Macroeconomic instability makes growth less pro poor, in Africa and elsewhere: A preliminary examination

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Macroeconomic instability makes growth less pro poor, in Africa and elsewhere: A preliminary examination

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Abstract

The recent literature on the determinants of poverty changes across countries has been focused on the change of average level of income per capita and its distribution, generally measured by a Gini coefficient. While the instability of income is more and more considered as an explaining factor of the average rate of income, it is not generally considered as a factor of higher poverty for a given level of income. However it can be expected that income volatility is a factor of poverty, due to the existence of poverty traps. In this paper we argue that income instability may result in higher poverty for a given level of income.

Considering that in Africa poverty during the last two decades has been increasing whereas it was decreasing in other developing countries, and that income instability is higher in Africa than it is elsewhere, it is relevant to examine whether this higher instability has been a factor of higher poverty beyond the fact that it lowers growth.

In order to answer to this question, the paper first summarizes the evolution of poverty from available statistical data, and then introduces income instability in an appropriate model of a poverty change. The econometric results corresponding to this model show that income instability may have, besides income growth and Gini coefficient change, an additional impact on poverty change. Even if it is low, since income instability is higher among Sub Saharan African countries, this impact can explain a part of their larger poverty incidence.

1 Comparative overview of poverty change and income instability

1.1 Sources of poverty data

Cross country comparisons of poverty changes have been made possible by the work done at the World Bank. The data used in that paper are those collected through PovcalNet (http://iresearch.worldbank.org/PovcalNet/jsp/index.jsp). They come from 454 socio-economic sample surveys spanning 97 countries. From these surveys, an assessment is made of how aggregate consumption or income is distributed across the population in each country at the date of each survey. The proportion of people who do not reach any given "poverty line" is drawn from this distribution. Here is taken a "$1 a day" poverty line ($1,08 at 1993 international prices).

Since the surveys do not all line up in time, they do not give the evolution of poverty over homogeneous time periods, what would be needed to examine the impact of instability across countries. If income instability has an impact on poverty change, it reasonably depends on the length of the time period during which it occurs. Interpolating survey data to non survey years is needed. That is done by the World Bank's research group, using national accounts data and census-based estimates of the population of each country at each date, combining all this information, and calculating the total number of people living below various international poverty lines, as well as other poverty and inequality measures[1].

From these data, a sample has been built composed by two 9-year-spells of poverty change, 1981-1990 and 1990-1999, covering 68 developing countries among which 28 are sub Saharan countries.

[1] See Chen and Ravallion (2004) for the details on the data sources and the methods.

1.2 Poverty change in Africa

A lot of work has been done on poverty in Africa, not only at the micro level, but also at the macro level (see for instance Sahn and Younger 2004, as well as Bigsten and Fosu 2004, Mwabu and Thorbecke 2004 in a special issue of the Journal of African Economies). Here we focus on the comparisons of the poverty changes made possible by the survey sample indicated above (a comparison of an earlier and more limited set of surveys can be found in Christiaensen, Demery and Paternostro 2003). Two main features first appear:

a) Incidence of poverty is more important in SSA than in other developing countries

	Poverty headcount ratio (H)
SSA	41,7 %
Non SSA	12,8 %
Difference	+ 28,8 % pts
H0 : diff=0, Ha : diff>0	p-value = 0,00

b) Incidence of poverty has been growing in SSA, declining elsewhere

	(H_t-H_{t-1})		$(H_t-H_{t-1})/ H_t$	
	On both 81-90 and 90-99	On 81-99 period	On both 81-90 and 90-99	On 81-99 period
SSA	+1,48 % pts	+ 3,29 % pts	+0,05 %	+0,11%
Non SSA	-2,76 % pts	- 6,92 % pts	-0,18 %	-0,36 %
Difference	+4,23 % pts	+ 10,21 % pts	+0,22 % pts	+0,47 % pts
H0 : diff=0, Ha : diff>0	p-value = 0,02	p-value = 0,01	p-value = 0,10	p-value = 0,05

The difference of evolution of poverty in Africa and other developing countries is due of course to a lower increase of income.

