Zambia's Poverty and Food Security: Measurements, Trends and Decompositions

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Abstract

This paper examines poverty measurement methodology and poverty situations in Zambia with a special focus on level and trends in Southern and Eastern provinces where our study sites are located. Poverty in Zambia is measured using absolute poverty approach by which households are classified as poor if their monthly consumption expenditures fall below a pre-determined cost of minimum food basket for a family of six. This consumption based poverty measurement provides a direct linkage to household food security. The implementation of structural adjustment program in 1990 coupled with a major drought in 1991/92 agricultural season have created a sharp increase in poverty in both rural and urban areas in 1993. The largest increase of poverty was in urban areas especially in Lusaka and Copperbelt. Overall poverty situation in Zambia showed sign of improvements especially during the new growth period after the year 1998. Economic growth during this new growth period appears to disproportionately benefit urban population with Lusaka enjoying significant reduction of poverty headcounts. In contrast, poverty in Southern and Eastern provinces are on a rising trend with increasing severity. The turning point was in the year 2002. The shifting poverty trends in those two provinces may be associated with a series of droughts affecting farm production during early 2000s' agricultural seasons.

1. Introduction

Once a middle-income country, Zambia is now one of the Sub-Saharan Africa's poorest. Every two in three persons lived off a daily income of less than PPP$1.25 a day. A transition into a low income country status started when price of copper, a Zambia's dominant mining industry and source of foreign currency earnings, fell sharply in 1970s. Zambia government responded by heavily relying on foreign borrowings to finance imports and ambitious social programs with a hope that copper market would recover. The long anticipated recovery of the copper market failed to come and foreign debts piled up. Unable to service the debts, IMF and the World Bank provided assistance conditioning on successful implementations of market liberalizations and structural adjustment programs. The market liberalizations and structural adjustment programs implemented in 1991 were Zambian's painful experiences. People saw their welfare as measured by real income per capita fell further. The falls of the real GDP per capita were finally over in 1998. Since then the country has entered a new era of steady growth of real income per capita (see Figure 1).

The purposes of this paper are two folds. Poverty and food insecurity are intimately linked. First, this paper provides a macro view of the dynamics of household poverty in post market liberalization and structural adjustment program period, which happened to coincide with a period of frequent droughts and dry spells threatening living standards of the rural poor. The second objective is to provide linkage across scales by extracting poverty statistics and household dynamics at a level closest to the Resilience Project's study sites in

Petauke and Sinzongwe districts. That level of analysis is not routinely published in any governments' and international organizations' reports.

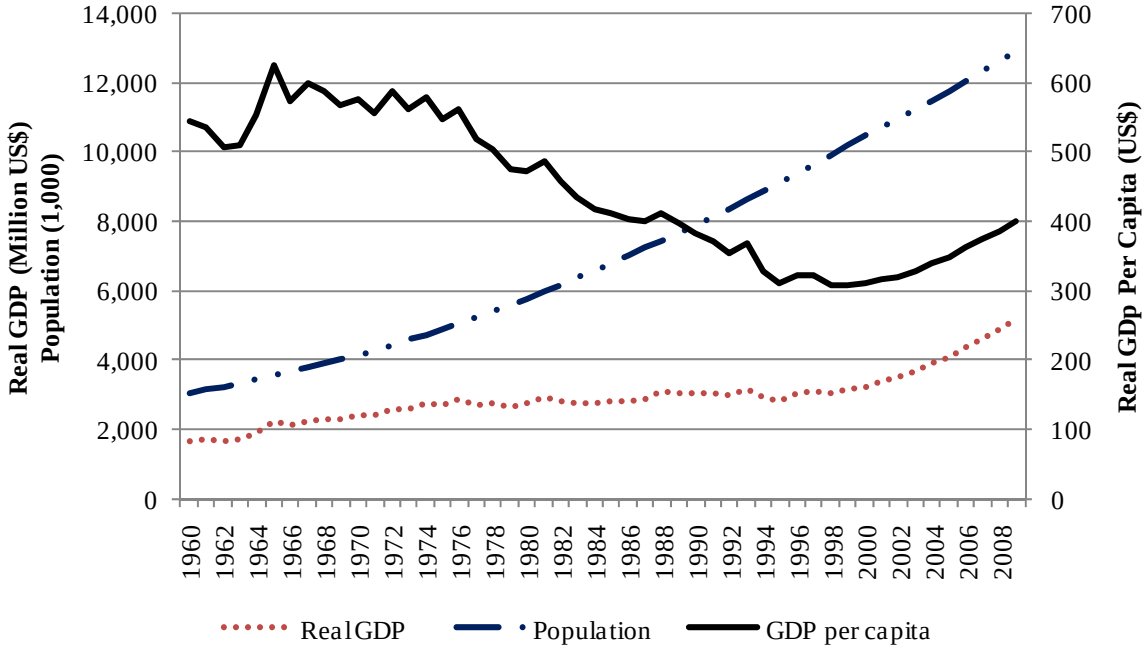

Figure 1: Real GDP and GDP per Capita, Zambia, 1960-2009
Source: IMF's World Economic Outlook Database, October 2010

2. Poverty Measurements and Food Security

Poverty is broadly defined as a deprivation of acceptable welfare. Recognizing that human welfare is multidimensional, economists choose to focus on income or consumption since they are important determinants of human welfare. The United Nations' Development Program argues for the use of multidimensional poverty index (MPI) to reflect multidimensionality of the poverty. The MPI simultaneously takes into account of health, education and living conditions. A drawback of the MPI is its insensitivity to short-run variations to external shocks. The MPI is ideal in measuring poverty in long- or mid-term situations. On the other hand, income or consumption based welfare measure is a more sensitive short-term and medium term poverty indicator.

In Zambia as in most developing countries, income data are not reliable. Consumptions can be measured more accurately. The Zambia governments routinely survey household income, consumptions and other living condition indicators to monitor their living standards through the Central Statistical Office (CSO). The CSO conducted what is called Indicator Monitoring Survey (IMS) roughly every two years starting from 1991. Up to now, a total of eight IMS has been conducted, i.e. Priority Survey (PS) 1991 and 1993 and Living Standard Monitoring Survey of 1996, 1998, 2002-2003, 2004, 2006 and 2008. In this report, data analyses cover the 1991-2006 periods because the official release of the LSMS 2008 is not yet available.

