	21.7	17.7
Type of Latrine		
Sanitary	27.0	25.5
Pacca latrine (water seal)	18.5	6.5
Pacca latrine (Pit)	26.6	21.2
Kacha latrine (Perm)	45.2	18.3
Kacha latrine (Temp)	57.5	18.6
Open field	73.8	10.0
At least one male in the HH is literate		
Yes	30.0	69.1
No	62.2	30.9
At least one female in the HH is literate		
Yes	31.3	66.7
No	57.3	33.3

Regional variations in determinants

Percentage of Population Receiving Remittances							
	Barisal	Chittagong	Dhaka	Khulna	Rajshahi	Sylhet	Total
2005							
Domestic	30.4	26.1	14.5	25.8	27.6	10.5	22.1
International	5.4	25.0	8.4	4.2	1.3	15.8	9.2
2000							
Domestic	37.2	16.1	17.5	21.0	13.6	33.3	18.9
International	8.2	20.7	8.2	1.8	2.2	17.4	8.6
Percentage of Population having Electricity Connection							
2005							
Rural	23.0	39.9	32.8	33.3	25.2	33.4	31.2
Urban	73.1	82.4	92.6	74.5	57.5	83.8	82.6
Total	30.4	50.7	55.8	42.1	30.1	40.7	44.2

Next steps

- Complete determinants of poverty change work
- In parallel work analyzing other HIES modules on-going (e.g. labour markets, extreme poverty, lagging regions, remittances, safety nets, education/health, agriculture/non-farm, migration)
- On-going dissemination as and when analysis is ready
- Draft Poverty Assessment report mid 2007