	$(Y_t-Y_{t-1})/Y_t$	
	On both 81-90 and 90-99	On 81-99 period
SSA	- 0,05 %	- 0,09 %
Non SSA	+ 0,09 %	+ 0,19 %
Difference	- 0,13 % pts	- 0,28 % pts
H0 : diff=0, Ha : diff>0	p-value = 0,01	p-value = 0,01

But it is not due to a more rising inequality as measured by the Gini coefficient (changes are not significantly different between Africa and elsewhere).

It also appears that the reaction of poverty to the respective changes of income per capita and Gini coefficient has been lower in Africa. The respective elasticities of the headcount index of poverty to income per capita and to Gini inequality, estimated from a standard model of poverty change as that used by Adams (2004), have in Africa about half of the value found for other developing countries.

Table 1 : Standard model of poverty change				
Dependent variable	Poverty headcount growth			
Estimation type	OLS		RE	
Regression no.	1	2	3	4
Income growth	-2.220	-2.521	-2.220	-2.521
	(0.000)	(0.000)	(0.000)	(0.000)
Income growth*SSA		1.227		1.227
		(0.000)		(0.001)
Dgini	4.949	7.010	4.949	7.010
	(0.001)	(0.003)	(0.000)	(0.000)
Dgini*SSA		-4.530		-4.530
		(0.062)		(0.022)
SSA		-0.038		-0.038
		(0.641)		(0.690)
Constant	-0.017	0.028	-0.017	0.028
	(0.728)	(0.720)	(0.732)	(0.652)
Observations	125	125	125	125
Countries	68	68	68	68
R-squared / R-squared between	0.65	0.70	0.71	0.77
p-value random effects			0.02	0.00
Hausman test			0.54	0.80

p values in parentheses (robust for OLS)

However the lower growth elasticity of poverty in Africa must be interpreted cautiously: in 32 cases among 51 ones the average rate of growth has been negative, meaning a lower increase of poverty for a given decrease of income per capita.

1.3 Income instability

There are many ways to measure the instability or volatility of income. Since instability is considered over a rather long period (9 years), it does not seem appropriate to retain, as often done, the standard deviation of the rate of growth, which may only reflect a trend in this growth rate. For that reason instability has been measured by the average absolute

deviation from a mixed trend estimated with the time and the lagged value of income as explanatory variables or from a stochastic trend, with only the lagged value of income, if the time trend is not significant. Income instability appears to have been slightly but significantly higher in Africa than in other developing countries. This holds for several primary sources of instability (Guillaumont, Guillaumont Jeanneney and Brun 1999).

	Income instability
SSA	3,08
Non SSA	2,61
Difference	+ 0,48
H0 : diff=0, Ha : diff>0	p-value = 0,05

While several studies examine and evidence the impact of shocks and vulnerability on poverty in Africa at the micro level, "few, if any, studies, as noted by Dercon 2005, have tried to quantify the overall effect on growth and poverty".

2 A model of poverty change including income instability

2.1 Basic factors determining the "growth elasticity of poverty": a parsimonious model

Since the incidence of poverty basically depends on the average level of income per capita and on the degree of income inequality, generally measured by the Gini coefficient, a standard model of poverty change, estimated above, is a function of the respective changes of income per capita and Gini coefficient (Adams 2004). However, as clearly shown by Bourguignon (2003), assuming a lognormal distribution of income, the so-called growth elasticity of poverty (better named income elasticity of poverty) is arithmetically determined by the initial levels of the income per capita and of the Gini coefficient. Thus, for given values of these initial levels there is a theoretical or expected level of the income elasticity of poverty. This expected elasticity is found to explain to a large extent, but not entirely the poverty change for a given change in income per capita. Therefore, if a model of poverty change is to be estimated, it must include the initial level of income and the initial Gini coefficient each multiplied both by the growth of income and the change in the

Gini coefficient, since these initial variables are expected to influence the reaction of poverty to the change of income and its distribution as measured by the Gini coefficient.

