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To What Extent Are Bangladesh's Recent Gains in Poverty Reduction Different from the Past?

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Abstract

The poor in Bangladesh are more likely to belong to households with a larger number of dependents and lower education among household members, be engaged in daily wage labor, own little land, and be less likely to receive remittances. This poverty profile for 2005 is similar to the profile in the mid-1980s and hence at first glance it would appear that little has changed over time. A closer look at national household survey data suggests a more nuanced story. This paper uses the latest two rounds of the Bangladesh Household Income and Expenditure Survey to decompose the micro-determinants of poverty reduction between 2000 and 2005, closely following a similar analysis using five earlier rounds of the Survey. The comparison of results shows that the spatial distribution of poverty seen in earlier decades has changed with time and the drivers of poverty reduction are different in several respects.

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I. Introduction

Since the beginning of the 1990s, Bangladesh has witnessed robust economic growth, relatively stable inequality and consequently respectable rates of poverty reduction. The proportion of poor in 1990 was 59%, ten years later it had declined to 49% and by 2005, due to a faster pace of poverty reduction, the headcount rate fell to 40% (World Bank 2008). In this paper we analyze the factors that contributed to the substantial decline in poverty between 2000 and 2005 and compare it to what we know about the drivers of poverty reduction in earlier decades. Specifically we analyze the determinants of poverty using nationally representative household data from two different points in time (2000 and 2005), examining the extent to which poverty reduction is explained by changes in attributes of households (including household and geographic factors) and changes in the returns to these attributes. We use the same decomposition methodology as Wodon (1999), who used earlier rounds of the same dataset to assess the factors explaining poverty reduction in Bangladesh between 1983/84-1995/96, in order to assess changes in the micro-determinants of growth and poverty reduction over time.

A specific question in this context relates to the role of geographic location in determining the economic status of households. Wodon (1999) and Ravallion and Wodon (1999), using survey data from 1988 and 1992, had found a significant and sizable geographic effect on poverty in Bangladesh, with the most significant (and positive) impact arising from the location of a household in the greater Dhaka region. In other words, even after controlling for mobile characteristics of households, location of a household in the region surrounding the capital city of Dhaka had a positive and significant effect on household consumption, relative to being located outside this region.

This is despite the fact that Bangladesh is a small country in terms of land area and there are no administrative restrictions to migration, which would tend to equalize earnings across space. In the light of these findings, an important question our paper examines is whether the effect of geographic location on household welfare has changed in the 15 or so years since the early-1990s, and if so, in which direction.

In order to address the questions above, we apply a model specification that uses as a starting point the regression model used by Ravallion and Wodon. To provide a context for our analysis and illustrate the nature of economic and social transformation that occurred in Bangladesh during 2000-2005, we also discuss a range of poverty correlates and how they have evolved during this period. The paper is structured as follows. A profile of poverty, including a descriptive analysis of the correlation between consumption poverty, household characteristics and geographical location, are presented in Section II. Section III uses a multivariate regression framework to identify the relationships between household and geographic characteristics and poverty. Section IV examines the trends in the correlates of poverty over time, to analyze how changes in these characteristics and the returns to these characteristics may have contributed to poverty reduction. Section V concludes the paper, summarizing the main findings and identifying areas for further analysis.

The main data source for this study is the Household Income and Expenditure Survey (HIES), a household survey conducted by the Bangladesh Bureau of Statistics (BBS). The paper relies primarily on the 2005 round of HIES for poverty profile and determinant analyses; the 2000 HIES is used to make comparisons over time. The community survey of the HIES is also used to examine location-specific characteristics,

3

such as access to market and services, infrastructure, and so forth. The 2001 *Population Census* is used to obtain sub-district level variables measuring access to infrastructure. Finally, data on microfinance coverage at sub-district (*thana*) level was obtained from the *Palli Karma Sahayak Foundation (PKSF)*, the apex body for microfinance in Bangladesh.

II. Trends in standard of living measures and a profile of the poor

Poverty in Bangladesh fell dramatically between 2000 and 2005 – the percentage of population with per capita consumption below the poverty line declined by 18 percent. The fall in poverty headcount rates was significantly more than population growth during 2000-2005 leading to a decline in the number of poor people by nearly 6 million. The levels and distribution of consumption among the poor improved as well, as evident from reductions in poverty gap and squared poverty gap measures by 30 and 37 percent respectively (World Bank 2008).

Household welfare is influenced by a range of characteristics which are typically correlated with consumption. A number of non-consumption indicators of welfare show significant improvements between 2000 and 2005, for the general population and the poor alike (Table 1).

[insert Table 1 here]

Earlier work on poverty in Bangladesh shows that poverty and *quality of housing* is closely correlated. For example, households who live in houses with straw roofs are typically extremely poor (Hossain, 1995). It is therefore significant that housing

conditions have improved dramatically between 2000 and 2005, with a larger percentage of households with walls and roofs of corrugated iron sheets and cement that are more resilient to adverse weather conditions.

Access to hygienic *sanitation* facilities is closely associated with a reduced disease burden and better health outcomes. Between 2000 and 2005, the percentage of households with access to a safe toilet has increased from 52 percent to 69 percent. At the same time, the differences between poor and non-poor remain significant. In 2005, households who do not have access to safe toilet are nearly twice as likely to be poor than those who do.

Also significant is the increase in the share of households with electricity connections, from 31 to 44 percent during 2000-2005. There has also been a sharp rise in the percentage of households with access to a phone (landline and/or mobile) – from 2 percent of the population in 2000 to 13 percent in 2005 – mainly due to expansion of the mobile phone network. However, among the poorest 50 percent of the population, phone ownership while rising, remains very low at less than 2 percent.

An important household asset, especially in rural areas, is livestock ownership. Between 2000 and 2005, the average livestock asset value in real terms increased by about 20 percent for all households. For poorer households the increase was almost 50 percent. The increase appears to have come both from existing owners increasing their livestock holdings and from a higher number of households owning livestock.

The remaining part of Section II will profile poor households by factors that are likely to be associated with the *likelihood* of a household to be poor. The focus will

primarily be on factors that are relatively 'exogenous', that is, more likely to *determine* consumption levels rather than the other way around. The profiles are drawn in the form of bivariate cross-tabulations, while a multivariate analysis will follow in Section III.