2.1 *Absolute Poverty and Minimum Food Basket*

CSO has been using a consumption based methodology to measure poverty under an absolute poverty concept. A household's consumption is defined as a sum of household expenditures and the value of home production. The absolute poverty is defined as an inadequacy of food consumption to meet human's minimum

caloric requirements. CSO adopted the WHO's recommendation of 2,094 calories/adult/day as a minimum caloric requirement. The food basket that meets the caloric requirement for a family of six living in poverty is then established and converted into monetary units. A household is judged food poor or severely poor if its consumption values in adult equivalent unit fall below the food poverty line.

Table 1; Adult Equivalent Scales, Zambia

Age	Adult equivalent scale
Child 0-1 year	0.00
Child 1-3 year	0.36
Child 4-6 year	0.62
Child 7-9 year	0.78
Child 10-12 year	0.95
1 Adult female (age 13 and above)	1.00
1 Adult male (age 13 and above)	1.00

Source: CSO, LSMS Report

In actuality, lives require not only food but also some non-food items such as cooking fuel, lighting etc. to sustain a healthy life. To reflect these basic non-food needs, the minimum food basket poverty line is adjusted by adding an additional amount of non-food items to the poverty line. The amount added is determined by examining the consumption patterns of households living near poverty. It is determined that non-food consumptions of the near poverty households accounted for approximately 30 % of total consumption expenditures. That number is then used to adjust the food poverty line upward to produce what may be called basic poverty line to distinguish it from the food or core poverty line. Households living below food poverty line are considered severely poor and those that are living between the food poverty line and the basic poverty line are considered moderately poor.

Table 1 shows adult equivalent scales used in converting household members with different gender and age groups into one single adult equivalent unit.

Table 2: Zambia's Minimum Food Basket

Food/Non-Food Item	CSO		JCTR	
	1991	2002	1991	2002
Basic/Minimum Food Basket				
Roller/Mealie meal	80 Kg	90 Kg	75 Kg	75 Kg
Bread	-	-	30 Loafs	30 Loafs
Nuts/Beans			2 Kg	2 Kg
Groundnuts	1 Kg	3 Kg	NS	NS
Mixed nuts	1 Kg	-	NS	NS
Dried beans	1 Kg	2 Kg	NS	NS
Vegetable			30 day supply	
Green vegetables/Rape	1 Kg	7.5 Kg	NS	7.5 Kg
Onions	1 Kg	4 Kg	NS	4 Kg
Tomatoes	1 Kg	4 Kg	NS	4 Kg
Meat product				
Dried kapenta	1 Kg	2 Kg	-	2 Kg
Dry fish	-	1 Kg	-	1 Kg
Meat	-	-	8 Kg	4 Kg
Egg	-	-	40 Eggs	20 Eggs
Fresh milk	500 ml	2 L	-	2 L
Micellaneous				
Sugar	2 Kg	-	8 Kg	8 Kg
Salt	1 Kg	1 Kg	1 Kg	1 Kg
Cooking oil	5 L	2.5 L	5 L	4 L
Tea	-	-	500 g	500 g
Basic Non-Food Basket				
Charcoal	-	-	180 Kg	180 Kg
Soap	-	-	6 Tablets	10 Tablets
Detergent	-	-	2 Kg.	1.6 Kg
Vaseline	-	-	200 g	500 g
Electricity	-	-	-	3 bed room
Water & sanitation	-	-	-	3 bed room
Housing	-	-	-	3 bed room
Average basic food costs	5,766	387,180	6,375	324,650
Average basic non-food costs	2,514	165,930	-	504,600
Average basic foood and non-food	8,280	553,110	6,375	829,250

Source: - CSO, Priority Survey Report 1991 and Living Standard Monitoring Survey (2002).

- JCTR (2007)

Note: NS = not specified; - = not included.

Table 2 compares minimum food basket used by CSO and those of the Jesuie Centre for Theological Reflection (JCTR), a strong advocate for poverty reduction and social justice in Zambia. The two baskets differ in many ways. Firstly, the CSO's basket is based on consumption patterns of and price faced by the rural and urban poor while the JCTR's based entirely on urban markets. Secondly, specific non-food items are identified

in the JCTR's but not in the CSO's baskets. Thirdly, despite including non-food items in what JCTR called the Basic Need Basket, the poverty line in 1991 is only slightly higher than the CSO's food basket (5,766 vs. 6375). Differences in prices might be a factor. Over times, gaps between the two baskets are growing.

Poverty line used by CSO to estimate poverty statistics is shown in table 3. It is interesting to note that costs of minimum food basket in Zambia have grown from ZMK 60 in 1981 to ZMK 961 in 1991 and ZMK 65,710 in 2006 respectively. Assuming that food baskets are comparable across time, such increased costs of the minimum food basket indicates an average inflation rates of 43%/year.

Table 3: Zambia Poverty Line, 1981-2006

Year	Food Poverty Line	Basic Poverty Line
1981	60	106
1991	961	1,380
1993	5,910	8,480
1996	20,181	28,979
1998	32,861	47,187
2002	64,530	92,185
2004	78,223	111,747
2006	65,710	93,872

Source: Various issues of CSO's PS and LSMS reports

3. Poverty Profile and Trend

3.1 *Poverty Profile*

Poverty measures calculated are of the FGT poverty index class (Foster, Greer, & Thorbecke, 1984). The FGT poverty index is comprised of three related indices, i.e. poverty headcount index (P0), poverty gap index (P1) and poverty gap squared index (P2). The headcount index measures prevalence of poverty in percentage of population. The poverty gap index measures severity of poverty using distance of household consumptions from the poverty threshold or poverty line. The square of the poverty gap index measures inequality of poverty. A full report of all three poverty indices from 1991 to 2006 is in Table 4. The poverty line used in these calculations is the basic poverty line which includes food and non-food items. Poverty estimations using the food poverty line are available upon request.

Poverty in Zambia remains persistently high at the lowest of 64 percent in 2006 to the highest of 74 percent in 1993 which is a year after a major continental wise drought in 1991/1992 agricultural season compounded with post policy shocks from the market liberalization and structural adjustment program mandated by the IMF and World Bank. The poverty prevalence is gradually trending down over times.