The model to estimate is then the following:

$$(1)\ \Delta H/H = \alpha + \beta_1.\Delta ly + \beta_2.\Delta ly.(1/ly_0) + \beta_3.\Delta ly.G_0 + \chi_1.\Delta G + \chi_2.\Delta G.(1/ly_0) + \chi_3.\Delta G.G_0 + \varepsilon$$

where H represents the poverty headcount ratio, $\Delta H/H$ its relative variation, ly_0 the income per capita in log, Δly is the per capita income growth, G_0 the initial Gini coefficient, ΔG the Gini absolute variation. The reaction of poverty both to income and Gini changes are initial income (in log) and initial Gini coefficient. The absolute value of the income elasticity of poverty is higher the higher the initial income per capita and the lower the initial Gini coefficient. The Gini elasticity of poverty is the higher the higher the initial income per capita and the lower the initial Gini coefficient. A relevant alternative specification is to take ΔH (as suggested by Klasen), as dependent variable, the β coefficient being then a semi elasticity. Indeed the relative change of the poverty headcount ratio is politically less meaningful than its absolute change.

Moreover since the levels of the initial income per capita (or its reverse) and the initial Gini coefficient are the main factors determining the initial level of poverty (and in Bourguignon 2003 with similar coefficients), it is convenient in a more parsimonious model to replace these two variables by one single variable, initial poverty (then multiplied both by the rate of income growth and by the change in Gini coefficient):

$$(2)\ \Delta H/H = \alpha + \Delta ly.(\beta_1 + \beta_4.H_0) + \Delta G.(\chi_1 + \chi_4.H_0) + \eta$$

where H_0 is the initial poverty headcount ratio.

It simply means that the level of the per capita income elasticity of poverty depends on the initial level of poverty: its absolute level is expected to be the higher the lower is the initial level of poverty. By the same way the inequality elasticity of poverty is expected to be the higher the lower the initial level of poverty.

2.2 Channels of income instability to poverty

A negative relationship between the average rate of growth and its volatility has been evidenced across countries (Ramey and Ramey 1995, Hnatkovska and Loayza 2003, Norbin and Yigit 2005, Guillaumont 2005). As income growth is a necessary condition for poverty reduction, income instability hurts the poor first through its impact on income growth. The impact of instability on African growth has already been evidenced (Guillaumont, Guillaumont Jeanneney and Brun 1999). Here we focus on the effects of instability on poverty which are not induced by a lower growth.

Poor people may be more vulnerable to the cyclical nature of growth than the rich. During falling periods some people are pushed under the poverty line while during rising ones they cannot recover enough to come back above the line. This is the essence of a poverty trap. It can be analyzed as an asymmetry of the reaction of the different income groups to the fall and rise in income. These asymmetry effects on poverty have been noted by several authors (see for instance Agénor, 2001, 2002, Laursen and Mahajan 2004, Guillaumont Jeanneney and Kpodar 2005, Guillaumont 2005). They may correspond to irreversible changes, in particular when they affect human capital: deterioration in health levels can be permanent, and interruptions in school attendance are often definitive. These are of course long term effects of the level of poverty. Other long term effects are those resulting from a higher risk aversion of poorer people, sometimes assumed in the literature.

Income instability may also have more rapid effects on poverty. Actually, lower income people may be more vulnerable than the rich during recessions because they have “lower levels assets and access to financial markets make them more difficult to protect against adverse income and employment shocks” (Laursen and Mahajan 2004). Moreover, “the lower income groups depend more on public transfers and social services exposing them more directly to cuts in government spending” (Ibid.). Besides, while prices rarely fall during recessions, they most often rise during expansions (Guillaumont Jeanneney and Kpodar 2005). As the poor are less able to protect themselves against inflation (due to the level and composition of their assets or in middle income countries because they may depend more than the rich on state determined income that is not fully indexed to inflation,

such as pension, state subsidies or direct transfers, Easterly and Fischer 2001), the inflation induced by growth fluctuations tends to increase income inequality.