Household demographics are typically closely associated with poverty. Cross-country evidence suggests that larger households, and households with a large number of children, are more likely to be poor (Lanjouw and Ravallion, 1995). In Bangladesh, poor households had a larger average household size than non-poor households in both 2000 and 2005 (Table 2). This is primarily because the average number of children in a poor household is higher than that in non-poor households, which leads to a significantly higher average dependency ratio for poor households. The correlation is found to be still significant, albeit weaker than what appears here, even if reasonable adjustments for economies of scale in household consumption were to be incorporated.[1]

[Insert Table 2 here]

A sharp fall in household size from 2000 to 2005 appears to have played an important role in increasing per capita expenditures and reducing poverty. The national average household size fell from 5.2 to 4.9 and the dependency ratio fell from 0.77 to 0.69 (Table 2). Table 2 suggests that the downward trend in household size is associated with a fall in the number of children in a household, indicating a fundamental demographic change rather than household splitting or migration. Aggregate evidence also supports this theory – the decline in household size is consistent with reductions in

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[1] A sensitivity analysis suggests that households identified as poor after reasonable adjustments for economies of scale in consumption have on average a larger household size and higher dependency ratio than non-poor households. The gaps between poor and non-poor, however, become narrower with scale adjustments – expected since such adjustment by definition raises the measured welfare of larger households.

annual population growth rate (from 2.9 percent in the 1970s to 1.5 percent currently) and total fertility rate (from 7 in 1975 to 2.7 in 2007).

The gender dimension of poverty turns out to be a more nuanced story. Poverty incidence appears to be slightly lower among households headed by women – female-headed households account for 8 percent of poor households but 12 percent of non-poor households (Table 2). However, it is important to distinguish between de facto and de jure female headed households (see Buvinic and Gupta, 1997). The economic condition of a household headed by a female where male earning members have migrated (and send remittances) can be quite different from one where the female head is the de facto main earner. Disaggregating female-headed households by marital status of the head captures this phenomenon partially. Poverty rate is just 16 percent among households headed by married women (about a third of the female-headed households in the HIES 2005 sample), compared to 48 percent among households headed by women who are divorced or separated and 37 percent when she is a widow. The regressions in section III also confirm that the association between female headedness and economic status of households depends on the marital status of women. On the whole, the evidence suggests that female headed households face considerable hardships in the absence of adult male earners.

Education is clearly associated with lower poverty (Table 3). There are two important changes between 2000 and 2005: (i) an overall improvement in education levels among household heads in 2005; and (ii) lower poverty rate in 2005 for the *same* education level (up to secondary level). The proportion of household heads with education of secondary level or above has risen from 27 percent in 2000 to 31 percent in

7

2005, while that of those with no education has declined from 57 to 54 percent. At the same time, significant poverty reduction has occurred among all education levels.

[Insert Table 3 here]

Occupational status is another key correlate of poverty. Earlier work in Bangladesh shows that *agricultural wage laborers* are the poorest occupational group by a wide margin (Hossain 1995). This is still true – the poverty rate when household heads work as agricultural wage labor and non-agricultural wage labor is 72 percent and 59 percent, respectively, compared to a national poverty rate of 40 percent (Table 3).

Land ownership is the most common targeting variable in anti-poverty programs in Bangladesh given its close relationship with poverty particularly in rural areas. Poverty rate for the landless was 57 percent in 2005 compared to 24 percent for small landowners and 13 percent for medium/large landowners. There has been no significant change in land distribution in rural areas between 2000 and 2005. In both years, around 61 percent of households in rural Bangladesh had less than 0.5 acres of land – the commonly used targeting criteria for NGO programs. While poverty reduction has occurred among all land ownership groups, the reduction was progressively greater for higher land ownership. Poverty fell by 11 percent among landless households, compared to 38 percent among medium/large landowners (Table 3).

Foreign remittances have been a key driver of poverty reduction and its role appears to have grown over the past decade (Sharma and Zaman 2009). There is a strong positive correlation between the receipt of foreign remittances and household expenditures. The poverty rate among receivers of foreign remittances is 17 percent compared to 42 percent

among the rest; domestic remittances are more evenly distributed among the poor and the nonpoor. There are stark geographic disparities in the incidence of foreign remittances. Twenty-four percent of households in Chittagong and 16 percent of those in Sylhet received remittances from abroad in 2005, compared to less than 5 percent of households in Rajshahi, Khulna, and Barisal (Table 4). This disparity roughly mirrors the geographic distribution of poverty in Bangladesh in 2005.

[Insert Table 4 here]

Access to microfinance increased significantly in recent years, with membership increasing by 62 percent between 2003 and 2005. Unfortunately, the lack of adequate information on savings/credit in the HIES does not allow for incorporating microfinance access at the household level into the analysis. Instead, data obtained from Bangladesh's micro-finance apex body (PKSF) on changes in micro-finance coverage at the sub-district (*thana*) level is merged with HIES data. On the average, microfinance membership expanded faster in areas that were poor in 2000 (Table 5). Moreover, sub-districts with higher growth in microfinance coverage experienced a higher rate of poverty reduction.

Two important caveats must be noted. First, since the membership figures are *thana*/sub-district level aggregates, the association is between the geographic patterns of microfinance access and poverty reduction, rather than at the household level. Second, in the absence of membership figures from 2000, the change in microfinance membership during 2003-2005 is used.[2] Although the lack of data limits the scope for national level analysis, some of the earlier studies using smaller data sets have found a significant

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[2] Table 5 thus assumes that the annual rate of client growth in each sub-district during 2003-2005 is similar to what would have occurred between 2000 and 2005.

positive impact of microfinance on various dimensions of household welfare in Bangladesh.[3] While there are differing views among studies about whether microfinance has significant impact on poverty of member households (see Morduch 1999), there is a broad consensus that microcredit improves welfare by reducing the *variability* of consumption of borrowers and cushioning the impact of income shocks on households.[4]

[Insert Table 5 here]

Thus a number of household level characteristics – notably household size and composition, occupation and education of household head, ownership of land and whether the household receives foreign remittances or not – appear to be strongly associated with its poverty status. Below we examine these correlations in a multivariate framework, which is useful for quantifying the relative importance of each household/location attribute in influencing household consumption.