Poverty are higher in rural than in urban areas especially among the small scale and medium scale farmers. In urban area, poverty is more prevalent among the populations living in a low-cost urban. Provinces that are predominantly urban such as Lusaka and Copperbelt have the lowest poverty headcounts. Eastern, Luapula and Northern are three provinces with highest prevalence of poverty. Levels of poverty in the remaining provinces are only marginally lower.

Poverty gap is about 30%-40% below the poverty line. Given that 30% of the basic poverty line is of non-food, the observed poverty gap implies that, on average, poor households are slightly below the food

poverty line. Some even argued that the 2,094 calories per adult equivalent per day is a generous amount and suggested that the lower figure of 1,774 calories better reflect real minimum nutritional requirements (World Bank, 2005).

If one is to arbitrarily defined level of inequality based on the poverty gap squared index of 0.00-0.25 as low, 0.26-0.50 as moderate and 0.50 or greater as high, the poverty inequality in Zambia may be characterized by moderate to low levels of poverty inequality varying in range from 13.9-32.5.

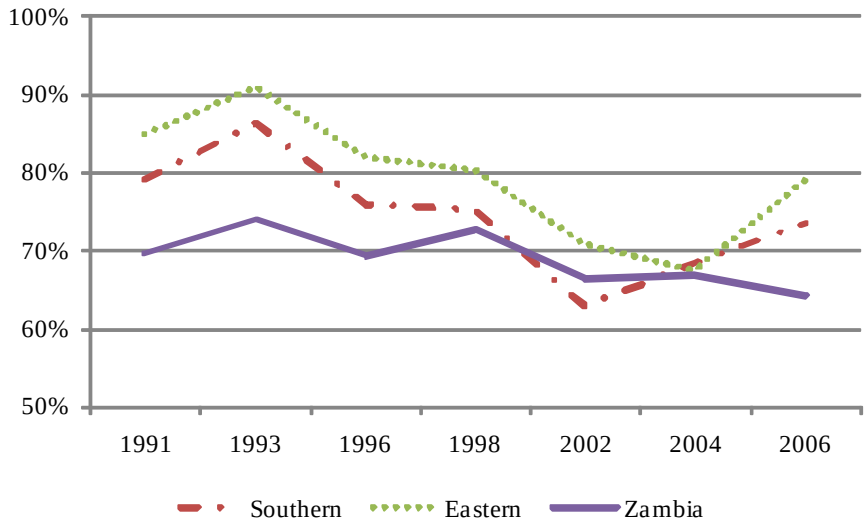

Figure 2: Poverty Headcount of Zambia, 1991-2006

Source: Own calculation.

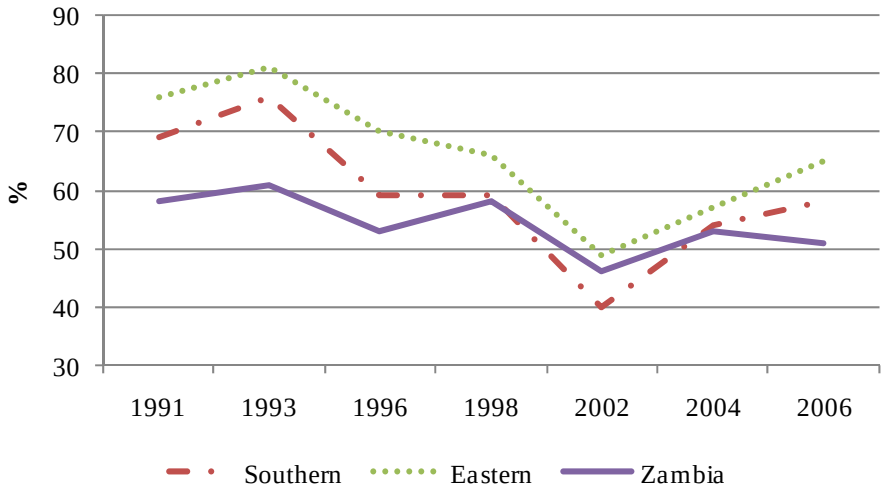

Figure 3: Poverty Headcount of the Severely Poor, Zambia, 1991-2006

Source: Various issues of CSO's PS and LSMS reports.

3.2 *Poverty Trend*

Figure 3 and 4 display poverty trends. National poverty in Zambia is on a gradual declining trend. The trend is driven by variations of the food poor. Poverty headcounts in Southern and Eastern Provinces are generally higher than the national average and follow similar national trend up to the year 2002. There appears to be a rebound of poverty in the two provinces with increasing severity as measured by the poverty gap shown in table 4.

Cautions should be exercised when interpreting the observed results of 2002. The LSMS 2002/2003 was conducted with an important change in methodology. The LSMS 2002/2003 was a panel survey with the same households being interviewed about 10 times in a year. A journal method was used to collect consumption data while a standard method of 2-weeks to one-month recalls was utilized in all other surveys which were a onetime interview survey. Such methodological changes may have influenced survey results and make cross survey comparison difficult.

3.3 *Urbanization vs. Ruralization*

Population share between the two periods of 1998 and 2006 reveals an unusual pattern of de-urbanization. The urban share fell from 37.6 to 35 percent and the rural population share increased from 62.4 to 65 percent (see Table 4). A similar ruralization trend is marginally observed in Eastern Province as shown in Table 5. The unexpected change corresponded with an increased share of small scale agriculturalists stratum and a decrease in the share of medium-cost and high-cost economic stratum of the urban.

On the other hand, Southern Province became rapidly urbanized between the two periods under examination. Rural population fell from 81 to 76 percent and the urban population rose from 18 to nearly 22 percent (Table 5). A possible shift in economic stratum from the no-farm rural to the low-cost urban is observed while other economic strata remained relatively constant. The much faster urbanization in Southern Province is not beyond expectation considering the fact that Southern Province is better endowed with road and rail road infrastructure.

Urbanization progressed at an astonishing speed in Sinazongwe district (see Table 6). Once 96 percent rural, Sinazongwe's rural population share now stands at 78 percent with a corresponding increase of urban population from 4 percent to 22 percent. The rapid urbanization was associated with movements of the rural non-farm stratum to the low-cost urban. At the same time, small scale farm stratum slightly increased.

