Poverty and Economic Inequality in Tanzania's Kagera Region

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Abstract

This study addresses poverty, economic inequality, determinants of consumption, determinants of poverty, and decomposition analyses using a dataset collected in Tanzania's Kagera region from 1991 to 1994. In the entire Kagera region, the share of the between-group inequality had increased between Waves 2 and 4, although all three inequality indices had decreased between Waves 2 and 4. Our regression decomposition analyses confirm that the households in the rural area of the Kagera region are poorer than the households in the urban area of the Kagera region mainly due to the difference in the returns to their endowments.

Keywords: Poverty, Economic inequality, Economic growth, Decomposition analysis, Tanzania

JEL classification Numbers: I32, O12, O18

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1. Introduction

This paper addresses poverty, economic inequality, economic growth, the determinants of consumption, determinants of poverty changes, and decomposition analyses in Tanzania's Kagera region from 1991 to 1994.

The poverty alleviation is one of the biggest problems in Tanzania's Kagera region. Table 2 indicates that 67.5% to 78.3% of the households are in poverty during the Waves (that is, periods) investigated in Tanzania's Kagera region. Especially, the poverty is very severe in the rural area of the Kagera region. Table 2 indicates that 75.6% to 83.8% of households are in poverty during the Waves investigated in the rural area of the Kagera region. And economic inequality is also one of the biggest problems in Tanzania's Kagera region. Economic growth might worsen economic inequality in a region. Hence, a government or a development institution should care how its economic growth policy affects economic inequality in a region.

This paper attempts to answer three main questions: (1) how incidences of poverty and inequality had changed in that region from 1991 to 1994; (2) to what extent poverty changes by residential area can be explained by variations in economic growth and economic inequality; and (3) how welfare disparities between urban and rural residents of Tanzania's Kagera region evolved from 1991 to 1994, as well as what the main factor of disparity between the urban and rural residents of Tanzania's Kagera region was. Some analytical tools will be employed to answer these questions.

This paper is organized as follows. Section 2 presents the empirical methods employed and the empirical results. Section 3 concludes the paper and proposes policies.

2. Empirical Results

Analyses of Poverty and Economic Inequality

Table 2 reports the three poverty indices (poverty headcount ratio, poverty gap ratio, and squared poverty gap ratio) for each wave in the urban and rural areas and Kagera region as a whole in the dataset we employed.

The nominal poverty line for basic needs is 16966.0 Tanzania Shilling for 182 days in 1991-1992 shown by Tanzania government. I used its real value for this study.

In investigating these three indices in the Kagera region as a whole, we found that none of those three indices had changed very much over the four waves, although each had increased between Waves 2 and 4. However, each of those three indices had changed greatly within the urban areas of the Kagera region, between Waves 1 and 4. Between Waves 1 and 4, the poverty headcount ratio had changed from 28.3 to 53.3, the poverty gap ratio from 9.9 to 23.0, and the squared poverty gap ratio from 4.6 to 12.7. Hence, in the urban area of the Kagera region, not only the ratio of poor households to all households but also the severity of poverty had increased greatly between Waves 1 and 4. In the rural areas of the Kagera region, none of the three indices had changed greatly over the four waves, although each had increased between Waves 2 and 4.

The poverty headcount ratio in the rural area of the Kagera region is larger than that in the ur-

ban area of the Kagera region for all four Waves. And the squared poverty gap ratio in the rural area of the Kagera region is larger than that in the urban area of the Kagera region for all four Waves. Therefore, the poorness is severer in the rural area of the Kagera region than in the urban area of the Kagera region for all four Waves.

Table 3 reports the elasticities of poverty with respect to consumption. Values are provided for each of the three poverty indices for each wave in the urban and rural areas and Kagera region as a whole for the dataset we employed. All figures are negative.

In investigating elasticities of poverty with respect to consumption in the Kagera region as a whole, the absolute values for the elasticities of the poverty headcount ratio with respect to consumption were less than 1 for all waves. Hence, when consumption increased by 1% in a wave, the poverty headcount ratio decreased by less than 1% within the same wave. In the urban areas of the Kagera region, the absolute values for the elasticities of the poverty headcount ratio with respect to consumption were less than 1 for Waves 1 and 4, and the absolute values for the elasticities of the poverty headcount ratio with respect to consumption were more than 1 for each of Waves 2 and 3. Therefore, there were more households just below the poverty line in Waves 2 and 3 than in Waves 1 and 4, respectively. In the rural areas of the Kagera region, the absolute values for the elasticities of the poverty headcount ratio with respect to consumption were less than 1 for all waves.

