Growth and Distribution of Rural Income in Bangladesh Analysis Based on Panel Survey Data Mahabub Hossain, Binayak Sen, Hossain Zillur Rahman INTRODUCTION ALTHOUGH the household expenditure surveys (HES) carried out by the Bangladesh Bureau of Statistics (BBS) represent a major source for analysing trends in income distribution and poverty, the results have generated controversies, as they seemed incongruent with macroeconomic trends. Considerable controversies persisted - at least until recently - on the nature of the rural growth process, on the directionality of attendant changes in income inequality and poverty, and on possible factors that underlined such changes [Rahman and Haque 1988; Khan and Hossain 1989; Osmani 1989; Khan 1990]. Consultation with a third source of primary data, such as the present study, can help clear up factual controversies that cloud thinking on policies. Similarly, the need for going beyond the conventional analysis of cross-sectional data to shed light on what is going on 'behind the scenes' can hardly be exaggerated. This paper highlights the dynamic aspects of the growth and distribution of rural incomes by focusing on the changing fortunes of the same set of households over time. Broadening the scope of conventional poverty analysis is an important step, given the increasing emphasis in the literature on policies beyond economic growth. The focus of the paper is restricted to the analysis of factors contributing to the dynamics of rural income growth and its distribution. The paper is structured as follows. Section II describes the methodology used for selecting the sample. Growth and Distribution of Rural Income in Bangladesh 3 2 Groseth and Distribution of Rural Income in Bangladesh unions were dropped at this stage because of the problem of Section III reports the findings of the survey on changes in the logistics for conducting the survey. The sample thus consisted of 62 asset base, occupation structure, and technological progress in villages from 57 districts. agriculture. The structure and the growth of household incomes and their determinants are reported in Section IV. The section The census of the selected villages enumerated totalled 9,874 households or 159 households per village. These households were also gives a brief review of the aggregate trend and the sources used as the sample frame for the final draw of the sample for data of income inequality. An estimate of the income-poverty level generation on the operation of the household economy. The for each of the survey points is presented in Section V. The households were classified into four landownership categories: (a) functionally landless (with less than 0.2 hectare of land), (b) small section also focuses on trends in non-income dimensions of poverty with special focus on health and education. It also landowner (0.2 to 1.0 ha), (c) medium landowner (1.0-2.0 ha) and (d) large landowner (over 2.0 ha). Each of the landownership presents the households own perceptions of the changes in wellbeing, to provide a check on the trends derived on the basis of groups was further classified into two sub-groups according to objective assessment. Section VI provides a summary of whether the household was engaged in tenancy cultivation or not. the findings and draws implications for policy Twenty households were then selected from each village using the proportionate random sampling method so that each of the eight (4×2) strata was represented according to its weight. In a few DATA AND METHODS villages the sample size was 21 because of rounding error. The total sample for the 1987 survey thus consisted of 1,245 households. Survey Methodology The selected households were interviewed with a structured The sample for the study was drawn in 1987 using a multistage questionnaire for generating data on demographic characterisrandom sampling method for the study of the Differential Impact tics of all household members, utilisation of all landowned and of Modern Rice Technology conducted by the Bangladesh Instioperated by the household, costs and returns of cultivation of tute of Development Studies (BIDS) in collaboration with the International Rice Research Institute (IRRI) [See Hossain et al. different crops, ownership of non-land assets, employment of working members and earnings from non-farm activities, and 1994: David and Otsuka 1994 for the findings of the study]. In the perceptions of the households regarding their economic standfirst stage, 64 unions (to cover one union each from 64 districts in ing in the village and changes in their economic conditions. The Bangladesh) were selected from the list of all unions (the lowest same households were re-surveyed by BIDS in 1990 [see level local government unit) using a random number table. In the Rahman and Hossain 1995 for the findings] and in 1995 for the second stage, information on land area, total population, and project entitled 'Analysis of Poverty Trends' supported by the literacy rates were obtained for all villages of the selected unions Like Minded Group of Donors. The sample size was larger in from the district reports of the 1981 Population Census. Two the later surveys as many households were subdivided due to villages were selected purposively for each union such that the demographic pressures. All subdivided households were covpopulation pressure and the literacy rate for the selected villages ered by the later surveys. There was also some attrition due to were similar to those for the selected union. Thus, 124 villages were migration of some households from the village. This paper is selected, with the first choice in each pair in the village being the based on the data from the 1988 and 1995 surveys. most representative of the union. A census of all households in the first choice village was undertaken to collect information on the Estimation of Income ownership of land, adoption of modern rice varieties, and the The concept of income used in the study is comprehensive, major source of household incomes. Where the village community including income received in kind and in cash. A money value was imputed to receipts in kind at