III. Determinants of poverty from multivariate regressions

Regressions of (log of) per capita expenditures – a proxy for household welfare – on a set of household and location-specific attributes are run separately for urban and rural samples of HIES 2005 data. The regression specification is as follows:

$$\log(y_i) = \beta X_i + u_i$$

Where y_i is real consumption per capita and X_i is a vector of independent variables that influence consumption. The independent variables contain household and location-specific variables. To identify the effect of location on household consumption, fixed

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[3] To cite one example, using a specialized survey, Khandker (2005) finds that both poverty and extreme poverty rates dropped faster among microcredit borrowers than among non-borrowers, with nearly half of the borrowers' poverty reduction attributable to microcredit alone.
[4] See Morduch (1999), Pitt and Khandker (1998), Zaman (1999) and Khandker (2005).

effects representing 16 regions[5] are included in each specification. The set of independent variables is limited to those likely to be exogenous to household welfare, in other words factors that are likely to be *determinants* of a household's per capita consumption (for list of variables, see Annex, Table A-1). The specifications of the basic models for rural and urban households (columns 1 and 3 of Table A-1) are similar to that used by Wodon (1999).

Results from the regressions are consistent with the bivariate cross-tabulations in Section II. Household demographics (particularly the number of children and infants in the household), occupation and education level of the household head, land ownership and the receipt of remittances are important correlates of household consumption in a multivariate framework. The regressions also help clarify the links between the gender of household head and poverty, and between the presence of non-farm enterprises in the household and poverty. As expected, the regressions are particularly useful in measuring the effect of the location of the household on consumption, and that of location-specific factors related to infrastructure and market access.

Larger households are likely to be poor – the *number of infants, children and adults* are all correlated negatively with consumption. The relationship between poverty and number of infants or children tends to be stronger than that with the number of adults, indicating that higher dependency within a household is associated with higher poverty incidence. *Religion* and *age of household head* also influence a household's economic status. Everything else being equal, households with non-Muslim heads tend to be poorer,

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[5] Dhaka region is the reference region where "region" here refers to the old definition of districts, and not the current definition of 64 much smaller districts.

and household consumption improves with age of the household head, but at a diminishing rate. In 2005, *female-headed* urban households are likely to have *lower* consumption than male-headed urban households, while no significant effect is observed for rural households. In contrast female headed rural households were at a clear disadvantage in earlier survey years, while in only one of the five surveys which Wodon (1999) examines were urban female headed households significantly worse off compared with male headed households. Consistent with what was argued in section II, households headed by women where the men are migrants (and likely to send remittances) are likely to be better off on the average than other households whether male or female headed – this result is consistent with those found between 1983/84 and 1995/96.

Education levels of all household members have positive and significant association with per capita consumption, with the household head's education having the highest effect. The education "premium" increases with the level of education among household heads. The premiums for education of fifth grade or higher are larger for urban than rural households, reflecting greater opportunities for educated workers in urban areas – this is consistent with Wodon's (1999) analysis of earlier survey years. Spouse's (of the household head) education and the maximum education level among other adult members of the household have positive but smaller effects on per capita expenditures. These indicate positive externalities of education among household members, in line with evidence from an earlier study (Basu et al, 2001).

Agricultural land ownership is positively and significantly correlated with household consumption in rural areas. All categories of land ownership raise the level of consumption (compared to the reference group of landless households), and the

coefficients increase with land size. For urban households, land ownership has smaller effects that are significant only for land size of 0.5 acres and above while Wodon's urban regressions from earlier years show that all land thresholds are associated with higher consumption levels compared with the base category of not owning land. Ownership of small *livestock* (the number of chicken) is associated with higher consumption for rural households only.

Occupation type and the presence of *non-farm enterprises* matter for household welfare. In rural areas, households headed by daily wage workers are significantly worse off than other types of households. In urban areas, non-agricultural self-employment of the household head has a positive and significant effect on household consumption, in comparison to other occupations. The presence of non-farm enterprises in households is associated with higher level of consumption, with the coefficient being similar for both rural and urban areas.

Households receiving *remittances* (foreign or domestic) tend to be better off than households that do not in both urban and rural areas. The coefficient on the dummy representing remittances from abroad is significant and about three times larger than that on domestic remittances. While there is substantial regional disparity in the incidence of external remittances (see section II), the regressions suggest that remittances have a significant correlation with household consumption even *after* controlling for the location of the household. These coefficients must however be treated with caution, given that the direction of the causality is unclear. Foreign migration in particular can require relatively large investment upfront that the relatively better off households are more likely to afford in the first place.

13

After controlling for household characteristics, location of a household in most of the regions is associated with lower consumption relative to Dhaka region (columns 1 and 3, Table A-1). Sylhet and Kushtia are the only exceptions in the rural and urban samples respectively. Ravallion and Wodon (1999) had found broadly similar results using data from earlier rounds of HES. For example, in the rural sample for 1988, location in all but one region (Chittagong) had a negative and significant effect on household consumption relative to location in the Dhaka region.

In the light of these results, an important question is whether the regional fixed effects are capturing variations in community characteristics below the level of regions, such as availability of infrastructure in the community, connectivity/access to urban markets and size of the non-farm sector? To address this question, a few variables of this type – that are available from the community survey of HIES 2005 (for rural communities) and Census (2001) – are included in the poverty determinant regressions.[6] The coefficients of these variables must be interpreted with caution because the bias caused by the omission of potentially other important location attributes for which no data is available. Taken together, these community variables reduce the size of the regional fixed effects (see columns 2 and 4 of Table A-1). For rural areas, adding travel time from the community to *thana* and district headquarters and Dhaka city (from HIES community survey), indicators of microfinance coverage at the *thana* level (from PKSF data) and percentage of households in the *thana* with electricity connection or owning agricultural land (from the Census) reduce the size of the regional fixed effects. Similar results are seen for urban households, with the microfinance coverage and Census

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[6] Note that since the Census was fielded in 2001, these variables can be interpreted as indicators of the initial condition of development in each Thana.

variables added as independent variables in the regression (column 4 in Table A-1). The results suggest that differences in community level characteristics do explain some of the location effects on household consumption.