Table 4 reports the elasticities of poverty with respect to inequality. Values are provided for each of the three poverty indices for each wave in the urban and rural areas and Kagera region as a whole for the dataset we employed. The figures are elasticities of the three poverty indices, with respect to a simulated 10% decrease in the Gini inequality index. The Gini index was changed by undertaking the following transformations in the actual income structure: (1) a shift of all incomes by a fixed amount, and (2) a normalization of incomes to bring the mean of the new distribution to the mean of the original distribution.

In using the poverty headcount ratio as a poverty index, the elasticities of poverty with respect to inequality were positive for Waves 1 and 2 and negative for Waves 3 and 4 in the Kagera region as a whole. Hence, when the Gini inequality indices decreased by 10% in all four waves of the Kagera region as a whole, the poverty headcount ratios would increase in Waves 1 and 2 and decrease in Waves 3 and 4. This is a very interesting result—that is, the relationship between poverty and inequality had not been consistent across the four waves in the Kagera region as a whole, although Tanzania's Kagera Health and Development Survey had been conducted just for three years. In the rural area of the Kagera region, in using the poverty headcount ratio as a poverty index, the elasticities of poverty with respect to inequality were positive for Wave 2 and negative for Waves 1, 3, and 4. In the urban area of the Kagera region, in using the poverty headcount ratio as a poverty index, all the elasticities of poverty with respect to inequality were positive for all four waves. Hence, in Waves 1, 3, and 4, a policy to reduce economic inequality would have been desirable in reducing the poverty headcount ratio in the rural areas of the Kagera region.

However, in using the poverty gap ratio or the squared poverty gap ratio as a poverty index, all figures were positive in all four waves in the urban and rural areas and Kagera region as a whole. Therefore, in many cases, a policy to reduce economic inequality would not have been desirable in

reducing poverty in those areas of the Kagera region, as such a policy would not have been effective.

We use the General Entropy (GE) class of inequality measures. It is defined by

$$GE(\theta) = \frac{1}{\theta(\theta-1)}\left[\frac{1}{N}\sum_{i=1}^{N}\left(\frac{y_i}{\bar{y}}\right)^{\theta} - 1\right], \quad (1)$$

where θ is a parameter that represents a weight given to distances between incomes in different areas of an income distribution and can take any real value, y_i is an income for an individual (household) i, $\bar{y}$ is an average income, and N is the number of individuals (households). This measure satisfies the four conditions (i.e., income scale independence condition, principle of population condition, anonymity condition, and decomposability condition).

The values of GE measures range from 0 to infinity. Higher values indicate higher levels of inequality. These values were more sensitive to changes at the lower (upper) tail of an income distribution with lower (higher) values for θ; they were equally sensitive to changes across an income distribution with θ equal to 1.

When $\theta = 0$, we obtain Theil's L index (the Mean Log Deviation)

$$GE(0) = \frac{1}{N}\sum_{i=1}^{N}\log\left(\frac{\bar{y}}{y_i}\right). \quad (2)$$

When $\theta = 1$, we obtain Theil's T index

$$GE(1) = \frac{1}{N}\sum_{i=1}^{N}\left[\frac{y_i}{\bar{y}}\log\left(\frac{y_i}{\bar{y}}\right)\right]. \quad (3)$$

When $\theta = 2$, we obtain

$$GE(2) = \frac{1}{2}\left[\frac{1}{N}\sum_{i=1}^{N}\left(\frac{y_i}{\bar{y}}\right)^{2} - 1\right]. \quad (4)$$

With GE measures, the total inequality (I) can be decomposed into a component of inequality between different subgroups of the population or different regions (I_b) and the remaining within-group component (I_w). It is defined by

$$I = I_w + I_b = \sum_{j=1}^{K} v_j^{\theta} w_j^{1-\theta} GE(\theta)_j + \frac{1}{\theta(\theta-1)}\left[\sum_{j=1}^{K} w_j\left(\frac{\bar{y}_j}{\bar{y}}\right)^{\theta} - 1\right], \quad (5)$$

where v_j is an income share for group j in all groups ($j = 1, \cdots, K$), w_j is a population share for a group j in all groups, $\bar{y}_j$ is a mean income for group j, and $\bar{y}$ is a mean income for all individuals.