prices prevailing in the survey village. was found non-cooperative for conducting the study, the household survey was conducted in the second choice village. Two Growth and Distribution of Rural Income in Bangladesh 5 4 Growth and Distribution of Rural Income in Bangladesh enumerated in 1988. Nearly 55 per cent of the migrants belong Household consumption of self-produced crops and their by ed to the landless households, and 20 per cent to households products, and livestock, lishery, and forestry products are considwith less than 0.2 ha. The incidence of migration was low ered as incomes. The income from crop production activities is among the land-rich households although many experienced estimated as the value of the main product and by-products net of migration of educated members. the costs on account of seeds, fertilisers, pesticides, irrigation The changes in the age composition of the population charge, payment to hired labour, and draft and machine power. indicated a substantial decline in the natural rate of population The income thus includes the imputed value of the utilisation of growth. The size of the 0-10 age group declined substantially resources owned by the household, such as land, family workers during the 1998-95 period, while the number in the age group and draft animals. Due to lack of information, no allowance could 10 and above increased at a rate of 2.3 per cent per year, similar be made for depreciation of fixed assets and the owner-occupied to that estimated by the 1981 Population Census for the 1973-81 housing. Receipts from disinvestment of assets and borrowings are period. The ratio of young children (0-4 age group) to women in the reproductive age (16 to 50) is a good indicator of the not included in incomes. Implicit transfers on account of nonmarket access to public services such as education and health care current fertility in the population. The child-woman ratio among the survey population declined from 77 per cent in 1988 to 50 should ideally be included in income accounting. The survey lacked information on this aspect. per cent by 1995 indicating substantial reduction in the fertility rate. These demographic changes were reflected in the reduc-Measures of Income Inequality and Poverty tion in household size from 6.16 in 1988 to 5.95 in 1995, a rate The degree of inequality in the distribution of income was of decline of 0.5 per cent per year. measured by the Gini coefficient, as proposed by Sen (1973). The progress in population control was not yet reflected in the availability of family labour. The average number of family The concentration coefficient was estimated by ranking house holds in the scale of per capita incomes. A Gini decomposition workers (earning members) increased from 1.61 to 1.79 during the 1998-95 period. The labour force participation rate among adult analysis was conducted to identify the factors contributing to overall income inequality by following the procedure suggested (16+) male members in fact declined marginally from 85 to 82 per by Fei et al (1978), Pyatt et al (1980) and Shorrocks (1983). The cent due to higher school participation rate among young adults. changes in the poverty situation was assessed by measuring a The increase in the number of family workers was due to higher class of indices - the head count ratio, the poverty gap ratio, and female participation in economic activities outside the homestead, the squared poverty gap ratio - using the method proposed by which increased from 7 to 11 per cent over the period. Foster, Greer and Thorbeck (1984). The quality of human capital seems to have improved (Table 1). The proportion of adult population without any formal schooling declined from 55 to 44 per cent, while those CHANGES IN ASSET BASE AND LIVELIHOOD SYSTEMS who attended secondary schools increased from 23 to 30 per cent. Those who had completed high school or attended college The findings show that the number of rural households were only 12 per cent of the adult population in 1995 and their proportion hardly changed over the 1988-95 period. There increased by only 0.8 per cent and the population by 0.3 per cent per year during 1987-95 period, compared to a 2.1 per cent was a high rate of rural-urban migration from this category. annual growth in national population during the 1980s, as estimated by the 1991 population census. Rural-urban migra-The changes in the livelihood system for the earning members can be seen from Table 2. In 1988 nearly two-thirds of the tion contributed to a large extent to the reduction in rural family workers were engaged in agriculture as the principal population growth. The number of households who migrated occupation; 43 per cent in farming activities for the household, during the 1988-95 period constituted 14 per cent of households Growth and Distribution of Rural Income in Bangladesh 7 Growth and Distribution of Rural Income in Bangladesh agriculture to non-farm activities was facilitated by the improve and 23 per cent selling labour services for others' farms. The ment in rural infrastructure and human capital, and the technodependence on agriculture for livelihood however declined sublogical progress in agriculture that generated employment stantially over the period with increasing importance of rural non-farm activities. In 1995, 45 per cent of the workers were engaopportunities in rural trade and transport sectors. The incidence of multiple occupations declined with greater importance of ged in non-agricultural activities including various salaried and non-farm employment as the source of livelihood. personal services, petty trade, shop-keeping and business, pro-The surveys found a high degree of inequality in the access viding labour in agro-processing activities, transport operation to land resources. The change in the pattern of distribution of landownership can be seen from Table 3. The top 6 per cent of and road and house construction. The number of cultivators remained almost the same, while agricultural labourers declined the households who owned more than 2.0 ha of land controlled by 1.7 per cent per year and non-agricultural workers increased nearly 