Petauke became more urbanized at a much slower speed than did Sinzongwe. Rural population dropped from 96 percent to 90 percent (see Table 6). However, patterns of economic stratum movements clearly differed. The urbanization in Petauke is primarily associated with a movement out of the small scale farming stratum toward the low-cost urban and, to a smaller extent, rural non-farm.

One should be cautious in interpreting all district-level statistics. The resulting estimates are generally imprecise because they are based on small sample size.

Table 4: Poverty Profile, Zambia 1991-2006

	Pop. Share	Pop. Share	Poverty Headcount (P0)							Poverty Gap (P1)							Poverty Inequality (P2)						
	1998	2006	1991	1993	1996	1998	2002	2004	2006	1991	1993	1996	1998	2002	2004	2006	1991	1993	1996	1998	2002	2004	2006
National			69.7	73.8	69.2	72.8	66.5	66.9	64.3	43.3	43.0	35.5	39.9	27.1	35.2	33.8	32.5	29.9	22.3	26.6	13.9	22.8	21.7
Rural	62.4	65.0	88.0	92.1	82.8	83.0	74.3	75.4	80.5	61.3	60.2	46.1	49.8	31.3	43.4	45.0	48.0	43.9	30.2	34.7	16.5	29.5	29.7
Small scale	54.9	59.6	89.9	92.4	84.4	84.0	75.5	76.3	81.6	63.7	60.6	47.4	50.4	32.0	44.3	45.8	89.9	44.3	31.3	35.1	16.8	30.3	30.3
Medium scale	2.4	2.3	78.5	90.8	65.1	71.7	63.9	72.0	69.6	48.7	56.6	31.4	38.3	22.8	36.0	34.5	78.5	39.9	18.6	25.2	11.5	22.4	21.2
Large scale	0.1	0.1	61.6	0.0	34.9	15.7	32.8	38.0	33.3	31.6	0.0	9.4	10.1	5.1	18.5	11.3	61.6	0.0	3.7	7.7	0.9	12.5	5.2
Non-farm	5.0	3.0	70.4	0.0	72.0	79.3	54.7	66.5	67.9	41.5	0.0	36.8	48.5	22.5	35.1	37.8	70.4	0.0	22.9	35.1	12.0	23.2	25.2
Urban	37.6	35.0	48.6	44.9	46.0	55.8	52.2	53.6	34.2	22.6	15.9	17.4	23.5	19.2	22.6	13.0	14.5	7.8	8.9	13.2	9.3	12.5	6.8
Low-cost	27.6	28.1	55.5	50.1	51.1	60.9	61.6	59.0	38.9	26.0	18.5	19.9	26.5	23.1	25.4	14.9	55.5	9.3	10.3	15.0	11.2	14.3	7.8
Medium-cost	5.2	4.2	42.6	40.9	32.4	49.4	30.3	47.3	19.1	19.7	13.0	10.4	18.5	8.6	18.5	7.1	42.6	5.9	4.7	9.6	3.5	9.6	3.7
High-cost	4.8	2.7	36.1	33.0	23.8	33.5	7.5	29.9	7.7	15.9	12.3	7.3	12.3	2.3	11.7	2.6	36.1	6.1	3.3	6.4	1.0	6.3	1.3
Province																							
Central	10.0	10.4	70.0	81.0	73.8	76.8	69.1	74.0	71.7	39.1	51.0	36.9	44.3	29.5	42.2	36.8	26.6	36.9	22.4	30.7	15.5	28.0	22.5
Copperbelt	17.9	15.2	61.1	49.2	55.6	64.7	58.8	57.2	41.9	31.9	18.8	21.3	31.4	23.1	24.6	17.5	22.7	10.0	11.0	19.1	11.6	13.8	9.8
Eastern	12.7	13.7	84.7	90.8	82.0	80.2	70.7	67.4	79.0	58.6	59.2	48.1	46.5	28.2	38.6	44.1	46.4	43.4	32.9	31.7	14.1	26.6	29.0
Luapula	6.9	7.9	84.0	88.4	78.8	80.9	70.4	76.7	72.8	53.3	53.7	42.4	47.5	29.0	41.0	39.0	39.9	37.0	27.1	32.5	15.2	26.1	24.6
Lusaka	15.0	14.0	30.6	38.8	37.9	51.8	56.3	47.3	29.0	12.2	16.9	14.7	22.3	21.6	18.5	10.5	6.7	10.2	7.8	12.9	10.9	9.9	5.3
Northern	12.1	12.7	84.0	86.1	83.9	81.1	80.5	72.5	78.5	55.9	47.7	46.2	45.9	37.7	40.3	43.2	42.0	30.7	29.7	30.9	21.1	26.9	28.2
N. Western	5.4	6.0	74.7	88.0	80.3	75.8	71.9	76.8	72.1	48.0	55.8	43.3	41.5	30.0	40.7	37.9	36.2	41.1	27.8	26.8	15.5	26.4	24.6
Southern	12.7	12.4	79.1	86.3	75.9	75.2	62.9	68.4	73.4	54.1	55.6	39.5	42.1	23.6	35.5	39.3	43.2	40.9	24.9	28.5	11.4	22.6	25.5
Western	7.4	7.5	84.3	91.1	84.3	89.1	65.4	81.4	83.6	59.3	61.2	51.0	57.4	24.0	52.0	53.4	47.0	45.8	35.3	42.3	11.7	37.8	39.0

Source: Own estimations.