Given that some of the location-specific variables are highly correlated with each other, it is useful to look at their coefficients when they are introduced into the regressions one at a time (see Table A-2). *Travel times to urban centers,* which proxy access to markets, are important determinants of household welfare in rural Bangladesh. Travel times to the nearest local market (Thana headquarter) and the largest urban market of the country (Dhaka) have the largest positive effects on rural household consumption. The extent of *electrification* in the *thana* is associated with higher consumption, more strongly for rural areas than for urban areas (Table A-2).

The regression specifications also include *thana* level indicators for *microfinance coverage* and *increase in coverage* between 2003 and 2005 (see columns 2 and 4 of Table A-1). For rural households, the coefficient for *thana* level microfinance coverage is insignificant, while that for *thana*-level increase in microfinance coverage (2003-2005) is positive and significant.[7] This is consistent with the trend suggested by Table 5: on average, areas where microfinance membership grew more also experienced higher poverty reduction between 2000 and 2005. The caveats with the microfinance data discussed in Section II are relevant here, which imply that these correlations do not

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[7] The coefficient for *thana* level microfinance coverage is negative and significant for urban households. This is likely to be a spurious correlation – given the extremely limited coverage of MFIs in urban areas, it is hard to see how consumption of urban households would be impacted by microfinance expansion. The negative coefficient probably reflects a deliberate attempt by MFIs to expand coverage in areas that were poorer to start with (also see Annex, Table A-1).

constitute evidence that microfinance expansion had an *impact* on poverty reduction given our lack of household level microfinance access data.

IV. Changes in poverty over time: results from a decomposition analysis

A comparison of the regression results from HIES datasets of 2000 and 2005 can be useful to identify the factors that were largely responsible for the reduction in poverty during this period. We can compare our results with Wodon (1999) who uses the same methodology. This exercise involves decomposing the growth in mean per capita real consumption – using the Oaxaca-Blinder method (see Oxaca 1973) between 2000 and 2005 into growth due to changes in (i) household and location *endowments* and (ii) *returns* to these endowments.[8] More specifically, we specify the linear regression equation (specified in section III above) for two different time periods, t and t+1, and then subtract the latter from the former to obtain:

$$log(y_i^{t+1}) - log(y_i^t) = (\beta^{t+1} - \beta^t)X_i^t + \beta^{t+1}(X_i^{t+1} - X_I^t) + (u_{t+1} - u_t) \text{----------[1]}$$

or

$$log(y_i^{t+1}) - log(y_i^t) = (\beta^{t+1} - \beta^t)X_i^{t+1} + \beta^t(X_i^{t+1} - X_I^t) + (u_{t+1} - u_t)\text{----------[2]}$$

In most cases these two ways to decompose $log(y_i^{t+1})$ - $log(y_i^t)$ will give similar decomposition results, and this is borne out by the empirical results.[9] In each version, the first term on the right hand side represents the effect of changing returns over time (holding characteristics constant) and the second term represents the effect of changing household characteristics (holding returns constant).

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[8] See Glewwe et al (2002) for a similar decomposition exercise, with household survey data from Vietnam.
[9] The standard index number problem, where two possible 'weights' (coefficients in this case) can be used for decomposition purposes is the reason for the two equations presented in this paper.

The decompositions suggest somewhat different stories for the rural and urban samples (see summary results in Table A-2.3).[10]   Among rural households, increasing *returns* over time had as strong an impact on the observed consumption growth as did changes in household and location characteristics. Among urban households, changes in *characteristics* played a larger role than that in returns or coefficients on the aggregate.[11] Changes in returns to household size, other demographic variables, land ownership and geographic location contributed more to the consumption growth of rural than urban households. The fact that a rise in returns to endowments played a significant role in rural poverty reduction suggests an improvement in the economic environment in rural areas.

Among household endowments, changes in household size and education of household members contributed the most to consumption growth. The role played by reduction in household size is consistent with the finding in World Bank (2008) – that if household size had not changed between 2000 and 2005, poverty reduction would have been almost half of what it actually was. This is similar to Wodon's (1999) finding for the 19883-1996 period that '*changes in the returns to demographic variables account for the lion's share of the change in per capita consumption over time*' (page 13). The effect of an increase in education endowments was particularly strong for urban households but the returns are negative for both rural and urban areas. In other words while a shift to higher levels of education is associated with improving welfare, the overall returns to education at each grade level appears to have declined. This is in contrast to Wodon's

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[10] More detailed results – including decomposition results for each variable – are available in an Addendum to this paper, which can be provided upon request.
[11] These results are similar (but not identical) to those obtained by Serajuddin et al (2007), using the same datasets, but with some differences in specifications.

findings from earlier survey rounds where he concludes that the returns to education of the household head in urban areas rose over time while they fell in rural areas.

For both rural and the urban households, the effects of changes in returns to occupations dominate that of changes in occupational characteristics. For rural households, the increases in returns to agricultural labor and farming are substantial and consistent with poverty reduction seen among households headed by an agricultural day laborer or farmer (see Table 3). This is consistent with Wodon's results from 1991-1996 where returns to agricultural occupations rose following a decline in the 1980s. For urban households, returns to non-agricultural daily labor and self-employment improved significantly, suggesting that rising labor incomes and increased earnings from nonfarm self-employment in urban areas contributed to reducing poverty.

Among urban households, the coefficients on remittances (domestic and foreign) increased sharply from 2000 to 2005, suggesting that a rise in 'returns' to remittances contributed significantly to urban consumption growth. Among rural households, both increase in remittances and returns to remittances had small contributions to consumption growth. These impacts are consistent with the findings of a recent study on the effect of remittances on household welfare in Bangladesh (Sharma and Zaman, 2009).