40 per cent of the total land, while the bottom 50 per cent by 6 per cent per year. The mobility of the labour force from of the households who owned less than 0.2 ha of land controlled only 6 per cent of the total land. While the relatively large landowners could maintain their number, the proportion of the Table 1: Educational Attainment of Adult (16+) Population", 1988-95 landless and marginal landowners continued to increase under demographic pressures. The concentration coefficient in land-Male Population Female Population Total Population 1988 1995 1988 1995 1988 1995 Educational ownership, which was already high at 0.67 in 1988 further deteriorated to 0.69 by 1995. The average size of landownership Attainment declined from 0.61 to 0.58 ha during the period. No formal schooling Attended primary school 34.4 55.2 35.0 44.1 12.0 69.8 25.6 21.4 Nearly 30 per cent of the households did not utilise any land in 1995 and another 50 per cent operated holdings in sizes of less 18.4 Attended secondary school High school graduate Attended college university 18.0 16.5 21.4 8.4 14.1 12.7 DH TH H.2 9.5 2.5 5.9 than 1 ha. Households operating land in sizes of more than 2.0 ha constituted only 6.1 per cent of all rural households, and they 1.8 Note: a Figures in per cent of population in the group. controlled 34 per cent of the total operated land. The average size of cultivated holding declined from 0.94 to 0.87 ha during Table 2: Changes in the Livelihood System for the the 1988-95 period. Sixty-four per cent of the farms were owner operated, 13 per cent operated by pure tenants and the remain-Earning Members
Figures in per cent of total earning members ing 23 per cent by households who owned some land and Primary or Source of Livelihood Primary Occupation dary Occupation 1995 Table 3: Changes in the Pattern of Distribution of Landownership, 1988 to 1995 1995 1968 1988 Agriculture Crop cultivation 55.3 65.5 93.9 79.2 Per Cent of Households 1988 1995 Per Cent Share of Land 1988 1995 Size of Landowned 12.9 62.0 (ha) Agriculture wage labour 21.9 16.8 29.3 23.8 Up to 0.2 0.2 to 1.0 0.7 3.2 4.2 Non-crop agriculture Non-agriculture Business and trade 46.0 49,6 4.0 34.4 29.5 27.0 34.5 14.7 50.3 54.7 32.9 29.0 9.2 17.0 15.8 1.0 to 2.0 11.4 11.3 26.0 16.7 21.0 19.5 23.4 18.8 11.9 2.0 to 3.0 Non-agricultural labour 3.0 and more 22.2 (industry, transport and Total 100.0 100.0 100.0 100.0 15.0 construction) 12.0 Note: The average size of landownership was 0.61 ha in 1988 and 0.58 in 1995 100.0 100.0 144.2 133.9 8 Growth and Distribution of Rural Income in Bangladesh Growth and Distribution of Rural Income in Bangladesh 9 rented-in some for higher capacity utilisation of the farm from Table 4. The numbers indicate that the inter-sector transestablishment. The area cultivated under different tenancy fer of the rural labour was partly induced by the productivity arrangements was 22 per cent of the operated land. Both owner differential between these sectors. In 1988, annual income per and tenant farmers grew in importance while the proportion of worker was about one third higher for non-agriculture than for mixed tenant farmers declined. agriculture. The difference has however narrowed considerably Since land is extremely scarce, the households look for options over the period with faster growth in labour productivity in to augment household incomes. Investment in irrigation has been agriculture induced by technological progress. The marginal the most important means of increasing the intensity of cropping increase in productivity in non-agriculture was mainly due to and the productivity of land. The coverage of irrigation expanded expansion of employment for activities that are at the lower end very fast from 21 to 42 per cent of the cultivated land during the in the scale of labour productivity. In the trade sector, for period. Most of the expansion of irrigation came from privately example, there was faster expansion of informal petty trade than owned shallow tube wells and low lift pumps. With the expansion that of formal large-scale business. Similarly, there was a large of irrigation, the adoption of modern varieties increased from 30 to increase in employment for the landless and marginal landown-(i) per cent of the rice cropped area during the 1988-95 period. ers in rickshaw and van transport, which is not highly produc-Although total cropping intensity increased only marginally during tive, although the operator earned more in these jobs than in the the period, the rice cropping intensity increased from 122 to 139 per alternative agricultural labour market. So with the expansion of cent of the cultivated land. In 1995 two modern varieties were non-farm employment the average productivity declined. Howgrown on the same parcel for 41 per cent of the irrigated land ever, in 1995 the average labour productivity for non-agriculcompared to only 12 per cent for the rain-fed land. The adoption ture was still 7 per cent higher than that for agriculture, Overall, of modern rice varieties contributed to an increase in rice yield the land productivity in agriculture increased at 2.7 per cent per from 2.44 tha in 1987 to 3.22 tha in 1995. year, and the labour productivity in all rural activities increased The change in the availability and allocation of land and at 2.5 per cent per year, indicating a respectable increase in total labour resources for farm and non-farm activities, and the factor productivity. difference in the productivity of resources can be reviewed The distribution of benefits from agricultural growth depends on the differential access to irrigation and adoption of modern technology. In the early literature on the green revolution, it was Table 4: Changes in Resource Endowment and Productivity argued that modern technology would bypass the small and marginal farmers [Griffin 1974; Pears 1980]. Most of the empiriin the Rural Economy, 1987-94 Rate of Growth (Per Cent/Year) 1994/95 1987/98 1987/94 cal studies carried out for Bangladesh found contrary evidence [Hossain 1977, 1988; Mandal 1980; Hossain et al 1994; Landowned (fia) No of family workers 0.58 0.61 Asaduzzaman 1979]. The present