Table 5 reports the decomposition of inequality for each wave in the Kagera region as a whole, as well as the three inequality indices for each wave in the urban and rural areas of the Kagera region. In this study, the groups were the urban and rural areas of the entire Kagera region.

In the entire Kagera region, the share of the between-group inequality, as a proportion of the total inequality for each inequality index, had increased between Waves 2 and 4, although each of the

three indices had decreased between Waves 2 and 4. With GE (0), the share of the between-group inequality, as a proportion of the total inequality in Wave 4, was almost twice that of Wave 2. With GE (1), the share of the between-group inequality, as a proportion of the total inequality in Wave 4, was more than twice that of Wave 2. With GE (2), the share of the between-group inequality, as a proportion of the total inequality in Wave 4, was more than six times higher than that of Wave 2.

Table 6 reports the decomposition of poverty changes into the growth effect and the redistribution effect.

First, let us introduce the method used to decompose a poverty change into the growth effect and the redistribution effect, following Datt and Ravallion (1992).

The poverty measure P_t at date t is written as

$$P_t = P\left(\frac{z}{\mu_t}, L_t\right), \tag{6}$$

where z is the poverty line, μ_t is the mean income, and L_t is a vector of parameters fully describing the Lorenz curve at date tt.

The growth component of a change in the poverty measure is defined as the change in poverty due to a change in the mean income while holding the Lorenz curve constant at some reference level L_r. The redistribution component is the change in poverty due to a change in the Lorenz curve, while keeping the mean income constant at the reference level μ_r. A change in poverty over dates t and $t + n$ can then be decomposed as follows:

$$P_{t+n} - P_t = G(t, t+n; r) + D(t, t+n; r) + R(t, t+n; r), \tag{7}$$

where the growth component is defined by

$$G(t, t+n; r) \equiv P\left(\frac{z}{\mu_{t+n}}, L_r\right) - P\left(\frac{z}{\mu_t}, L_r\right), \tag{8}$$

the redistribution component is defined by

$$D(t, t+n; r) \equiv P\left(\frac{z}{\mu_r}, L_{t+n}\right) - P\left(\frac{z}{\mu_r}, L_t\right), \tag{9}$$

and $R(t, t+n; r)$ is a residual. In each case, the first two arguments in the parentheses refer to the initial and terminal dates of the decomposition period, and the last argument shows the reference date r with respect toof the observed change in poverty that is being decomposed.

For $r = t$, a residual can be written as

$$\begin{aligned} R(t, t+n; t) &= G(t, t+n; t+n) - G(t, t+n; t) \\ &= D(t, t+n; t+n) - D(t, t+n; t). \end{aligned} \tag{10}$$

The residual can thus be interpreted as the difference between the growth (redistibution) compo-

nents evaluated at the terminal and initial Lorenz curves (mean incomes). If the mean income or the Lorenz curve remains unchanged over the decomposition period, then the residual vanishes.

Second, let us analyze the figures in Table 6.

Regarding the absolute values of the figures, a growth effect or a redistribution effect is the largest factor in a poverty change in any pair of waves in which poverty measures were compared in any area of the Kagera region.

The absolute values of the redistribution effects were highest in the poverty changes in all the urban and rural areas and Kagera region as a whole between Waves 2 and 3. In this pair of waves, all poverty changes and redistribution effects were positive in all the urban and rural areas and Kagera region as a whole. Hence, the redistribution effects have negative impacts on poverty reduction between Waves 2 and 3. The growth effects weakened the redistribution effects in the urban areas and Kagera region as a whole between Waves 2 and 3, since the growth effects were negative in those areas of the Kagera region between Waves 2 and 3. Therefore, the poverty level would have declined in the urban areas and Kagera region as a whole between Waves 2 and 3, if economic inequality had not changed in those areas of the Kagera region between Waves 2 and 3.

The absolute values of the growth effects were highest in the poverty changes across all the urban and rural areas and Kagera region as a whole between Waves 3 and 4. In this pair of waves, all poverty changes were positive in all the urban and rural areas and Kagera region as a whole, while all growth effects were negative in all those areas. Hence, the growth effects have positive impacts on poverty reduction between Waves 3 and 4. The growth effects weakened the redistribution effects in the urban and rural areas and Kagera region as a whole between Waves 3 and 4, since the growth effects were negative in those areas of the Kagera region between those waves. Therefore, the poverty level would have declined in the urban and rural areas and Kagera region as a whole between Waves 3 and 4, if economic inequality had not changed in those areas of the Kagera region between Waves 3 and 4.