There are relatively few cross country empirical studies of the effects of income volatility on income distribution and poverty. A. de Janvry and E. Sadoulet (2000) support the asymmetry assumption: using data about twelve countries in Latin America from 1970 to 1994, they have shown that economic growth has reduced rural and urban poverty on average, but that the negative impact of recessions has been stronger than the positive impact of expansions. S. Guillaumont and K. Kpodar (2005), find that, on a sample of developing countries over the period 1966-2000, while there is a positive effect of financial development on the poor, in the same time the related financial instability has a detrimental effect. Laursen and Mahajan (2004) find an impact of income volatility on the lower quintile of income, in particular for African countries and try to identify some transmission channels by examining asymmetries of reaction to the opposite phases of the cycle (asymmetry observed in particular for inflation, which hurts relatively more the poor). They also evidenced differential effects on the various quintiles (second lower quintile more affected than the lowest on a very long period). Breen and Garcìa-Peñalosa (2005), using a cross-section of developed and developing countries, find that income volatility, defined as the standard deviation of the rate of output growth, increases the income share of the top quintile, while it reduces the share of the other quintiles.

These last informations lead to the conclusion that income distribution in presence of volatility may not respect the log normality distribution assumption. It follows that the impact of volatility on income distribution and poverty may not be adequately captured through the change in the Gini coefficient. For that reason it is relevant to include income instability besides the change in Gini coefficient to explain poverty changes due to income distribution changes.

The previous arguments supporting the hypothesis of an instability more detrimental to the poor have been presented irrespective to the measure of poverty retained. If, instead of the poverty headcount index, the poverty gap is considered, the impact of instability is likely to be more significant, because it will capture poverty trap effects not only across the poverty line, but in the whole distribution before the poverty line.

2.3 An augmented model of poverty change

The advantage offered by an econometric estimation, compared to the arithmetic calculation of the expected elasticity, is to leave a room for capturing the impact of variables or relationships not adequately reflected in the arithmetic model, in particular of possible changes in income distribution not translated into the variation of the Gini coefficient, as those resulting from income instability.

Income instability must be taken into account both as a factor explaining the change in Gini coefficient and maybe more importantly as an additive factor likely to represent the effect of instability on income distribution which is not reflected by a change in the Gini coefficient.

Moreover it can be expected that this impact of instability on poverty not reflected by the Gini change is itself dependent on the initial level of poverty, as is the reaction of poverty to the change in the Gini coefficient.

$$(2bis)\ \Delta H/H = \alpha + \Delta ly.(\beta_1 + \beta_4.H_0) + \Delta G.(\chi_1 + \chi_4.H_0) + Insy(\delta_1 + \delta_4.H_0) + \zeta$$

where Insy represents income instability during the spell.

If the change in Gini coefficient is influenced by instability, we can write

$$(3)\ \Delta G = \phi.Insy + Resid(\Delta G)$$

which introduced in (2bis) gives :

$$(4)\ \Delta H/H = \alpha + \Delta ly.(\beta_1 + \beta_4.H_0) + Res(\Delta G).(\chi_1 + \chi_4.H_0) + Insy.((\chi_1.\phi + \delta_1) + (\delta_4 + \chi_4.\phi).H_0) + \zeta$$

3 Econometric results

As mentioned before, the poverty data used are collected from PovcalNet (World Bank). Two nine-year spells are constructed: 1981-90 and 1990-99. The sample counts 125 observations, covering 68 developing countries and 28 sub Saharan countries.

Almost all countries give two spell observations. The Hausman test never shows a preference for a fixed effects model when compared to a random effects model (p-

value>10%). In addition, within standard deviations are lower than between standard deviations, which conducts to prefer a random effects estimation. However, this type of estimation also needing strong assumptions, an ordinary least squares estimation is also made to strengthen the results.

Since the correlation coefficient between income instability and the change in Gini is not significant, table 2 only gives estimates of equation (2bis), with the OLS and RE methods, giving up the estimation of equation (4).