study further confirms that irrigation development and technology adoption have remained 1.79 1.61 1.5 Agriculture scale neutral in Bangladesh (Table 5). The 1988 survey did not Non agriculture 0.79 0.50 6.8 find any systematic difference in the intensity of irrigation across Land productivity (Tk ha) 19,172 41,133 2.7 farm size groups, while the rate of adoption of modern rice Agricultural income per head of agricultural 22,605 28,636 3.4 varieties was in fact higher on smaller farms. With large-scale Non-agricultural income per head of non-agricultural worker (1k) expansion of irrigation and fast diffusion of modern varieties 30,545 29,601 0.5 this pattern hardly changed. The findings show that the benefits Household income per worker (Tk) of the expansion of irrigation and the technological progress Note: The estimates of income for 1987-88 are at constant 1995 prices. have been fairly equally distributed in Bangladesh. Growth and Distribution of Rural Income in Bangladesh 11 10 Growth and Distribution of Rural Income in Bangladesh peddling, petty trade, business, and various kinds of market STRUCTURE AND DISTRIBUTION OF HOUSEHOLD INCOMES intermediation (such as contractors in public sector road construction activities, and moneylenders). Definition of Income Sources Services. It requires education at different levels, depending Total income has been decomposed by sector of origin, (i e, on the activity and hence prior investment in human capital agriculture and non-agriculture) and by economic activity. The formation. It includes incomes from self-services and various agricultural income has been divided into three sources types of salaried services. The incomes from services may not Crops. The income includes expenditures saved from house necessarily be derived from activities conducted within the hold consumption of own-account production of crops, veg village boundary. Due to improvement in transport infrastrucetables and fruits, sale of the crops, and the imputed value of ture, many members of the households are found employed in crop by products. The incomes are calculated taking the net of the services and commercial activities in local towns and cities the expenditures on material inputs, hired labour, and rental while retaining the household in the village. The incomes from payments for hired draft power and farm machinery remittances from members permanently residing outside the Non-crop agriculture. It refers to net income from livestock, household are also included as service incomes. fisheries, and forestry products, which includes household Other non-agricultural activities. This component includes consumption of own-account production. The 1994 survey did earnings from manual labour employed in rural processing and not collect information on income from renting out of draft industrial activities, transport operations, and housing and road power and sale of by products such as animal skins and dung. Based on data from the 1988 survey, it was assumed that such income accounts for 10 per cent of the value of livestock Composition and Growth of Incomes Table 6 reports the findings of the survey on household incomes Agricultural wages. It includes income earned from hiring out in rural Bangladesh and its sources. The average rural household income estimated from the survey was Tk 52,767 for 1994-95 crop of labour services in crop production activities on others' farms. The non-agricultural sources of income are classified by the year. With an average household size of 5.94 persons, the per capita relative importance of physical capital, human capital, and income was Tk 8,803 or US\$ 220 at the prevailing exchange rate. labour as components of income. They are divided into three In computing the rate of growth of income from different components during the survey period, we converted the esti-Trade. Financial capital is the dominant factor of producmates of income for 1987 at constant 1995 prices by using the tion for this activity. It includes incomes from shop-keeping, cost of living index for rural areas. Since price changes may not have been uniform for different sources, this method will Table 5: Intensity of Irrigation and Adoption of Modern introduce some bias in the estimates of growth for different Varieties, by Size of Farm, 1987 and 1994 income components, but the estimate of growth for total house hold income should not be affected. It can be noted from Per Cent of Rice Area under Modern Varieties Per Cent of Cultivated Area Star of Farm (ha) Table 6 that the income from agriculture increased at only 1.9 Irrigated 1987 1994 1987 15894 per cent per year during the 1987-88 to 1994-95 period. The household income, however, increased at a respectable 4.1 per 44.0 34.5 69.6 Up to 0.40 0.40 to 1.0 19.6 cent per year, mainly due to faster growth (7.2 per cent per year) 30.2 37.7 29.4 63.4 of income from rural non-farm activities 30.6 L0 to 2.0 66.0 2.0 to 3.0 33.0 Several aspects are noteworthy with respect to the structure 32.1 62.2 69.7 20.1 3.0 and over of rural household income as of the mid-90s. First, land-Growth and Distribution of Rural Income in Bangladesh 12 Greath and Distribution of Rural Income in Bangladesh per cent per year during this period. Because of faster growth of ownership was no longer the predominant source of household non-agricultural activities, the share of the non-agricultural incomes in rural Bangladesh. This may be judged from the fact sector in the rural household income increased from 37 to 46 that, in 1994-95, the crop production activities accounted for per cent over the 1987-95 period. only 34 per cent of the rural household income. The income from this source is dependent on the ownership and operation Determinants of Income of agricultural land. Second, trade and services accounted for nearly 38 per cent of the household incomes, indicating that A multivariate regression model was estimated using house hold-level data to assess the relative contribution of different ownership of non-land physical assets and accumulation of factors to changes in the rural household income. The incomehuman capital have become important sources