Tables 7-8 report the determinants of real consumption per capita for the households in the urban and rural areas in all Waves. Real household consumption per capita is a dependent variable. The estimates for the real per capita income and the real financial stock per capita are significant in all Waves in the urban Kagera region. The estimates for the real per capita income are significant in Waves 1, 3, and 4 in the rural Kagera region. The estimates for the real physical stock per capita are significant in all Waves in the rural Kagera region.

Tables 9-10 report the determinants of poverty for the residents in the urban and rural areas in all Waves. A probit model is used to estimate whether a household's per capita consumption was below the poverty line conditional on a vector of household characteristics.

$$\Pr(Y_{ij} = 1) = \Phi(X_{ij}\beta_j), \tag{11}$$

where Y_{ij} is a binary variable (=1 if household consumption per capita is less than the poverty line, =0 otherwise) for a household i in a region j (=urban or rural area) and $\Phi(\cdot)$ is a standard normal cumulative distribution function. The estimates for the real household income per capita divided by

1000000 are significantly negative in all Waves in the urban Kagera region. The estimates for the real household income per capita divided by 1000000 are significantly negative in all Waves in the rural Kagera region. The estimates for the real physical stock per capita divided by 1000000 are significantly negative in waves 2, 3, and 4 in the rural Kagera region.

Table 11 reports the results of Blinder-Oaxaca decomposition for the difference of means in real household consumption per capita and the likelihood of poverty between the urban and rural households for each Wave.

First, let us introduce the Blinder-Oaxaca method used, following Yun (2004).
The mean difference of a variable (V) between regions r (rural area) and u (urban area) can be decomposed as

$$\overline{V}_r - \overline{V}_u = \sum_{l=1}^{L} W_{\Delta X}^{l} \left[\overline{F(X_r \hat{\beta}_r)} - \overline{F(X_u \hat{\beta}_r)} \right] + \sum_{l=1}^{L} W_{\Delta \hat{\beta}}^{l} \left[\overline{F(X_u \hat{\beta}_r)} - \overline{F(X_u \hat{\beta}_u)} \right], \quad (12)$$

where V is a dependent variable indicating a real household consumption per capita or a probability of poverty in this study,
$W_{\Delta X}^{l} = \frac{(\overline{X}_r^l - \overline{X}_u^l)\hat{\beta}_r^l}{(\overline{X}_r - \overline{X}_u)\hat{\beta}_r}$,
$W_{\Delta \hat{\beta}}^{l} = \frac{\overline{X}_u^l(\hat{\beta}_r^l - \hat{\beta}_u^l)}{\overline{X}_u(\hat{\beta}_r - \hat{\beta}_u)}$,
and $\sum_{l=1}^{L} W_{\Delta X}^{l} = \sum_{l=1}^{L} W_{\Delta \hat{\beta}}^{l} = 1$.

The first term of (12) indicates the contribution of different household's characteristics or endowments to mean difference of the dependent variable (the characteristic component); and the second term of (12) indicates the contribution of different returns to those households' characteristics (the structural component).

In this study, the equation (12) is reduced to the following equation:

$$\overline{c}_r - \overline{c}_u = (\overline{X}_r - \overline{X}_u)\hat{\beta}_r + \overline{X}_u(\hat{\beta}_r - \hat{\beta}_u). \quad (13)$$

The equation for our probit decomposition is

$$\overline{P}_r - \overline{P}_u = \sum_{l=1}^{L} W_{\Delta X}^{l} \left[\overline{\Phi(X_r \hat{\beta}_r)} - \overline{\Phi(X_u \hat{\beta}_r)} \right] + \sum_{l=1}^{L} W_{\Delta \hat{\beta}}^{l} \left[\overline{\Phi(X_u \hat{\beta}_r)} - \overline{\Phi(X_u \hat{\beta}_u)} \right], \quad (14)$$

where $\overline{P}$ is an average predicted poverty.

Second, let us analyze the figures in Table 11.

We observe that the welfare gap (difference in real household consumption per capita) between urban and rural residents of Kagera region can be attributed more to the difference in the returns to their endowments than the difference in household characteristics. The ratio of the difference in the returns to their endowments in the aggregate difference in real household consumption per capita had decreased between Waves 1 and 4.