Table 5: Poverty Profile of Eastern and Southern Province, Zambia 1991-2006

	Pop. Share	Pop. Share	Poverty Headcount (P0)							Poverty Gap (P1)							Poverty Inequality (P2)						
	1998	2006	1991	1993	1996	1998	2002	2004	2006	1991	1993	1996	1998	2002	2004	2006	1991	1993	1996	1998	2002	2004	2006
Eastern																							
Rural	**90.8**	**91.8**	**90.9**	**93.3**	**84.1**	**81.7**	**73.6**	**70.6**	**82.5**	**64.6**	**62.4**	**50.3**	**48.2**	**29.6**	**42.3**	**46.8**	**52.0**	**46.3**	**34.7**	**33.2**	**14.9**	**29.9**	**31.0**
Small scale	85.9	87.2	91.3	93.6	85.7	82.1	74.5	70.5	83.1	65.1	63.1	51.5	48.9	30.0	42.5	47.2	52.6	47.0	35.6	33.8	15.1	30.1	31.3
Medium scale	2.7	2.4	85.6	88.9	63.6	75.4	71.9	70.5	73.1	56.4	52.3	31.1	33.1	26.1	37.9	39.8	41.2	35.5	19.5	17.9	12.9	24.5	25.9
Large scale	0.1	0.1	87.8	-	35.7	37.7	0.0	91.3	91.7	53.6	-	0.8	18.3	0.0	67.5	36.4	32.7	-	0.0	10.7	0.0	51.0	17.4
Non-farm	2.2	2.2	75.9	-	44.5	74.1	37.2	69.9	69.7	55.0	-	26.5	43.2	13.9	37.8	39.2	43.7	-	17.6	29.5	7.5	26.5	26.0
Urban	**9.2**	**8.2**	**57.1**	**66.7**	**64.4**	**66.1**	**39.9**	**57.5**	**39.3**	**31.6**	**28.4**	**29.9**	**29.2**	**12.9**	**27.3**	**13.7**	**21.3**	**15.6**	**17.5**	**16.7**	**5.7**	**16.4**	**6.7**
Low-cost	6.0	7.5	73.0	79.5	67.5	69.3	41.5	69.2	41.4	41.6	34.0	32.3	34.2	13.5	36.1	14.6	27.6	18.5	19.2	20.5	6.0	22.7	7.2
Medium-cost	2.6	0.1	97.2	56.5	63.9	62.4	54.7	48.8	15.2	64.3	22.9	27.6	20.3	16.3	20.7	4.4	47.3	12.8	14.3	9.9	7.4	11.7	1.4
High-cost	0.5	0.5	21.6	17.6	39.5	47.7	11.4	30.3	14.8	5.9	8.2	11.6	16.3	3.1	10.6	3.3	3.0	4.7	5.4	7.6	1.0	5.3	1.1
Southern																							
Rural	**81.6**	**78.3**	**85.9**	**93.7**	**80.1**	**80.5**	**68.2**	**74.6**	**81.9**	**61.4**	**65.4**	**42.8**	**46.6**	**26.5**	**40.5**	**45.6**	**49.6**	**49.7**	**27.4**	**32.1**	**13.0**	**26.3**	**30.2**
Small scale	65.8	67.9	87.6	94.5	81.1	83.0	70.2	75.4	84.3	63.8	66.3	43.9	48.4	28.0	40.9	47.5	51.8	50.8	28.3	33.5	13.9	26.6	31.7
Medium scale	6.2	4.8	79.8	93.7	74.0	69.7	54.6	75.5	68.7	50.3	64.1	38.3	35.6	15.2	41.8	34.8	39.6	47.3	23.5	22.3	5.7	27.5	21.5
Large scale	0.2	0.1	61.2	0.0	77.1	5.0	89.3	65.1	15.1	29.8	0.0	36.3	4.7	16.8	23.9	0.1	22.4	0.0	17.1	4.4	3.2	14.8	0.0
Non-farm	9.3	5.5	73.6	0.0	76.5	72.6	51.3	54.8	64.4	53.6	0.0	38.1	42.1	15.5	30.4	32.1	42.5	0.0	23.8	29.7	6.7	20.3	19.4
Urban	**18.4**	**21.7**	**57.7**	**61.9**	**52.9**	**52.7**	**43.4**	**48.1**	**42.9**	**30.9**	**23.3**	**21.1**	**22.7**	**13.2**	**19.3**	**16.5**	**22.7**	**11.9**	**11.1**	**12.9**	**5.7**	**10.3**	**8.5**
Low-cost	8.2	16.2	59.5	61.7	57.1	72.3	52.9	55.1	49.9	30.8	23.2	23.2	33.6	15.3	23.1	19.5	22.3	12.5	12.5	19.9	6.4	12.6	10.1
Medium-cost	5.7	4.3	65.1	65.6	50.9	42.4	51.5	47.4	27.1	37.9	23.7	18.5	16.0	16.3	18.4	9.2	29.2	11.0	8.8	8.3	7.2	8.7	4.6
High-cost	4.6	1.2	24.7	47.5	26.3	30.5	14.0	17.4	5.3	8.5	22.3	8.3	11.4	5.8	3.7	2.0	4.1	12.4	3.4	6.1	2.8	1.7	1.1

Source: Own estimations.