of rural income. earning capacity of the household would obviously depend on Third, the importance of the labour market in income intermethe size of landowned and operated by the household, the diation was fairly low in rural Bangladesh. Self-employment of number of family members in the working age group, and the manual labour in rural non-farm enterprises and hiring of amount of non-land fixed assets used in productive activities. labour services in crop production activity accounted for only Access to irrigation would increase the quality and the producabout 13 per cent of rural incomes. The agricultural labour tivity of land. The adoption of modern rice varieties would market accounted for only 5.5 per cent of the total household increase household incomes if the increase in output outweighs incomes in 1994-95. Additional data shows that even for functhe increase in costs on account of fertilisers, irrigation and tionally landless households, agricultural wages accounted for pesticides. Iti per cent, and manual labour-based non-farm activities ac-The model was estimated in linear form so that the value of counted for another 16 per cent of the household incomes, while the parameters would show the marginal returns from the 12 per cent of their total incomes originated in trade and service factors of production. Two alternative variants of the model activities. Income from agricultural wages in fact declined at 7.0 incorporated separately irrigated land and rice area under Table 6: Structure and Growth of Rural Household Incomes, 1987-95 modern varieties, because of strong correlation between these two variables. The model was estimated with data from the 1988 and 1995 surveys, and the values of the parameters were Share of Total Income at Constant Source of Income 1995 Prices Household Growth of Table 7: Determinants of Household Incomes: (Tk/household) Income A Regression Estimate (Per Cent) (Per Cent) 1994-95 1987-88 1987-95 1987-881 1994-95 Equation 1 Equation 1 Factors of Production 1.9 Equation 2 Equation 1 Equation 2 62.9 25,094 54.3 Agriculture 28,636 36.5 14.3 34.3 3.1 Crop production 18,124 14,565 12,660(12.10) 13.150(12.96) 22,712(11.63) 21,195(11.95) Landholding (ha) 4.2 Non-crop agriculture Agricultural labour 7,606 2,902 5,1295 14.4 8160(9.91) 45.0(8.02) No of family 8215(10.02) 17,868(15.55) 18,492(16.10) 7.0 7.2 1,831 Fixed capital 465.4(8, 11) 14.3(9.45) 12.8(8.38) 14,802 6,583 Non agriculture 45.7 24,131 37.1Irrigated land (ha) 1996(4.95) 9084(3.22) 16.5 3.7 16.1 Trade and business H, 4HD Land under water 11,751 5,595 22.3 13.1 11.2 Services 8074(4.70) modern varieties (ha) Non-agricultural labour 1.891 2.624 32,767 39,893 100.0 4.0 Total income 10,683(7.32) 102342(7.09) 3105(-1.33) 207 ([-0.89] Constant term Notes: a The incomes in current prices for 1987-88 were converted into constant 1994.95 prices using the change in the cost of living index for rural areas. Notes: Figures within parenthesis are estimated 't' values of the regression coefficient b Includes earnings from labour in agro-processing, transport operation and construction activities. The dependent variable is household income at 1995 constant prices Groseth and Distribution of Rural Income in Bangladesh 15 Growth and Distribution of Rural Income in Bangladesh measured at constant 1995 prices using the cost of living index, to facilitate comparison. The estimates show substantial in-Measure of Income Inequality The sample households were ranked in the scale of per capita crease in the average as well as the marginal productivity of both income and the income shares of successive decile groups were land and labour resources during the 1987-95 period (Table 7). estimated to study the pattern of distribution of income in the The increase in land productivity was mostly due to technologisample (Table 8). The income distribution was fairly unequal. cal changes in agriculture through the diffusion of the modern The bottom 40 per cent of the households owned only 16 per seed, fertiliser, and water technology. The marginal contribu-tion of irrigation was estimated at Tk 9,084 per ha (40 per cent cent of the total income, while the top 10 per cent owned about 32 per cent. The Gini ratio for concentration of per capita income was estimated at 0.42 for the entire sample. The high higher than that for rain fed land); the return declined by 9 per cent over the 1987-95 period with large expansion of the degree of income inequality is related to the inequality in the irrigated area. The additional contribution of modern varieties distribution of landownership. The top 10 per cent of the rural of rice was estimated at Tk 9,396 per ha (44 per cent higher than households controlled 51 per cent of the total land, while the bottom 40 per cent owned only 2 per cent that for traditional varieties). The marginal returns from modern There was a substantial deterioration of income distribution varieties increased by 16 per cent over the 1987-95 period. While the average income per person increased by 2.4 per cent per year over the 1987-95 period, the marginal earnings during the 1987-95 period. The income share of the bottom 40 per cent of the households declined from 19 to 16 per cent, while per worker increased by 12 per cent per year. This large increase in the marginal productivity of labour is a reflection the share of the top 10 per cent of the households increased from 26 to 32 per cent. The value of the Gini concentration ratio of the increase in the productivity of labour in specific occupaincreased from 0.35 to 0.42. An in-depth investigation revealed that this was due to the drastic reduction in the crop sector tions, as well as the reallocation of labour from lower to higher productive activities. The expansion of irrigation infraincome in several villages because of the disastrous flood in structure and the diffusion of modern varieties might have 1987. The reduction in crop sector income was obviously higher contributed to the increase in the marginal productivity of for larger landowning households. The land-poor households gained during that year from the relief and employment support The marginal