Given the role played by location effects in explaining household consumption (see Section III), time trends of these effects help understand whether and how the pattern of regional disparities has changed over the years, and how these changes may have contributed to reduction in national poverty. The results illustrate how spatial dimensions of poverty have shifted in Bangladesh. First it is clear that there has been some reduction

in the 'disadvantage' of being located in any region other than Dhaka.[12] This trend is seen more clearly for the period 2000-2005 where decompositions show a reduction in the size of the average (negative) effect of being located in any region other than Dhaka (Table A-3).

Second, a more disaggregated analysis reveals a nuanced story suggesting that the earlier divide between Dhaka and the rest of Bangladesh is being replaced by an 'East-West' divide. We run the following regression specification:

$$Y = \alpha + X\beta_1 + \beta_2 D(year = 2005) + Z_k\beta_3 + D(year = 2005)Z_k\beta_4 + \varepsilon \,,$$

where Y is the vector of log of real per capita consumption, X represents other control variables and Z the district dummies. Chow test results (for changes in location effects between 2000 and 2005) represent coefficients of the interaction terms between district dummies and dummy for 2005 in the model where both years are pooled.

Results presented in table A-4 show that the narrowing of the gaps with Dhaka region occurred mostly for the eastern regions while the gap with Dhaka region has widened for most of the regions to the west and southwest. These are evident from the results of Chow tests indicating whether the location effects in 2005 are significantly different from those in 2000. For the rural sample, of the nine western regions, the gap with Dhaka region has increased for four and remained unchanged for two. In contrast, the gap with Dhaka region has not increased for *any* of the eastern regions, and shrunk for five out of the seven. For the urban sample, the gap with Dhaka region has increased

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[12] There are difficulties in making exact comparisons between the results of Ravallion and Wodon (1999) and results for 2000 and 2005 – because of some differences in the specifications, which are necessary due to changes in the household survey over time.

for five western regions and just one eastern region. Thus while poverty has reduced and consumption improved on the average in the eastern part of the country from 2000 to 2005, the western regions have fallen further behind.

V.   Conclusion

The poor in Bangladesh are more likely to belong to households with a larger number of dependents, lower education among household members, and with the household head engaged in daily wage labor. Poor households are also more likely to be landless or functionally landless and less likely to receive domestic or foreign remittances. Where a household is located geographically has a strong influence on its economic status. This poverty profile for 2005 is similar to the mid-eighties and hence at first glance it would appear that little has changed for the poor in Bangladesh.

A closer look at national household survey data suggests a more nuanced story. For a start the proportion of people below the poverty line has fallen sharply from close to 60% in 1990 to 40% in 2005. We show that the reduction in consumption poverty in Bangladesh during 2000-2005 was also mirrored by substantial improvements in living conditions – including housing characteristics, and access to sanitation facilities, electricity, and communications.

We find that the drivers of poverty reduction between 2000 and 2005 were to an extent similar to earlier decades, but in other key features they were not. Key factors contributing to poverty reduction which are consistent across the past decades were changes in some household characteristics – most prominently, a smaller number of dependents and improvements in education – and an increase in returns to some

characteristics, such as occupations and land ownership. The rise in returns to attributes suggest that households were able to get more out of their existing endowments and occupations, which indirectly points to an economic transformation created by sustained economic growth during this period.

So what is different in the new millennium compared with the past? Most significantly, we find that on average there has been some reduction in the economic gap between the Dhaka region and the rest of the country between 2000 and 2005 – this phenomenon of a large divide between the region which included the capital city and the rest of the country was a key feature of the eighties and nineties but has reduced in importance by 2005. More interestingly, once we unpack this 'average gap' result, we find that since 2000 while most regions in the east have reduced their gaps with the Dhaka region, much of the west and southwest have stagnated or fallen behind, resulting in an emerging East-West economic divide within Bangladesh. The results also point to more localized, community level factors that explain in part why location of a household matters, and why the location effects on household economic status vary widely even within the East and the West. The location effects are partly explained by a few indicators that reflect the availability of infrastructure and connectivity with local and national markets. In particular, lower travel times to the *thana* (sub-district) headquarter and Dhaka are strongly associated with higher household welfare (consumption).

There are two other factors which are different in the 2000s compared to earlier decades though the relative importance of their impact cannot be as easily compared with the past. Remittances rose sharply since 2000 as did micro-finance access. Both are clearly associated with reducing poverty, although the distribution of remittances was

skewed between regions within the country. However, since neither factor was included in the earlier Wodon (1999) study of the micro-determinants of poverty reduction we cannot make direct comparison between our results and those from the past.

Looking ahead, what do the findings of this paper imply for policies to sustain and improve the pace of poverty reduction? Improving labor productivity in agriculture would be critical to raise earnings of agricultural wage workers who have a high incidence of poverty. Given the population pressure on land, achieving higher agricultural labor productivity would require accelerated growth in the non-agricultural sectors to absorb workers from low return agricultural wage employment. The relatively high returns to non-agricultural self employment underscore the importance of this sector for poverty reduction. The rise in returns from and growth of household-based nonfarm enterprises may be linked to the rapid spread of microfinance. Further improving the access to finance for small enterprises, particularly in urban areas where microfinance is less prevalent, is likely to spur their growth.

A fall in dependency ratios within households played a key role in reducing poverty between 2000 and 2005, indicating that sustaining Bangladesh's past successes in reducing fertility is crucial for poverty reduction. Raising education attainments will also have high dividends in terms of higher earnings and reduced poverty. This paper shows the clear link between household welfare and education of *all* household members, and not just that of the household head. As women's participation in the labor force increases, there are increasing economic benefits of women's education to the household – to complement the social and intra-household benefits associated with women's education.

As education levels increase, the poor are also increasingly able to migrate out of agriculture daily wage labor into (predominantly) salaried employment in services.

Narrowing the economic gap between the growing and lagging regions of the country, which has increasingly taken the form of an east-west divide, would require interventions to improve endowments and returns to the endowments in the lagging parts of the country. Investments to improve human capital of the poor in lagging regions would enable them to access better opportunities in growing regions and improving credit access to household enterprises would enhance the availability of resources for investment. To raise returns to endowments, improving the investment climate for nonfarm enterprises in lagging regions would be crucial. This would require improving the availability and quality of infrastructure including roads and electricity. Furthermore, given the important role played by remittances in reducing poverty, addressing the constraints faced by the poor, especially from lagging regions, to migration can be an area for policy intervention.