We observe that the difference in the predicted poverty between urban and rural residents of Kagera region can be attributed much more to the difference in the returns to their endowments

than the difference in household characteristics. However, the ratio of the difference in the returns to their endowments in the aggregate difference in the predicted poverty had decreased between Waves 1 and 4. And the ratio of the difference in household characteristics in the aggregate difference in the predicted poverty had increased between Waves 1 and 4.

3. Conclusion

We have addressed poverty, economic inequality, determinants of consumption, determinants of poverty changes, and decomposition analyses in Tanzania's Kagera region from 1991 to 1994. In particular, we have attempted to explain the welfare disparity between the urban and rural areas of the Kagera region. In the entire Kagera region, the share of the between-group inequality, as a proportion of the total inequality for each inequality index, had increased between Waves 2 and 4, although all three indices had decreased between Waves 2 and 4. Hence, the between-group inequality had contributed more than the within-group inequality to the total inequality, between Waves 2 and 4 in the entire Kagera region.

The absolute values of the redistribution effects were highest in the poverty changes in all the urban and rural areas and Kagera region as a whole between Waves 2 and 3. The growth effects weakened the redistribution effects in the urban areas and Kagera region as a whole between Waves 2 and 3. The absolute values of the growth effects were highest in the poverty changes in all the urban and rural areas and Kagera region as a whole between Waves 3 and 4. The growth effects weakened the redistribution effects in the urban and rural areas and Kagera region as a whole between Waves 3 and 4.

Finally, our regression decomposition analyses confirm that the households in the rural area of the Kagera region are poorer than the households in the urban area of the Kagera region mainly due to the difference in the returns to their endowments. A policy by a government or a development institution to improve the quality of their endowments and, hence, to increase the returns to their endowments are important for increasing the welfare of the households in the rural area of the Kagera region.

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Appendix

Table1: Summary Statistics

Variable	Mean	Std. Dev.	Min.	Max.
Real per capita income (TS)	46731.71	60767.86	-128332	1452822
Real per capita total consumption (TS)	23461.94	41895.52	325	971027.9
Log real per capita total consumption (TS)	9.5916	0.8942	5.78383	13.78611
Real per capita food consumption (TS)	7619.574	13148.07	28.57143	230355.3
Log real per capita food consumption (TS)	8.2061	1.24215	3.35241	12.34738
Real per capita total stock (TS)	194807.6	1208139	-597.345	56000000
Real per capita financial stock (TS)	3752.483	49121.92	-743750	1560585
Real per capita physical stock (TS)	191055.1	1198323	0	56000000
Real per capita land value (TS)	85666.91	286225.2	0	11500000
Household size (Number)	5.8219	2.92807	1	19
Household head age (Years Old)	50.30015	16.81531	3	98
Household head sex: = 1 if male, female = 0	0.72419	0.447	0	1
Household head marital status: = 1 if married, other = 0	0.6650593	0.4720573	0	1
Household head's schooling: = 1 if primary, other = 0	0.68695	0.46382	0	1
Household head's schooling: = 1 if secondary, other = 0	0.03097	0.17328	0	1
Household head's schooling: = 1 if advanced secondary, other = 0	0	0	0	0
Household head's schooling: = 1 if university, other = 0	0.00479	0.06908	0	1
House own: = 1 if house owned, other = 0	0.9458457	0.2263639	0	1
Poverty incidence: = 1 if in poverty, other = 0	0.7262611	0.4459593	0	1
Observations: 2696				

Source: Tanzania's Kagera Health and Development Survey (1991-1994)
TS means Tanzania Shilling.

Table2: Overall Poverty

	Poverty Headcount Rate (P0)				Poverty Gap (P1)				Squared Poverty Gap (P2)			
	Wave1	Wave2	Wave3	Wave4	Wave1	Wave2	Wave3	Wave4	Wave1	Wave2	Wave3	Wave4
Urban	28.3	30.0	53.3	53.3	9.9	10.2	19.4	23.0	4.6	4.6	10.1	12.7
Rural	77.3	75.6	81.0	83.8	37.5	37.7	42.8	43.7	22.5	23.5	26.7	27.2
Total	68.5	67.5	76.1	78.3	32.6	32.8	38.6	40.0	19.3	20.2	23.8	24.6