returns to capital (excluding land), however, programme undertaken by the government after the flood [Hossain and Akash 1994]. The allocation of expenditure for declined significantly during the period. This may be due to rapid expansion of rural capital formation from a very low base. The average capital output ratio was estimated at only 0.28 for Table 8: Degree of Inequality in the Distribution of Landholding and Per Capita Incomes, 1987-95 1987; it increased substantially to 0.47 by 1994. The increase in capital intensity has contributed to the growth in land and labour productivity, but the marginal return from capital de-Share of Rank with Respect to the Share of Per Capita Incomes 1994-95 1987-88 The contribution of different factors to the growth of income Criterion Variable Landowned could be assessed from the value of their elasticity. The sum of the elasticity, as estimated from the 1995 survey data, was close 2.1 Bottom 40 per cent 1.9 15.7 18.7 Middle 40 per cent 35.8 29.6 to unity, indicating constant returns to scale. The value of the 27.9 39.315.8 elasticity was 0.36 for land, 0.62 for labour and 0.07 for capital. Ninth decile 19.6 21.0 16.9 The findings indicate that about 61 per cent of the increase in income at the margin was contributed by labour, 36 per cent by Top 10 per cent 50.6 Top 5 per cent Gini concentration ratio 16.0 34.6 30.0 19.9 land, and only 7 per cent by capital. Growth and Distribution of Rural Income in Bangladesh 16 Growth and Distribution of Rural Income in Bangladesh unequally distributed. About 65 per cent of the incomes from relief and development through rural public work programmes trade and 60 per cent of the incomes from services were (Food for Work and Vulnerable Group Development) had concentrated in the hands of the top 40 per cent of the declined since then, which may have contributed to the worsenhouseholds in the per capita income ladder. Thus, employment ing income distribution during the 1987-95 period. and income opportunities in the fast growing non-agricultural activities were also captured by the relatively high-income groups, presumably due to their better access to capital and Sources of Income Inequality The distribution of total income may change because of credit and improved human capital and their capacity to invest changes in the distribution of individual components of income in education of the children. The income from agricultural and/or changes in the income share of the component. If addiwages and processing and transport and construction activities tional income is derived from a relatively equally distributed were distributed in favour of the lower income groups as shown source, income distribution will improve. Conversely, if the by the low and negative values of the pseudo-Gini ratios for faster growing sources of income are more unequally distributhese components of income. Nearly 70 per cent of the agriculted, the inequality in the distribution of income will worsen. tural wage income accrued to the bottom 40 per cent of the The economic position of a household depends on the per households. capita income and not on the income from different compo-The contribution of different sources to overall income innents. So the Gini ratio of income for the component source equality is shown in the last column of Table 9. The crop does not have an economic meaning. Hence, we measured the production activity accounted for only 42 per cent of overall concentration ratio of income from different components by inequality in the household income (0.18 out of 0.43), services maintaining the same rank of the households in the scale of per accounted for another 28 per cent, and trade 19 per cent. As capita income. These pseudo-Gini ratios for different compothe share of income from the non-agriculture has been increasnents of income, and the results of the Gini decomposition ing, and the incomes from trade and services are more unequally distributed than the income from agriculture, nonanalysis are reported in Table 9. As expected, the crop sector income was highly unequally agriculture will become an important force behind worsening distributed because of the skewed distribution of landownerincome distribution. This finding points to the need for adoptship. But incomes from trade and services were almost as ing policies that support distribution of new employment opportunities in the non-farm sector in favour of the resource-poor Table 9: Decomposition of Inequality in the Distribution of Household Incomes, Per Capita Income Scale, 1994-95 households. Table 10: Changes in Poverty Situation, 1987-94° Concentration Ratio Contribution to Share of Income Component Component 1994-95 Component to of Income from Indicator Components Inequality in Income Total Income Head count ratio (per cent of households) Extremely poor 22.5 0.213 0.393 Agriculture 0.343 29.2 31,7 57,5 0.519Crop production Moderately poor 0.344 51.7 19.2 0.052 0.364 Extremely and moderately poor Non-crop activities Poverty gap ratio (per cent) Distributional-sensitive measure (FGT index) -0.01821.7 0.055 Wages 10.9 0.458 0.475Non-agriculture Note: a The line of extreme poverty (Tk per person per year) for 1987 and 1994 is 2480 and 3757, respectively. The line of moderate poverty (Tk per person per year) for 1987 and 1994 is 4150 and 6287, respectively. 