Table 2 : Poverty relative change model, augmented with instability

Dependent variable:	Poverty Headcount relative variation			
Estimation type:	OLS		RE	
Regression no.	1	2	3	4
Income growth	-2.996	-2.909	-2.996	-2.909
	(0.000)	(0.000)	(0.000)	(0.000)
Income growth*Initial poverty	0.039	0.037	0.039	0.037
	(0.000)	(0.000)	(0.000)	(0.000)
Dgini	7.642	8.510	7.642	8.510
	(0.005)	(0.002)	(0.000)	(0.000)
Dgini*Initial poverty	-0.113	-0.134	-0.113	-0.134
	(0.081)	(0.040)	(0.025)	(0.009)
Income instability		0.112		0.112
		(0.077)		(0.042)
Income instability*Initial poverty		-0.002		-0.002
		(0.123)		(0.140)
Initial poverty	-0.001	0.005	-0.001	0.005
	(0.512)	(0.228)	(0.513)	(0.293)
Constant	-0.031	-0.350	-0.031	-0.350
	(0.736)	(0.061)	(0.650)	(0.041)
Observations	125	125	125	125
Countries	68	68	68	68
R-squared / R-squared between	0.74	0.75	0.79	0.78
p-value of random effects			0.01	0.01
Hausman test			0.72	0.74

P values in parentheses (robust for OLS)

Columns no.2 and 4 show that the coefficient of income instability has been about 0,11 (if we consider as not significant the coefficient found for the multiplicative variable). That means that a 5 points instability has generated an increase in poverty headcount level around 0,55 %.

As these results are slightly difficult to interpret, table 3 estimates the same models, replacing the dependant variable ΔH/H by ΔH.

Table 3 : Poverty absolute change model, augmented with instability				
Dependent variable	Poverty headcount absolute variation			
Estimation type	OLS		RE	
Regression no.	1	2	3	4
Income growth	-11.465	-10.612	-10.970	-10.184
	(0.000)	(0.000)	(0.000)	(0.000)
Income growth * Initial poverty	-0.703	-0.744	-0.722	-0.758
	(0.000)	(0.000)	(0.000)	(0.000)
Dgini	50.869	57.692	48.738	54.605
	(0.003)	(0.001)	(0.000)	(0.000)
Dgini*Initial poverty	1.057	0.868	1.068	0.898
	(0.032)	(0.079)	(0.013)	(0.041)
Income instability		0.886		0.797
		(0.097)		(0.095)
Income instability * Initial poverty		-0.026		-0.024
		(0.080)		(0.064)
Initial poverty	-0.050	0.028	-0.055	0.017
	(0.032)	(0.582)	(0.005)	(0.701)
Constant	1.720	-0.822	1.849	-0.443
	(0.006)	(0.608)	(0.005)	(0.769)
Observations	125	125	125	125
Countries	68	68	68	68
R-squared / R-squared between	0.86	0.86	0.87	0.87
p-value of random effects			0.10	0.10
Hausman test			0.15	0.27

P values in parentheses (robust for OLS)

Since initial poverty sample mean is 26%, columns no.2 and 4 estimate the coefficient of instability at 0,2. Therefore, instability of 5 points may raise poverty headcount by 1 % point.

As instability is statistically larger in Sub Saharan African countries, it seems to be an additional factor explaining larger Sub Saharan African poverty incidence. However that assumption requires the stability of the model among African countries.

Table 4 shows that the model and more particularly income instability impact is the same among Sub Saharan African countries than in the full sample. Moreover a Chow test estimates that stability assumption cannot be rejected (p-value=0,25).