Tables

Table 1: Trends in basic assets and amenities						
	All households		Bottom 5 deciles		Bottom 3 deciles	
	2000	2005	2000	2005	2000	2005
Average real value of livestock (tks)	4280	5281	3222	4653	2623	3919
Livestock ownership (%)	35.2	40.3	33.6	43.3	31.6	42.5
Wall of dwelling (% with cement / CI sheet)	37.7	55.2	21.4	39.5	17.4	33.9
Roof of dwelling (% with cement / CI sheet)	76.4	89.9	68.1	84.2	64.5	81.6
Safe latrine use (%)	52.0	69.3	35.2	55.6	29.4	50.0
Electricity connection (%)	31.2	44.2	14.6	25.4	10.0	20.2
TV ownership (%)	15.8	26.5	3.6	10.1	1.8	6.7
Phone ownership (%)	1.5	12.2	0.1	1.5	0.0	0.9
Source: HIES 2000, 2005						

Table 2: Demographic characteristics of households						
	All households		Poor households		Non-poor households	
Demographics	2000	2005	2000	2005	2000	2005
Household Size	5.18	4.85	5.4	5.2	5.0	4.6
Dependency Ratio	0.77	0.69	0.99	0.91	0.60	0.57
Number of children	2.1	1.8	2.5	2.3	1.6	1.5
Number of Male Adults	1.6	1.5	1.4	1.4	1.7	1.6
Number of Female Adults	1.5	1.5	1.5	1.5	1.6	1.6
Head female	0.09	0.10	0.08	0.08	0.09	0.12
Source: HIES 2000, 2005						

Table 3: Characteristics 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 (acr.)				
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
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	24.0	20.8	32.6	45.4
Landline or cellphone connection	1.7	3.7	1.8	14.2
Receiving Domestic Remittances	42.5	37.5	18.5	21.6
Receiving remittances from abroad	26.2	17.1	9.7	10.4
Activity of household head				
Self: agri	40.2	32.9	20.7	22.9
Self: non-agri	41.7	32.7	25.7	20.4
Salary wage employment	28.9	22.0	13.3	14.9
Daily wage: agri	76.5	72.4	18.4	15.7
Daily wage: non-ag	66.9	58.5	11.7	13.0
None	39.6	27.7	10.3	13.2
Source: HIES 2000, 2005				

Table 4: Percentage of households receiving remittances by division				
	Domestic		International	
	2000	2005	2000	2005
Barisal	37.2	29.5	8.2	5.2
Chittagong	16.1	25.3	20.7	24.2
Dhaka	17.5	13.5	8.2	7.8
Khulna	21.0	24.1	1.8	3.9
Rajshahi	13.6	27.0	2.2	1.3
Sylhet	33.3	10.4	17.4	15.7
Total	18.9	21.1	8.6	8.8

Source: HIES 2000, 2005

Table 5: Increase in number of microfinance members and poverty reduction			
	Poverty Headcount Rate (%)		
Increase in no. of members[1]	2000	2005	Change (%)
Less than 20%	46.6	42.7	-3.9
20% to 30%	46.8	40.0	-6.8
30% to 40%	50.9	38.4	-12.6
More than 40%	54.4	41.1	-13.3

Note: [1] indicates percentage change in no. of microfinance members in Thana between 2000 and 2005.
Source: HIES 2000, 2005; PKSF

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Annex

Table A-1: Regressions of log of per capita consumption, 2005				
	(1)	(2)	(3)	(4)
		Rural-		*Urban-*
	Rural-Basic	*Extended*	*Urban-Basic*	*Extended*
Mymensingh	-0.108	-0.014	-0.114	-0.065
	(12.96)**	(0.49)	(11.83)**	(1.62)
Faridpur	-0.072	-0.004	-0.062	-0.042
	(8.24)**	(0.16)	(7.16)**	(0.89)
Tangail/Jamalpur	-0.236	-0.152	-0.269	-0.180
	(30.45)**	(6.86)**	(24.03)**	(4.02)**
Chittagong	-0.045	0.108	-0.027	-0.025
	(3.72)**	(2.11)	(2.93)**	(0.84)
Comilla	-0.069	-0.014	-0.130	-0.094
	(10.76)**	(1.03)	(13.08)**	(2.64)*
Sylhet	0.017	0.068	-0.066	-0.109
	(1.70)	(1.78)	(6.76)**	(2.35)*
Noakhali	-0.274	-0.212	-0.086	-0.056
	(6.21)**	(5.68)**	(2.54)*	(1.04)
Khulna	-0.276	-0.138	-0.416	-0.397
	(28.96)**	(5.08)**	(54.34)**	(20.98)**
Jessore	-0.281	-0.149	-0.334	-0.267
	(24.37)**	(4.66)**	(55.95)**	(5.59)**
Barisal/Patuakhali	-0.358	-0.140	-0.226	-0.153
	(36.47)**	(2.85)*	(27.68)**	(4.25)**
Kushtia	-0.041	0.032	0.135	0.205
	(7.46)**	(1.42)	(14.02)**	(5.70)**
Rajshahi	-0.287	-0.169	-0.255	-0.199
	(19.97)**	(5.85)**	(16.00)**	(5.81)**
Rangpur	-0.318	-0.226	-0.328	-0.264
	(46.62)**	(8.05)**	(30.57)**	(5.55)**
Pabna	-0.242	-0.197	-0.309	-0.255
	(13.84)**	(7.41)**	(19.51)**	(5.52)**
Dinajpur	-0.252	-0.109	-0.321	-0.199
	(25.40)**	(3.40)**	(35.93)**	(4.24)**
Bogra	-0.248	-0.156	-0.316	-0.260
	(26.83)**	(6.68)**	(30.85)**	(5.98)**
Number of infants	-0.202	-0.209	-0.421	-0.406
	(3.59)**	(4.16)**	(3.27)**	(3.00)**
Number of infants squared	0.034	0.038	0.277	0.269
	(0.66)	(0.84)	(2.32)*	(2.13)*
Number of children	-0.178	-0.177	-0.180	-0.178
	(14.80)**	(14.06)**	(13.34)**	(13.15)**
Number of children squared	0.014	0.013	0.012	0.011
	(6.01)**	(5.35)**	(4.79)**	(4.62)**
Number of adult	-0.104	-0.109	-0.142	-0.138
	(7.77)**	(7.87)**	(6.93)**	(7.05)**
Number of adult squared	0.008	0.008	0.012	0.011
	(5.75)**	(5.56)**	(5.64)**	(5.31)**
Head female	-0.015	-0.030	-0.148	-0.149