Table3: Elasticity of Poverty with Respect to the Consumption

	Poverty Headcount Rate (P0)				Poverty Gap (P1)				Squared Poverty Gap (P2)			
	Wave1	Wave2	Wave3	Wave4	Wave1	Wave2	Wave3	Wave4	Wave1	Wave2	Wave3	Wave4
Urban	-0.88	-1.67	-1.88	-0.94	-1.73	-1.77	-1.47	-1.18	-2.01	-2.20	-1.65	-1.49
Rural	-0.61	-0.72	-0.42	-0.54	-1.01	-0.94	-0.85	-0.87	-1.23	-1.10	-1.13	-1.13
Total	-0.63	-0.79	-0.60	-0.59	-1.05	-0.98	-0.91	-0.91	-1.26	-1.15	-1.17	-1.16

Table4: Elasticity of Poverty with Respect to the Inequality

	Poverty Headcount Rate (P0)				Poverty Gap (P1)				Squared Poverty Gap (P2)			
	Wave1	Wave2	Wave3	Wave4	Wave1	Wave2	Wave3	Wave4	Wave1	Wave2	Wave3	Wave4
Urban	1.76	2.78	1.25	0.78	4.36	4.57	2.56	2.12	5.79	6.30	3.79	3.46
Rural	-0.12	0.02	-0.11	-0.04	0.63	0.86	0.58	0.45	1.27	1.65	1.24	1.04
Total	0.06	0.20	-0.02	-0.04	1.07	1.28	0.93	0.78	1.89	2.22	1.80	1.56

Table5: Decomposition of inequality by urban and rural areas

	Wave1			Wave2			Wave3			Wave4		
	GE(0)	GE(1)	GE(2)	GE(0)	GE(1)	GE(2)	GE(0)	GE(1)	GE(2)	GE(0)	GE(1)	GE(2)
Total	38.7	48.0	111.9	49.1	71.5	327.7	45.3	56.9	142.0	39.9	45.3	78.6
Urban	40.0	47.0	90.5	35.9	35.2	45.8	41.4	47.1	81.5	39.7	39.1	51.9
Rural	30.6	37.4	84.1	46.0	80.0	520.8	37.4	49.2	147.4	31.0	35.5	63.4
Within-group inequality	32.2	40.6	103.1	44.2	65.8	321.1	38.1	48.5	131.9	32.5	36.8	68.4
Between-group inequality	6.4	7.4	8.8	5.0	5.7	6.6	7.3	8.4	10.1	7.3	8.5	10.2
Between as a share of total	16.6	15.4	7.9	10.1	7.9	2.0	16.0	14.8	7.1	18.4	18.7	13.0

Table6: Growth and redistribution decomposition of poverty changes

Wave 1-Wave 2						
			Change in incidence of poverty			
	Wave1	Wave2	Actual change	Growth	Redistribution	Interaction
Total	71.58	70.85	-0.73	19.78	-34.07	13.56
Urban	30.67	34.94	4.27	44.08	-25.11	-14.69
Rural	80.20	78.41	-1.79	15.29	-33.29	16.20
Wave 2-Wave 3						
			Change in incidence of poverty			
	Wave2	Wave3	Actual change	Growth	Redistribution	Interaction
Total	70.85	79.70	8.85	-0.13	8.85	0.13
Urban	34.94	57.63	22.69	-7.31	27.28	2.72
Rural	78.41	84.32	5.91	1.41	3.90	0.60
Wave 3-Wave 4						
			Change in incidence of poverty			
	Wave3	Wave4	Actual change	Growth	Redistribution	Interaction
Total	79.70	81.36	1.65	-4.92	4.26	2.32
Urban	57.63	60.45	2.82	-6.81	5.23	4.41
Rural	84.32	85.79	1.47	-5.08	4.02	2.53
Wave 1-Wave 4						
			Change in incidence of poverty			
	Wave1	Wave4	Actual change	Growth	Redistribution	Interaction
Total	71.58	81.36	9.78	17.77	-16.81	8.81
Urban	30.67	60.45	29.78	36.95	-0.14	-7.02
Rural	80.20	85.79	5.59	13.55	-20.86	12.90

Table7: Determinants of Consumption (Urban Area)