Table 6: Poverty Profile of Petauke and Sinazongwe District, Zambia, 1991-2006

	Pop. Share	Pop. Share	Poverty Headcount (P0)							Poverty Gap (P1)							Poverty Inequality (P2)					
	1998	2006	1991	1993	1996	1998	2002	2004	2006	1991	1993	1996	1998	2002	2004	2006	1991	1993	1996	1998	2002	2004
Petauke																						
Rural	**98.43**	**93.59**	**89.8**	**99.2**	**93.5**	**91.9**	**75.7**	**84.9**	**88.1**	**71.3**	**72.4**	**63.5**	**53.1**	**31.8**	**56.7**	**49.3**	**60.9**	**56.5**	**46.9**	**35.6**	**16.1**	**41.5**
Small scale	96.42	89.96	89.7	99.5	93.8	91.9	76.1	85.5	88.7	71.3	73.1	63.8	53.4	32.0	57.4	49.7	60.9	57.2	47.3	35.8	16.2	42.2
Medium scale	0.87	0.94	92.8	94.0	88.5	93.3	46.5	70.8	30.7	76.0	61.2	48.3	49.8	17.6	35.3	12.6	65.0	43.8	30.0	29.9	7.1	19.9
Large scale	-	0.07	100.0	-	0.0	-	-	100.0	51.0	61.0	-	0.0	-	-	85.8	38.1	37.3	-	0.0	-	-	73.7
Non-farm	1.14	2.6	90.7	-	86.9	87.7	60.4	63.9	89.3	68.3	-	56.2	35.8	22.8	27.2	48.2	58.2	-	38.0	20.0	12.1	15.5
Urban	**1.57**	**6.41**	**76.7**	**71.0**	**53.4**	**54.1**	**0.0**	**69.7**	**42.1**	**54.4**	**32.5**	**27.8**	**22.2**	**0.0**	**36.5**	**12.4**	**40.9**	**19.9**	**16.7**	**13.3**	**0.0**	**23.7**
Low-cost	1.57	6.41	76.7	71.0	53.8	54.1	0.0	90.9	42.1	54.4	32.5	28.7	22.2	0.0	90.9	12.4	40.9	19.9	17.4	13.3	0.0	43.3
Medium-cost	-	-	-	-	48.0	-	-	62.0	-	-	-	17.0	-	-	62.0	-	-	-	8.5	-	-	16.6
High-cost	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sinazongwe																						
Rural	**95.57**	**77.9**	**95.0**	**95.2**	**79.2**	**72.6**	**73.6**	**78.9**	**75.6**	**84.8**	**69.9**	**38.7**	**44.1**	**29.6**	**41.8**	**39.2**	**78.7**	**54.4**	**22.8**	**31.8**	**16.4**	**26.2**
Small scale	58.91	64.66	95.0	93.3	81.5	84.6	68.3	79.7	75.9	84.7	65.8	39.9	53.3	33.4	42.9	38.7	78.7	50.1	23.4	38.4	19.8	27.1
Medium scale	2.96	2.3	100.0	100.0	61.4	75.4	30.8	-	86.4	62.1	80.7	39.1	53.4	4.8	-	48.9	38.6	65.6	26.7	42.3	0.7	-
Large scale			-	-	-	-	-	60.9	-	-	-	-	-	-	16.6	-	-	-	-	-	-	5.1
Non-farm	33.7	10.93	94.2	-	64.0	51.6	85.7	-	71.2	91.3	-	22.5	27.2	22.5	-	40.3	88.7	-	12.0	19.4	10.0	-
Urban	**4.43**	**22.1**	**39.8**	**55.0**	**44.3**	**50.0**	**39.5**	**38.9**	**47.3**	**8.1**	**21.7**	**15.5**	**28.0**	**5.9**	**13.8**	**19.3**	**2.0**	**12.5**	**6.4**	**18.8**	**1.4**	**7.2**
Low-cost	1.24	19.86	34.6	86.2	-	91.8	39.5	38.9	49.7	7.4	45.3	-	61.5	5.9	13.8	20.4	1.8	30.1	-	47.1	1.4	7.2
Medium-cost	1.58	0.85	44.0	36.6	-	38.3	-	-	42.6	8.7	7.9	-	16.3	-	-	12.0	2.2	2.2	-	7.3	-	-
High-cost	1.61	1.39	-	-	44.3	29.1	-	-	15.8	-	-	15.5	13.6	-	-	7.6	-	-	6.4	8.2	-	-

Source: Own calculations.

Table 7: Growth Elasticity of Poverty Reduction, Zambia, 1991-2006

	1991-1998			1998-2006		
	Absolute Change Poverty Headcount	Growth Elasticity of Poverty Reduction	Growth Semi-Elasticity of Povety Reduction	Absolute Change Poverty Headcount	Growth Elasticity of Poverty Reduction	Growth Semi-Elasticity of Povety Reduction
National	3.153	-0.241	-0.168	-8.550	-0.738	-0.537
Central	6.715	-0.511	-0.358	-5.063	-0.414	-0.318
Copperbelt	3.649	-0.318	-0.194	-22.848	-2.217	-1.435
Eastern	-4.487	0.282	0.239	-1.263	-0.099	-0.079
Luapula	-3.113	0.197	0.166	-8.068	-0.627	-0.507
Lusaka	21.168	-3.680	-1.127	-22.852	-2.771	-1.435
Northern	-2.883	0.183	0.154	-2.656	-0.206	-0.167
N. Western	1.105	-0.079	-0.059	-3.621	-0.300	-0.227
Southern	-3.881	0.261	0.207	-1.776	-0.148	-0.112
Western	4.876	-0.308	-0.260	-5.494	-0.387	-0.345
Petauke	3.059	-0.185	-0.163	-6.120	-0.421	-0.384
Sinazongwe	-3.753	0.265	0.200	-2.326	-0.204	-0.146
Growth Real GDP/Cap.	-18.77			15.92		
Growth Real GDP/Cap./Yr	-2.7			2.0		

Source: Own calculations.

3.4 *Poverty Change and Decomposition*

An important question is whether or not economic growth lifts the poor out of poverty. Table 7 reports growth elasticity of poverty reduction and semi-elasticity is also reported side-by-side. During the 1991-1998 periods, growth of real income per capita was negative at an average annual rate of -2.7 percent. In the next period of 1998-2006, the real income per capita grew, on average, 2 percent/year.

The poverty-growth elasticities and semi-elasticities of Zambia are inelastic (less than unity) meaning that a 10 percent economic growth is associated with poverty reduction of 1.6 and 5.3 percentage point during the structural adjustment and new growth periods respectively. The fact that the elsaticities are smaller during the structural change period indicates that the Zambian economy has significant degree of shock absorptions. If the poverty-growth semi-elasticity during 1991-1998 is equal in magnitude to that in 1998-2006, absolute change in poverty headcounts would have tripled from 3.1 to 10.1 percentage point.

Predominantly urbanized Provinces like Lusaka and Copperbelt have high poverty-growth elasticities (greater than unity in absolute value) indicating that they are more affected during the structural adjustment program and benefited more from economic growth during the new growth era.

During the period of structural adjustment, Eastern and Southern Provinces were the top two provinces in reducing poverty. While poverty in Sinazongwe reduced, Petauke experienced an increase. During the growth period, however, Petauke outperformed Sinazongwe by having her poverty headcount reduced by 6 percentage points comparing to a meager reduction of 2 percentage point in Sinazongwe.

Change in poverty can be decomposed into growth and redistribution components (Datt & Ravallion, 1992). To avoid path dependent issue, Shapley approach to decomposition was used. Table 8 shows decomposition results. Changes in poverty headcounts were largely attributable to changes in growth components. No uniform patterns can be said about the redistribution components. Changes in the variance of consumption expenditures played both offsetting and supplementing roles to the growth components.