	(0.34)	(0.62)	(3.02)**	(3.09)**
Head:married, no spouse present	0.097	0.100	0.350	0.345
	(3.15)**	(2.68)*	(6.99)**	(6.78)**
Head:single, no spouse present	0.108	0.090	0.240	0.186
	(1.97)	(1.71)	(3.62)**	(4.08)**
Head:divorces, widowed, separated, no spouse present	-0.041	-0.033	0.160	0.166
	(1.14)	(0.84)	(2.45)*	(2.60)*
Head age	0.016	0.015	0.020	0.020
	(7.05)**	(5.95)**	(10.19)**	(9.47)**
Head age squared	-0.000	-0.000	-0.000	-0.000
	(6.77)**	(5.45)**	(8.39)**	(7.34)**
Head non-muslim	-0.093	-0.065	-0.107	-0.093
	(2.80)*	(3.16)**	(3.34)**	(2.86)*
Level of Head's edu: Below class 5	0.138	0.128	0.155	0.155
	(4.33)**	(4.69)**	(4.70)**	(4.19)**
Level of Head's edu: Class 5	0.131	0.128	0.193	0.192
	(8.91)**	(7.65)**	(11.19)**	(10.17)**
Level of Head's edu: Class 6 to 9	0.191	0.169	0.313	0.308
	(10.28)**	(10.44)**	(10.78)**	(11.01)**
Level of Head's edu: Higher Level	0.305	0.273	0.467	0.458
	(13.66)**	(14.71)**	(10.39)**	(10.41)**
Level of Spouse's edu: Below class 5	0.066	0.060	0.143	0.140
	(2.68)*	(2.51)*	(4.36)**	(4.12)**
Level of Spouse's edu: Class 5	0.045	0.046	0.114	0.117
	(2.66)*	(2.32)*	(5.41)**	(5.16)**
Level of Spouse's edu: Class 6 to 9	0.112	0.101	0.239	0.239
	(4.17)**	(3.53)**	(9.86)**	(9.30)**
Level of Spouse's edu: Higher Level	0.296	0.284	0.439	0.437
	(6.65)**	(6.53)**	(9.18)**	(9.52)**
Difference b/w head and max edu: 1 level	0.088	0.076	0.111	0.110
	(5.83)**	(4.76)**	(4.03)**	(4.11)**
Difference b/w head and max edu: 2 level	0.102	0.086	0.122	0.119
	(5.57)**	(5.56)**	(4.75)**	(4.15)**
Difference b/w head and max edu: 3 level	0.135	0.120	0.226	0.216
	(7.04)**	(6.28)**	(8.29)**	(9.89)**
Difference b/w head and max edu: 4 level	0.159	0.145	0.341	0.315
	(4.77)**	(4.74)**	(6.37)**	(8.09)**
Functionally Landless:0.05-0.49	0.072	0.082	0.008	0.006
	(4.28)**	(6.01)**	(0.37)	(0.22)
Marginal:0.5 to 1.5	0.148	0.173	0.082	0.100
	(8.61)**	(11.12)**	(3.21)**	(4.64)**
Small:1.5 to 2.5	0.269	0.299	0.190	0.206
	(7.07)**	(8.12)**	(4.31)**	(4.72)**
Medium&Large:2.5 or more	0.419	0.476	0.319	0.327
	(11.83)**	(15.79)**	(8.78)**	(9.05)**
Head's major activity: self-employment:non-agriculture	0.035	0.034	0.100	0.102
	(1.66)	(1.52)	(2.26)*	(2.27)*
Head's major activity: Daily wage employment	-0.058	-0.059	-0.023	-0.021
	(3.60)**	(3.88)**	(0.80)	(0.67)
Head's major activity: Salary wage employment	0.015	0.004	0.038	0.036

	(0.62)	(0.18)	(1.48)	(1.29)
Head's major activity: None	0.024	0.018	0.073	0.077
	(1.14)	(1.02)	(1.73)	(1.84)
Number of non-farm enterprises	0.071	0.062	0.079	0.076
	(3.79)**	(3.22)**	(2.83)*	(2.79)*
HH receives domestic remittances-dummy	0.091	0.078	0.107	0.109
	(2.45)*	(2.94)**	(3.16)**	(3.32)**
HH receives remittances from abroad-dummy	0.252	0.222	0.310	0.302
	(5.13)**	(6.10)**	(4.88)**	(4.47)**
number of cattle	0.004	0.005		
	(1.79)	(1.86)		
number of chicken	0.001	0.001		
	(3.10)**	(3.15)**		
Travel time to thana HQ ('00 mins)		-0.032		
		(2.33)*		
Travel time to zila HQ ('00 mins)		-0.003		
		(2.25)*		
Travel time to Dhaka HQ ('00 mins)		-0.036		
		(3.22)**		
% of HH with electric connection		0.001		0.000
		(1.30)		(0.54)
% of HH own agricultural land		-0.003		-0.000
		(1.74)		(0.06)
Coverage of micro finance in Thana in 2005		-0.001		-0.002
		(1.10)		(2.51)*
Change in microfinance members between 2003-2005		0.002		0.001
		(4.07)**		(1.15)
Constant	6.858	7.024	6.668	6.696
	(97.77)**	(48.49)**	(94.25)**	(47.45)**
Observations	6371	5874	3660	3600
R-squared	0.48	0.50	0.56	0.56

Note: Absolute value of t statistics in parentheses; * significant at 5%; ** significant at 1%