0.120 0.529 0.223 Services Trade 0.084 0.520 0.161 0.014 0.074 0.186 Others 0.431 1,000 Total 18 Greath and Distribution of Rural Income in Bungladesh Growth and Distribution of Rural Income in Bangladesh 19 expenditure group on the margin of poverty allocates 60 per TRENDS IN POVERTY cent of their consumption expenditure on food items [BBS 1989]. In this study, we basically followed the above approach to set the Measures of Income Poverty poverty line. In reporting results of the previous survey, official data The measurement of poverty involves: (a) the specification of on retail prices for Bangladesh were used. The 1995 survey, the income level below which a person is considered poor (the however, collected village-specific information on prices of basic so-called 'poverty line'); and (b) construction of an index to necessities, which were used to measure village-specific poverty measure the intensity and severity of poverty suffered by those line. For non-food items, we used the change in consumer price whose income is below the poverty line. The most widely used index for the country as a whole since such information is not measure of poverty is the so-called 'head count' ratio, i.e. the available for rural areas. This will introduce an upward bias in the proportion of people living below the poverty line. Foster et al estimate of poverty, since most rural households do not pay for (1984) proposed a class of poverty measures that are additively such non-food items (such as house rent, electricity) and the level decomposable and that satisfy all the criteria for an ideal of expenditure on transport, recreation, education, and health is poverty measure [Sen 1981; Kakwani 1980]. This measure is substantially lower in rural areas than in urban areas, known as the FGT index. Using this method, incidence, inten-The measures of the severity of poverty shown by the FGT sity, and severity of poverty were measured. index would depict what has been happening to changes in One needs to establish the poverty line income to estimate income among the poorer of the poor. This measure is however FGT indices of poverty. Setting the poverty line has been an difficult to interpret. To see what has been happening at the issue of great controversy in Bangladesh. It has also been an lower end of the poverty scale, we used a lower poverty line important source of discrepancy in the level and trend in income needed to have at least 1,800 kilocalories per person per poverty estimated in various studies [see Ravallion and Sen day and called the households below this line as extremely 1906 for a review). The popular approach used by the poverty poor, and those with enough incomes to obtain between 1,800 studies in Bangladesh is the 'cost of basic needs' method and 2,112 kilocalories as moderately poor. The lines of extreme Muquada 1986; Rahman and Haque 1988; Hossain and Sen poverty are estimated at 60 per cent of the line for moderate 1992; Sen and Islam 1993; Rahman and Hossain 1995; Rayallion poverty following the findings of the 1985-86 HES of the and Sen 1996]. This method takes a normative consumption Bangladesh Bureau of Statistics [BBS 1989]. This estimate is bundle of food items recommended for the average Bangladeshi based on the relationship between per capita income and population that gives a per capita daily intake of 2,112 kilocalo calorie intake at the household level. ries and 58 g of protein needed to maintain a healthy productive The estimates of the percentage of households living below life [Muqtada 1986]. The required minimum expenditure on the poverty line are reported in Table 10. The head-count food items is estimated by using a set of prices for the reference measure showed considerable improvement in the poverty year for the representative group of population. Earlier studies situation during the 1987-95 period. The proportion of house on poverty used national level retail prices for the reference year holds below the line of moderate poverty declined from 58 per for representative food items as published in the Statistical cent in 1987-88 to about 52 per cent in 1994-95. There was also Yearbook of Bangladesh. More recent studies [Hossain and Sen a significant improvement in economic conditions of the poorer 1992; Sen and Islam 1993] derived prices from the information group among the poor. The number of extremely poor declined on value and quantity for different food items published in the from 26 to 23 per cent. HES Reports. An additional 40 per cent allowance is then The intensity of poverty is measured by the average gap of made for incomes needed to satisfy the non-food basic needs. the income of the poor households from the poverty line. The This assumption is based on the finding of the HES that the poverty gap ratio declined from 22 per cent in 1987-88 to 19 per Growth and Distribution of Rural Income in Bangladesh 21 Growth and Distribution of Rural Income in Bangladesh cent, respectively, at the time of the 1995 survey. There has been cent in 1994-95, indicating an improvement in the intensity of substantial increase in the number of those who attended poverty. The FGT index of poverty gives higher weights to income gains accruing to the poorer among the poor house primary and secondary schools, for both male and holds. The FGT index declined only marginally from 10.9 to in female population. Another qualitative indicator of poverty would be the inci-1989 to 9.6, indicating improvement in economic conditions at dence of child labour. Participation in economic activities for the lower end of the poverty scale also. children in the 11 to 15 age group dropped from 20 per cent in 1988 to 12 per cent in 1995. Child labour was prevalent mostly Nan-Income Dimensions of Poverty among the male population; their labour force participation rate The survey collected other information on levels of living that declined from 30 to 21 per cent. The reduction in participation are indirect indicators of extreme deprivations. One rate was partly due to increased school attendance rate information is the availability of warm clothes to protect them The survey sought the opinion of respondents regarding the selves against low temperatures from December to February. economic standing of the households and the change in eco-Another is the possession of at least two sets of clothing so that nomic conditions during the 1995 period. Respondents were the person can wear a set while the other is cleaned and dried asked to categorise the relative economic standing of the after bathing. Deprivation of these basic clothing needs is an household into one of four classes - extremely poor, moderately indication of severe economic distress. The 1990 survey found poor, self-reliant, and solvent - in both the 1990 and 1995 15 per cent of the sample population having less than two sets surveys. The subjective judgment of the respondents themof clothing and 22 per cent without any winter clothing. But the