Table 8: Decomposition of Poverty Change

Period	1991-1998			1998-2006		
	Growth Componennt	Redistribution Component	Total Change in Poverty	Growth Componennt	Redistribution Component	Total Change in Poverty
	Headcount Index					
National	3.2	-0.1	3.2	-11.3	2.7	-8.6
Central	-1.6	8.3	6.7	-1.6	8.3	-5.1
Copperbelt	3.8	-0.1	3.6	-26.3	3.4	-22.8
Eastern	-4.4	-0.1	-4.5	-2.3	1.0	-1.3
Luapula	-2.3	-0.8	-3.1	-6.7	-1.4	-8.1
Lusaka	14.2	7.0	21.2	-23.4	0.5	-22.9
Northern	-2.8	-0.1	-2.9	-4.3	1.7	-2.7
N. Western	7.1	-6.0	1.1	-0.9	-2.7	-3.6
Southern	0.6	-4.4	-3.9	-8.4	6.6	-1.8
Western	10.2	-5.3	4.9	-2.5	-3.0	-5.5
Petauke	-1.0	4.1	3.1	-11.0	4.9	-6.1
Sinazongwe	-0.8	-2.9	-3.8	-2.0	-0.4	-2.3

Source: Own calculations.

To better understand how growth affects poverty, growth incidence curves were plotted for Zambia, Eastern and Southern Province, Petauke and Sinazongwe districts. The graphs are shown in Figure 5-14. For the structural adjustment periods, the growth incidence curves depict clear pictures of pro poor growth. Consumptions of the populations in lower quantiles grew faster than the mean growth rates. However, the situations reversed during the new growth period except Sinazongwe's. Consumption growth of the higher quantiles outpaced those of the lower ones indicating that gains from growth may have disproportionately benefited the better-offs which generally residing in urban areas. As a result, inequality in Zambia worsened (see Table 9). Figure 4 illustrates year-to-year movement of Gini coefficient (the lower is more equal). The movement patterns are consistent with the results reported in Table 9.

Table 9: Pro Poor Growth and Inequality, Zambia 1991-2006

	Pro-Poor Growth		Change in Gini Coefficient	
	1991-1998	1998-2006	1991-1998	1998-2006
Zambia	Yes	No	-0.081	0.032
Eastern	Yes	Neutral	-0.138	-0.003
Petauke	Yes	No	-0.292	0.073
Southern	Yes	No	-0.160	0.053
Sinazongwe	Yes	Yes	-0.200	-0.082

Source: Own calculations.

Note: Changes in Gini coefficient indicates improvement (deterioration) if negative (positive).

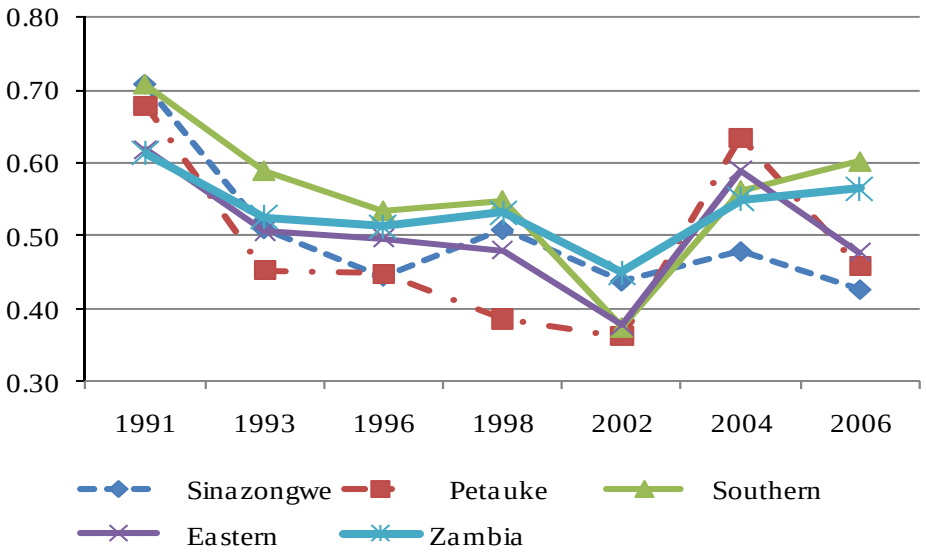

Figure 4: Trends of Gini Coefficient by Selected District, Zambia, 1991-2006

4. Conclusion

The implementation of structural adjustment program in 1990 coupled with a major drought in 1991/92 agricultural season have created a sharp increase in poverty in both rural and urban areas in 1993. The largest increase of poverty was in urban areas especially in Lusaka and Copperbelt. Overall poverty situation in Zambia

showed sign of improvements especially during the new growth period after the year 1998. Economic growth during this new growth period appears to disproportionately benefit urban population with Lusaka enjoying significant reduction of poverty head counts. In contrast, poverty in Southern and Eastern provinces are on a rising trend with increasing severity. The shifting poverty trends in those two provinces may be associated with a series of droughts affecting farm production during early 2000s' agricultural seasons.