Table A-2: Coefficients of location variables, 2005		
	Rural	**Urban**
Travel time to thana HQ ('00 mins)	-0.065 (4.02)**	
Travel time to zila HQ ('00 mins)	-0.008 (3.22)**	
Travel time to Dhaka HQ ('00 mins)	-0.042 (4.44)**	
Percentage of HH with electricity in Thana	0.004 (3.86)**	0.001 (2.14)*
Percentage of HH owning agricultural land	-0.004 (1.99)	-0.001 (0.54)

Note: each variable is added singly to the basic model for --model (1) for rural and model (3) for urban area.
**: significant at 1% level; *: significant at 5% level
Source: HIES 2005

Table A-3: Oaxaca decomposition of increase in per capita real consumption between 2000 and 2005: summary results						
	Rural			Urban		
	endowments	coefficients	interaction	endowments	coefficients	Interaction
Geographic dummies	-0.002	0.032	0.006	-0.033	0.014	0.017
Household size variables	0.032	0.059	-0.003	0.031	0.012	0.000
Other demographic variables	-0.002	0.220	0.002	-0.001	0.157	-0.004
Education variables	0.023	-0.019	-0.005	0.042	-0.089	-0.008
Land variables	0.000	0.025	0.000	0.020	0.001	0.003
Occupation variables	0.006	0.030	-0.008	-0.035	0.059	0.057
Number of non-farm enterprises	-0.004	-0.003	0.000	-0.002	0.008	-0.001
Remittances	0.004	0.009	0.001	-0.001	0.036	0.000
Livestock	0.003	-0.021	-0.002			
Constant	0	-0.275	0	0	-0.255	0
Total*	0.061	0.058	-0.008	0.022	-0.058	0.065

Source: HIES (2000, 2005)
*The total for each column may not exactly match the sum of rows due to rounding off.

Table A-4: Location effects of (old) district dummies– 2000 and 2005						
	Rural[1]			Urban[2]		
District	(1)	(2)	(3)	(4)	(5)	(6)
	2000	2005	Chow Test[3]	2000	2005	Chow Test[3]
Mymensingh	-0.305	-0.108	0.199	-0.208	-0.114	0.101
	(43.33)**	(12.96)**	(32.01)**	(13.75)**	(11.83)**	(12.28)**
Faridpur	-0.357	-0.072	0.292	-0.323	-0.062	0.235
	(56.43)**	(8.24)**	(31.96)**	(26.57)**	(7.16)**	(15.22)**
Tangail/Jamalpur	-0.377	-0.236	0.126	-0.019	-0.269	-0.228
	(50.11)**	(30.45)**	(24.45)**	(1.32)	(24.03)**	(18.60)**
Chittagong	-0.041	-0.045	-0.008	-0.104	-0.027	0.087
	(5.65)**	(3.72)**	(0.69)	(18.02)**	(2.93)**	(14.00)**
Comilla	-0.070	-0.069	0.015	-0.077	-0.130	-0.032
	(15.39)**	(10.77)**	(4.23)**	(9.64)**	(13.08)**	(4.49)**
Sylhet	-0.022	0.017	0.046	-0.151	-0.066	0.115
	(3.77)**	(1.70)	(8.21)**	(13.34)**	(6.76)**	(10.57)**
Noakhali	-0.190	-0.274	-0.040	-0.305	-0.086	0.261
	(19.71)**	(6.22)**	(1.66)	(34.11)**	(2.54)*	(16.26)**
Khulna	-0.064	-0.276	-0.233	-0.315	-0.416	-0.098
	(5.94)**	(28.98)**	(39.78)**	(51.03)**	(54.34)**	(24.27)**
Jessore	-0.275	-0.281	-0.008	-0.365	-0.334	0.082
	(33.97)**	(24.38)**	(1.45)	(34.77)**	(55.95)**	(8.02)**
Barisal/Patuakhali	-0.270	-0.358	-0.091	-0.141	-0.226	-0.066
	(47.47)**	(36.52)**	(13.88)**	(17.32)**	(27.68)**	(10.92)**
Kushtia	-0.242	-0.041	0.196	-0.378	0.135	0.535
	(30.91)**	(7.46)**	(27.37)**	(27.08)**	(14.02)**	(39.60)**
Rajshahi	-0.237	-0.287	-0.058	-0.267	-0.255	0.071
	(26.96)**	(19.99)**	(5.35)**	(33.29)**	(16.00)**	(4.49)**
Rangpur	-0.424	-0.318	0.096	-0.434	-0.328	0.119
	(53.45)**	(46.60)**	(20.73)**	(63.20)**	(30.57)**	(18.73)**
Pabna	-0.265	-0.242	0.015	-0.055	-0.309	-0.219
	(39.97)**	(13.85)**	(1.21)	(4.18)**	(19.51)**	(10.70)**
Dinajpur	-0.332	-0.252	0.060	-0.523	-0.321	0.243
	(26.71)**	(25.40)**	(12.97)**	(36.38)**	(35.93)**	(24.71)**
Bogra	-0.219	-0.248	-0.047	-0.097	-0.316	-0.211
	(25.07)**	(26.82)**	(6.51)**	(8.61)**	(30.85)**	(20.00)**

Notes: 1) basic specification of rural model (Column 1, Table A-2.3) is used for both 2000 and 2005 regressions
2) basic specification of urban model (Column 3, Table A-2.3) is used for both 2000 and 2005 regressions
3) Chow test results (for changes in location effects between 2000 and 2005) represent coefficients of the interaction terms between district dummies and dummy for 2005 in the model where both years are pooled. The regression model is
$Y = \alpha + X\beta_1 + \beta_2 D(year = 2005) + Z_k\beta_3 + D(year = 2005)Z_k\beta_4 + \varepsilon$, where Y is the vector of log of real per capita consumption, X represents other control variables and Z the district dummies. β_4 is presented in columns 3 and 6 for rural and urban samples respectively. A positive (negative) coefficient in column 3 indicates the reduction (increase) in gap between the rural samples of Dhaka and the respective district from 2000 to 2005, and similarly for column 6 with regard to urban samples.
4) **: significant at 1% level
Source: HIES 2000, 2005