selves suggests a considerable improvement in their poverty situation has considerably improved since then. By 1995, people situation. The number of those who considered themselves as with less than two sets of clothing dropped to 3.5 per cent and poor declined from 71 per cent in 1990 to about 50 per cent by 1995. Those who perceived themselves as extremely poor also doctors of 6. these without any warm clothes as 6.7 per cent. The survey also collected information on the health status of the sample population as an indicator of the outcome of declined from 24 to 18 per cent (Table 11). The respondents were also asked in the 1995 resurvey to economic distress. Members of households who were reported report the change in their economic conditions over the last five as either chronically ill or disabled were 3.2 per cent of the total population in 1988. The number dropped to 2.3 per cent by 1995. Members reported as occasionally ill and not fully able to years and the reasons for the change. Improvement in economic conditions was reported by 39 per cent, and deterioration, by 19 per cent. Others stated that their economic condition had participate in economic activities were 12.0 per cent of the remained unchanged. Major factors behind improvement were sample in 1988; the number dropped to 9.8 per cent by 1905. The in clence of ill health was higher for the female popular Table 11: Mobility of Households, by Self-Categorisation of Household's Economic Position, 1989 and 1994 tions he data show an improvement in health conditions during 1988/15 for both male and female populations. The Self-Categorisation (1905 Survey) Veir Self-Relian Solvent Total magneticle of the problem, however, remains at a level that is Self-Categorisotton not socially acceptable. Twelve per cent of the people still Per Cent Extremely Poor Poor (1990 Survey) cannot lead a healthy acuve life, and 2.3 per cent are entirely 23.1 Extremely poor dependent on others for their care and levelthood 254 381 49.7 123 There has also been a significant impact, near in the levels or inerary. Exactly 42 per cent of the male and 70 per cent of the greate population is a 4-six and above had no formal schooling 60 200 111 Self-reliant 119 Solvent. 100.0 360 1100 11.5 309 Per cent during the 1988 survey. C. e number dropp. 1 . . . It and 55 per 22 Growth and Distribution of Rural Income in Bangladesh Growth and Distribution of Rural Income in Bangladesh 23 reported as higher employment opportunities, adoption of a Incomes from trade, services and livestock production were modern rice variety, more earning members, higher profits in distributed more in favour of the higher income groups. The business, fewer family members to feed, and hard work, in that concentration in total household incomes deteriorated during order of importance. The reasons behind deterioration were the period because of the increase in the share of non-agriculmentioned as fewer earning members, lack of employment tural incomes which was more unequally distributed than opportunities, illness of earning members, natural disasters, incomes from agriculture. payment of dowry and increase in the number of family The growth in rural income contributed to a considerable members. improvement in the poverty situation during the period under study. The magnitude of poverty, with a head-count index of 51 VI per cent, is a matter of serious concern since natural resources CONCLUSION are already over exploited, and the adoption of the available technology has reached fairly high levels. A much faster accel-Although the growth of agricultural income decelerated in eration of growth will be needed to alleviate poverty within a the early 1990s, total factor productivity in the overall rural socially acceptable time horizon. economy increased at a satisfactory rate. The main contributors The findings of the study point to the importance of new to growth in productivity were rapid expansion of irrigation and agricultural technology, physical infrastructure, and human capital in fostering higher growth and favourable income distridiffusion of modern high-yielding rice varieties. Non-crop agricultural activities, such as livestock and fisheries, also registered bution in rural areas. Given the limited importance of the an impressive growth during the period. Labour productivity labour market in income intermediation, policies based on was substantially higher in non-farm activities than in agriculproviding better access to capital and education for the poor ture, which provided incentives to movement of labour from would make a greater impact on poverty alleviation than poliagriculture to non-agricultural sector. Opportunities for noncies based on interventions in the operation of the land and farm employment have, however, been available to households labour markets. with literate members and better access to capital. An important factor behind the improvement in rural eco-NOTE 1 Fast decline in poverty during 1976-86 and the consequent rise of poverty during 1986-96 based on official household expenditure surveys are two major moments in this debate. The debate between national accounts and household consumption survey based estimates of the level of income nomic conditions has been the drastic reduction in the growth of the rural population due to rapid rural-urban migration and the reduction in the fertility rate. The success in population control had not yet made any impact on the rural labour force (consumption) is another example. There is also considerable push vs pull debate relating to the increasing prominence of the rural non farm sector as provider of income and employment. at the time of the 1995 survey. The rural labour force grew at 2.0 per cent per year during the 1987-95 period. The additional labour force found employment mostly in the nonagricultural activities. REFERENCES The household income was fairly unequally distributed Asaduzzman, M (1979): 'Adoption of H Y V Rice in Bangladesh', Bangladesh Asaduzzman, M (1979): "Adoption of H Y V Rice in Bangladesh", Bangladesh Development Studies, 7(3): 23-29.
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