Table 4 : Poverty relative change and instability : an African specificity ?						
Dependent variable	Poverty headcount relative variation					
Estimation type	OLS			RE		
Regression no.	1	2	3	4	5	6
Income growth	-2.909	-2.882	-2.878	-2.909	-2.882	-2.878
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Income growth*SSA			0.601			0.601
			(0.156)			(0.380)
Income growth*Initial poverty	0.037	0.039	0.036	0.037	0.039	0.036
	(0.000)	(0.000)	(0.008)	(0.000)	(0.000)	(0.009)
Income growth*Initial poverty*SSA			-0.007			-0.007
			(0.637)			(0.747)
DGini	8.510	8.785	9.415	8.510	8.785	9.415
	(0.002)	(0.002)	(0.002)	(0.000)	(0.000)	(0.000)
Dgini*SSA			-8.037			-8.037
			(0.038)			(0.166)
Dgini*Initial Poverty	-0.134	-0.138	-0.144	-0.134	-0.138	-0.144
	(0.040)	(0.037)	(0.121)	(0.009)	(0.007)	(0.329)
Dgini*Initial Poverty*SSA			0.181			0.181
			(0.097)			(0.368)
Income instability	0.112	0.139	0.164	0.112	0.139	0.164
	(0.077)	(0.071)	(0.106)	(0.042)	(0.018)	(0.019)
Income instability*SSA		-0.098	-0.146		-0.098	-0.146
		(0.075)	(0.152)		(0.198)	(0.229)
Income instability*Initial poverty	-0.002	-0.002	-0.003	-0.002	-0.002	-0.003
	(0.123)	(0.142)	(0.181)	(0.140)	(0.191)	(0.160)
Income instability*Initial Poverty*SSA		0.001	0.003		0.001	0.003
		(0.254)	(0.248)		(0.418)	(0.404)
Initial poverty	0.005	0.003	0.006	0.005	0.003	0.006
	(0.228)	(0.509)	(0.392)	(0.293)	(0.622)	(0.411)
Initial poverty*SSA			-0.007			-0.007
			(0.387)			(0.559)
SSA		0.261	0.470		0.261	0.470
		(0.016)	(0.119)		(0.191)	(0.234)
Constant	-0.350	-0.408	-0.494	-0.350	-0.408	-0.494
	(0.061)	(0.051)	(0.096)	(0.041)	(0.022)	(0.024)
Observations	125	125	125	125	125	125
Countries	68	68	68	68	68	68
R-squared / R-squared between	0.75	0.75	0.76	0.78	0.79	0.79
p-value of random effects				0.01	0.01	0.01
Hausman test				0.74	0.72	0.89

P values in parentheses (robust for OLS)

As change in poverty gap is expected to better capture poverty trap effects, it is now considered in table 5.

Table 5 : Poverty gap absolute variation model: an African specificity?				
Dependant variable	Poverty gap absolute variation			
Estimations type	OLS		RE	
Regression no.	1	2	3	4
Income growth	-4.579	-4.235	-4.563	-4.235
	(0.000)	(0.001)	(0.000)	(0.000)
Income growth * Initial poverty	-0.865	-0.855	-0.866	-0.855
	(0.000)	(0.000)	(0.000)	(0.000)
Dgini	32.266	33.598	32.086	33.598
	(0.002)	(0.002)	(0.000)	(0.000)
Dgini * Initial poverty	2.441	2.340	2.449	2.340
	(0.000)	(0.000)	(0.000)	(0.000)
Income instability	0.439	0.481	0.433	0.481
	(0.044)	(0.085)	(0.064)	(0.084)
Income instability * SSA		-0.219		-0.219
		(0.461)		(0.536)
Income instability * Initial poverty	-0.039	-0.032	-0.039	-0.032
	(0.027)	(0.091)	(0.014)	(0.138)
Income instability * Initial poverty * SSA		-0.003		-0.003
		(0.865)		(0.860)
Initial poverty	0.061	0.024	0.059	0.024
	(0.327)	(0.711)	(0.264)	(0.677)
SSA		1.698		1.698
		(0.080)		(0.114)
Constant	-0.313	-0.650	-0.293	-0.650
	(0.636)	(0.416)	(0.694)	(0.430)
Observations	127	127	127	127
Countries	68	68	68	68
R-squared	0.814	0.820	0.846	0.854
random effects p-value			0.93	0.97

P values in parentheses (robust for OLS)

To sum up, the above estimations show that income instability may have, besides income growth and Gini coefficient change, an additional impact on poverty change. Even if this impact is low, since income instability is higher among Sub Saharan African countries, it explains a part of their larger poverty incidence. Moreover, as income instability tends to lower income growth, it contributes to increase poverty change by this way too.