	Wave1	Wave2	Wave3	Wave4
Real Per Capita Income	0.136**	0.365**	0.411***	0.184*
	(0.055)	(0.153)	(0.148)	(0.094)
Household head age	-332.575	-327.621**	-191.070	-370.416**
	(279.933)	(158.139)	(154.273)	(178.238)
HH sex dummy	-490.503	-2,260.249	-3,710.548	-16,489.541
	(11,798.937)	(6,502.969)	(6,588.081)	(10,010.812)
HH Marital Stat Dummy	11,804.688	2,173.075	6,975.489	18,307.654*
	(12,671.979)	(6,563.269)	(7,282.245)	(9,408.325)
Female Member Ratio	26,495.169	10,119.824	11,433.893*	14,573.781**
	(24,954.897)	(6,821.164)	(6,584.229)	(7,159.488)
HH Primary Dummy	472.472	-2,445.185	4,245.936	-1,158.337
	(11,533.294)	(4,165.357)	(5,503.757)	(6,871.879)
Real Phy Stock PC	0.070**	0.003	0.042***	0.015
	(0.029)	(0.004)	(0.010)	(0.010)
Real Fin Stock PC	2.926*	-0.107***	0.375***	0.273***
	(1.609)	(0.031)	(0.114)	(0.077)
House Own Dummy	-43,264.692**	-18,481.689*	-13,857.447	-6,273.091
	(17,042.387)	(10,510.586)	(8,848.437)	(9,331.317)
Constant	64,144.942***	43,988.136***	15,534.417	38,665.497***
	(24,257.922)	(14,947.443)	(12,571.518)	(14,741.456)
Observations	120	120	120	120
R-squared	0.543	0.360	0.741	0.432
F stat	F(9,110)=3.07***	F(9,110)=39.73***	F(9,110)=54.20***	F(9,110)=8.94***

Table8: Determinants of Consumption (Rural Area)

	Wave1	Wave2	Wave3	Wave4
Real Per Capita Income	0.193***	0.082	0.315***	0.092***
	(0.050)	(0.056)	(0.115)	(0.025)
HH Age	-25.623	-72.514	-72.621	17.279
	(57.025)	(50.380)	(56.834)	(35.577)
HH Sex Dummy	5,791.900*	-1,411.211	39.098	-926.756
	(2,953.240)	(1,309.089)	(1,535.498)	(1,764.592)
HH Marital Stat Dummy	-15.471	-2,027.522*	654.180	48.829
	(2,663.498)	(1,106.994)	(1,850.533)	(1,573.671)
Female Member Ratio	4,025.378	3,346.752	-318.676	2,250.682
	(3,444.895)	(2,801.199)	(3,036.186)	(1,666.067)
HH Primary Dummy	-3,260.575	1,997.413	-3,606.836	1,610.926
	(3,767.556)	(1,559.986)	(2,476.941)	(1,150.770)
Real Phy Stock PC	0.003**	0.018**	0.038**	0.018***
	(0.001)	(0.008)	(0.018)	(0.004)
Real Fin Stock PC	0.160	1.751***	0.032	0.155***
	(0.168)	(0.265)	(0.087)	(0.017)
House Own Dummy	-15,942.166**	-3,059.115	-2,746.868	-3,323.404
	(6,676.923)	(2,600.754)	(4,138.429)	(3,136.917)
Constant	24,644.822***	11,434.130***	7,724.328	9,195.228**
	(7,309.697)	(3,702.453)	(7,606.519)	(4,104.085)
Observations	554	554	554	554
R-squared	0.392	0.885	0.486	0.544
F stat	F(9,544)=4.58***	F(9,544)=10.94***	F(9,544)=9.30***	F(9,544)=28.78***

Table9: Determinants of Likelihood of Poverty (Marginal Effect, Urban Area)