4 Further research

The previous attempt to assess the impact of income volatility on poverty change in Africa can be extended in several directions:

a) A specification problem may arise if the income distribution and in particular the Gini coefficient is influenced durably by the income instability, which is often a structural characteristic. To capture this more permanent effect, a panel model explaining the level of poverty can be used with the previous instability observed on a rather long period as explanatory variable of poverty for each point of observation. Tentative estimates suggest an effect particularly important in Africa. Moreover some previous works quoted above suggest a long term effect of volatility on income distribution.

b) Particularly important for Africa is to consider the differential effect of volatility in rural and urban areas, and according to the primary sources of volatility (primary commodity prices, climate, macro economic policy)

c) Finally it has to be remembered that instability has significant impact on the average rate of growth, which is the main determinant of poverty reduction and which has been particularly weak in Africa, partly as a consequence of shocks. Income instability in Africa may have been slowing down poverty reduction even more by lowering the rate of growth than by making growth less pro-poor.

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List of countries (sorted by income instability level)

Country	period	Income instability
Ghana	1990-99	0,63
Swaziland	1990-99	0,65
Sri Lanka	1990-99	0,78
Bangladesh	1990-99	0,78
Guatemala	1990-99	0,96
Bangladesh	1981-90	0,97
Pakistan	1981-90	0,98
Vietnam	1981-90	1,00
Nigeria	1990-99	1,01
Madagascar	1981-90	1,02
United Republic of Tanzania	1990-99	1,07
Nepal	1990-99	1,07
Namibia	1981-90	1,08
Sri Lanka	1981-90	1,15
Lao PDR	1990-99	1,19
Kenya	1990-99	1,20
Vietnam	1990-99	1,21
Paraguay	1990-99	1,23
Jamaica	1990-99	1,25
Egypt, Arab Rep.	1990-99	1,26
Egypt, Arab Rep.	1981-90	1,32
Pakistan	1990-99	1,45
Colombia	1981-90	1,50
Malawi	1981-90	1,56
South Africa	1990-99	1,59
Madagascar	1990-99	1,68
Mongolia	1981-90	1,69
Cambodia	1990-99	1,76
Gambia	1990-99	1,76
Botswana	1990-99	1,80
Bolivia	1990-99	1,81
El Salvador	1981-90	1,81
Tunisia	1990-99	1,84
Kenya	1981-90	1,85
Ecuador	1981-90	1,87
Namibia	1990-99	1,88
Honduras	1981-90	1,89
St. Lucia	1990-99	1,91
South Africa	1981-90	1,94
Colombia	1990-99	1,96
Honduras	1990-99	1,97
Gambia	1981-90	2,02
Cote d'Ivoire	1981-90	2,06
Zambia	1981-90	2,07
Philippines	1990-99	2,09
Brazil	1990-99	2,09
Ecuador	1990-99	2,10
Panama	1990-99	2,10
Uganda	1990-99	2,16
Mauritania	1981-90	2,17
Thailand	1981-90	2,20
Algeria	1990-99	2,21
Algeria	1981-90	2,24
Turkey	1981-90	2,24
Mexico	1981-90	2,29
Jamaica	1981-90	2,35
Zimbabwe	1981-90	2,35
Chile	1990-99	2,38
Morocco	1981-90	2,39
Lesotho	1990-99	2,42
Costa Rica	1981-90	2,45
Guatemala	1981-90	2,47
Senegal	1990-99	2,48
Burundi	1981-90	2,50
Nicaragua	1990-99	2,53
Paraguay	1981-90	2,54
Nicaragua	1981-90	2,56
Costa Rica	1990-99	2,56
Niger	1990-99	2,59
Burkina Faso	1990-99	2,66
Trinidad and Tobago	1990-99	2,67
Malaysia	1981-90	2,68
Rwanda	1981-90	2,68
Tunisia	1981-90	2,70
Iran, Islamic Rep.	1990-99	2,72
El Salvador	1990-99	2,76
Botswana	1981-90	2,78
Uganda	1981-90	2,81
Lesotho	1981-90	2,82
Mexico	1990-99	2,83
Dominican Republic	1981-90	2,88
Cote d'Ivoire	1990-99	2,91
Mauritania	1990-99	2,93
Central African Republic	1981-90	2,99
Mozambique	1990-99	2,99
Guyana	1981-90	3,11
Mali	1990-99	3,12
Peru	1990-99	3,13
Brazil	1981-90	3,19
Ghana	1981-90	3,20
Jordan	1990-99	3,25
Philippines	1981-90	3,27
Chile	1981-90	3,31
Turkey	1990-99	3,58
Central African Republic	1990-99	3,60
Sierra Leone	1981-90	3,65
Yemen, Rep.	1990-99	3,66
Burkina Faso	1981-90	3,68
Venezuela, RB	1990-99	3,72
Malaysia	1990-99	3,85
Zambia	1990-99	3,86
Burundi	1990-99	3,91
Zimbabwe	1990-99	4,07
Cameroon	1990-99	4,08
Venezuela, RB	1981-90	4,11
Thailand	1990-99	4,21
Morocco	1990-99	4,40
Uruguay	1981-90	4,40
Panama	1981-90	4,43
Mongolia	1990-99	4,47
Niger	1981-90	4,65
Trinidad and Tobago	1981-90	4,72
Nigeria	1981-90	4,84
Mali	1981-90	4,91
Guyana	1990-99	4,95
Cameroon	1981-90	5,61
Ethiopia	1990-99	5,64
Iran, Islamic Rep.	1981-90	5,80
Peru	1981-90	6,26
Malawi	1990-99	6,33
Swaziland	1981-90	6,53
Mozambique	1981-90	6,73
Sierra Leone	1990-99	7,08
St. Lucia	1981-90	8,56
Rwanda	1990-99	9,03

Descriptive statistics

Variable		Mean	Std. Dev.	Min	Max
Poverty Headcount relative variation	overall	-0,071	0,921	-2,980	3,077
	between		0,611	-1,337	1,499
	within		0,704	-2,323	2,182
Poverty headcount absolute variation	overall	-0,964	11,064	-34,4	31,63
	between		9,352	-27,9	21,84
	within		6,896	-21,239	19,311
Poverty gap absolute variation	overall	-0,131	5,838	-16,190	27,730
	between		4,685	-15,330	15,825
	within		4,873	-12,906	12,644
Income growth	overall	0,030	0,310	-1,062	1,043
	between		0,239	-0,725	0,466
	within		0,205	-0,725	0,786
Dgini	overall	0,003	0,047	-0,129	0,180
	between		0,035	-0,129	0,090
	within		0,034	-0,105	0,111
Income instability	overall	2,813	1,584	0,627	9,025
	between		1,209	0,874	5,854
	within		1,054	-0,511	6,137
Mean income (lag)	overall	126,109	90,233	18,200	424,850
	between		89,793	18,515	410,460
	within		16,573	83,634	168,584
1/log of mean income (lag)	overall	0,223	0,036	0,165	0,345
	between		0,035	0,166	0,343
	within		0,006	0,204	0,242
Gini (lag)	overall	0,463	0,099	0,259	0,743
	between		0,097	0,272	0,743
	within		0,016	0,400	0,525
Poverty headcount (lag)	overall	26,040	21,755	0,140	88,010
	between		21,365	0,420	87,605
	within		4,691	10,875	41,205
Poverty gap (lag)	overall	10,221	11,429	0,000	53,23
	between		11,143	0,050	52,64
	within		2,204	2,192	18,252
SSA	overall	0,424	0,496	0,000	1,000