	Wave1	Wave2	Wave3	Wave4
Real PC Income/1000000	-1.068***	-0.829**	-8.637***	-6.235*
	(0.558)	(1.361)	(2.500)	(3.281)
HH Age/100	0.147	0.097***	0.017	0.456
	(0.104)	(0.137)	(0.298)	(0.286)
HH Sex Dummy	-0.012	-0.015	-0.161	0.083
	(0.047)	(0.029)	(0.158)	(0.123)
HH Marital Stat Dummy	-0.075	0.001	0.051	-0.046
	(0.055)	(0.014)	(0.141)	(0.127)
Female Member Ratio	-0.036	-0.026	-0.379***	-0.152
	(0.072)	(0.042)	(0.145)	(0.124)
HH Primary Dummy	0.095***	0.015	-0.101	-0.013
	(0.049)	(0.023)	(0.124)	(0.120)
RealPhyStockPC/1000000	-0.102	-0.211**	-0.162	-0.579*
	(0.126)	(0.231)	(0.164)	(0.321)
RealFinStockPC/1000000	-18.195**	-1.558**	-10.816	-13.741
	(7.075)	(1.734)	(10.480)	(14.886)
House Own Dummy	0.053*	0.013	0.128	0.117
	(0.034)	(0.019)	(0.132)	(0.127)
Observations	120	120	120	120
Log pseudolikelihood	-50.802058	-49.673261	-63.30196	-65.636931
Pseudo R2	0.2898	0.3224	0.2365	0.2083
Wald stat	Wald chi2(9)= 26.35***	Wald chi2(9)= 35.80***	Wald chi2(9)= 25.67***	Wald chi2(9)= 13.81
Observed P	.283	.300	.533	.533
Predicted P (at x-bar)	.050	.015	.427	.365

Table10: Determinants of Likelihood of Poverty (Marginal Effect, Rural Area)

	Wave1	Wave2	Wave3	Wave4
Real Income PC/1000000	-1.931***	-7.036***	-7.679***	-2.374***
	(0.448)	(1.352)	(1.093)	(0.802)
HH Age/100	-0.071	0.048	0.091	-0.022
	(0.128)	(0.125)	(0.113)	(0.107)
HH Sex Dummy	-0.046	0.024	0.068	-0.045
	(0.059)	(0.058)	(0.060)	(0.046)
HH Marital Stat Dummy	0.062	-0.055	-0.054	0.080*
	(0.059)	(0.052)	(0.046)	(0.050)
Female Member Ratio	-0.036	-0.093	-0.100**	-0.097**
	(0.081)	(0.069)	(0.044)	(0.042)
HH Primary Dummy	-0.010	-0.044	0.010	-0.023
	(0.049)	(0.045)	(0.040)	(0.036)
RealPhyStockPC/1000000	-0.114	-0.296**	-0.228**	-0.281***
	(0.094)	(0.124)	(0.107)	(0.092)
RealFinStockPC/1000000	-9.543**	-1.714	-0.438	-2.946**
	(5.105)	(3.279)	(0.440)	(1.483)
House Own Dummy	0.219*	0.082	-0.011	0.084
	(0.128)	(0.109)	(0.091)	(0.102)
Observations	554	554	554	554
Log pseudolikelihood	-257.79446	-256.41917	-202.73508	-191.48458
Pseudo R2	0.1321	0.1665	0.2463	0.2210
Wald stat	Wald chi2(9)= 37.24***	Wald chi2(9)= 56.81***	Wald chi2(9)= 91.48***	Wald chi2(9)= 51.85***
Observed P	.773	.756	.810	.838
Predicted P (at x-bar)	.733	.763	.841	.853

In Tables 7-10:
HH means a household head.
Robust standard errors in parentheses;
* significant at 10%; ** significant at 5%; *** significant at 1%;
Dummy for secondary school or higher is a base dummy for schooling dummies.
For explanatory dummy variables in Tables 9-10, a marginal effect is for discrete change of a dummy variable from 0 to 1.

Table11: Decompositions for Difference in Consumption and Difference in Predicted Poverty

Difference in Consumption				
	Aggregate Difference	Endowments Component	Coefficients Component	Interaction Component
Wave 1	-39498.35	5773.21	-35756.10	-9515.46
(%)	100	-14.6	90.5	24.1
Wave 2	-17729.18	-7667.83	-19125.24	9063.89
(%)	100	43.2	107.9	-51.1
Wave 3	-22521.71	-12256.96	-14635.31	4370.56
(%)	100	54.4	65.0	-19.4
Wave 4	-23630.96	-4474.81	-19330.78	174.63
(%)	100	18.9	81.8	-0.7

Difference in Predicted Poverty				
	Aggregate Difference	Endowments Component	Coefficients Component	Interaction Component
Wave 1	0.489	-0.023	0.437	0.075
(%)	100	-4.7	89.3	15.4
Wave 2	0.456	0.039	0.330	0.088
(%)	100	8.5	72.3	19.2
Wave 3	0.277	0.054	0.194	0.029
(%)	100	19.6	69.9	10.5
Wave 4	0.304	0.041	0.229	0.034
(%)	100	13.3	75.3	11.3