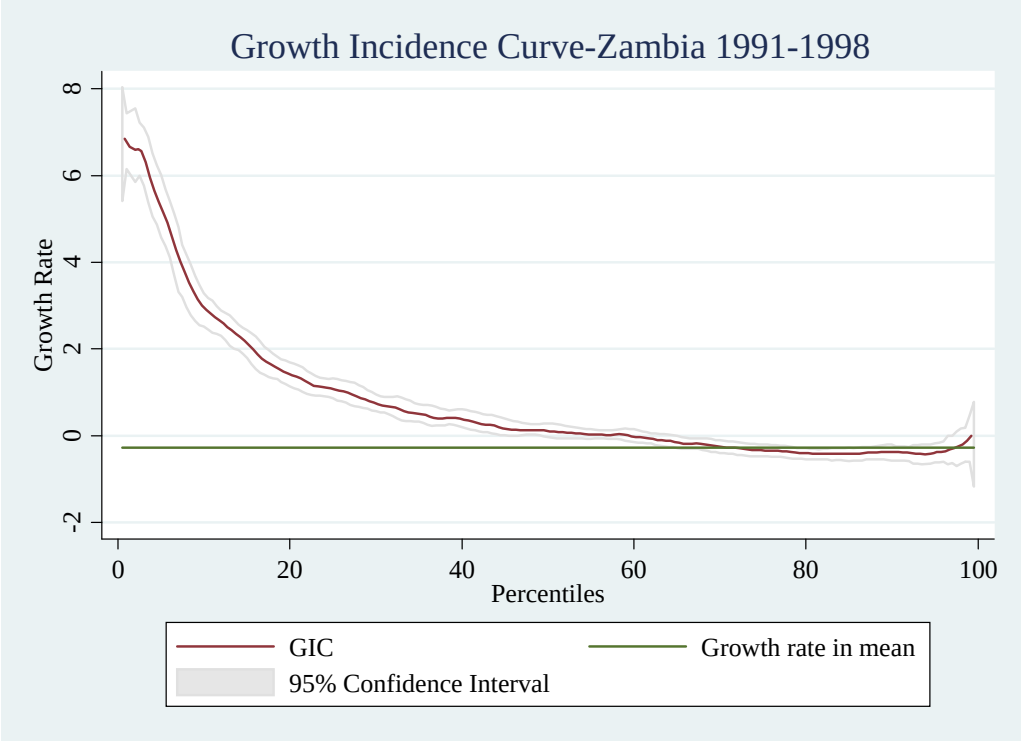

Figure 5: Growth Incidence Curve, Zambia, 1991-1998

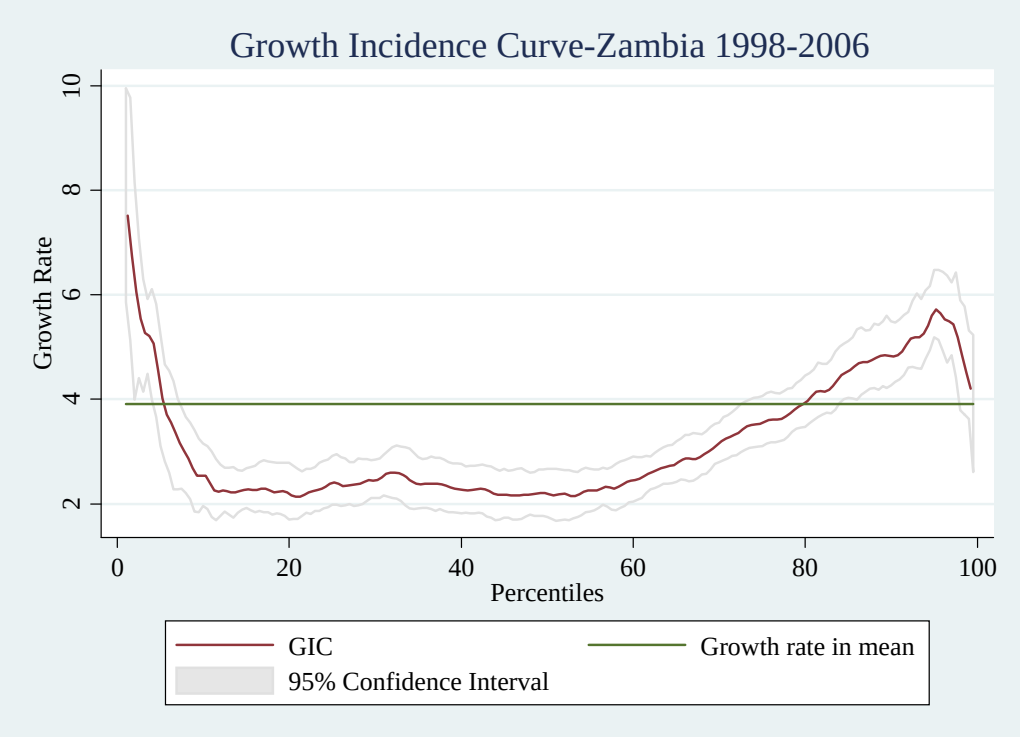

Figure 6: Growth Incidence Curve, Zambia, 1998-2006

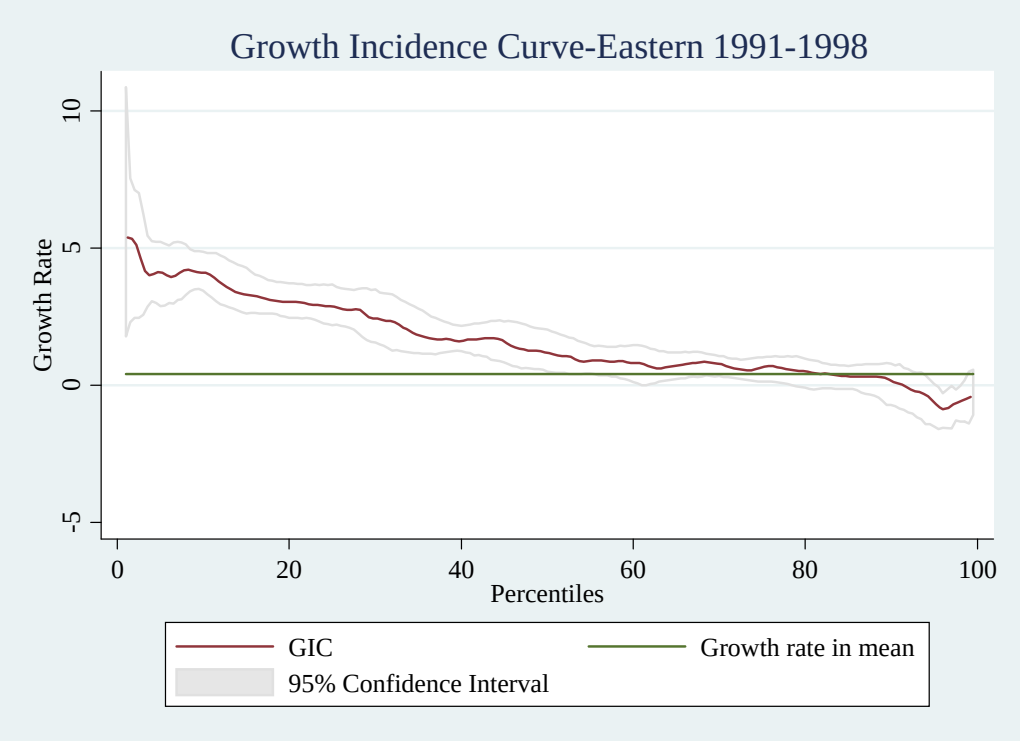

Figure 7Growth Incidence Curve, Eastern Province, Zambia, 1991-1998

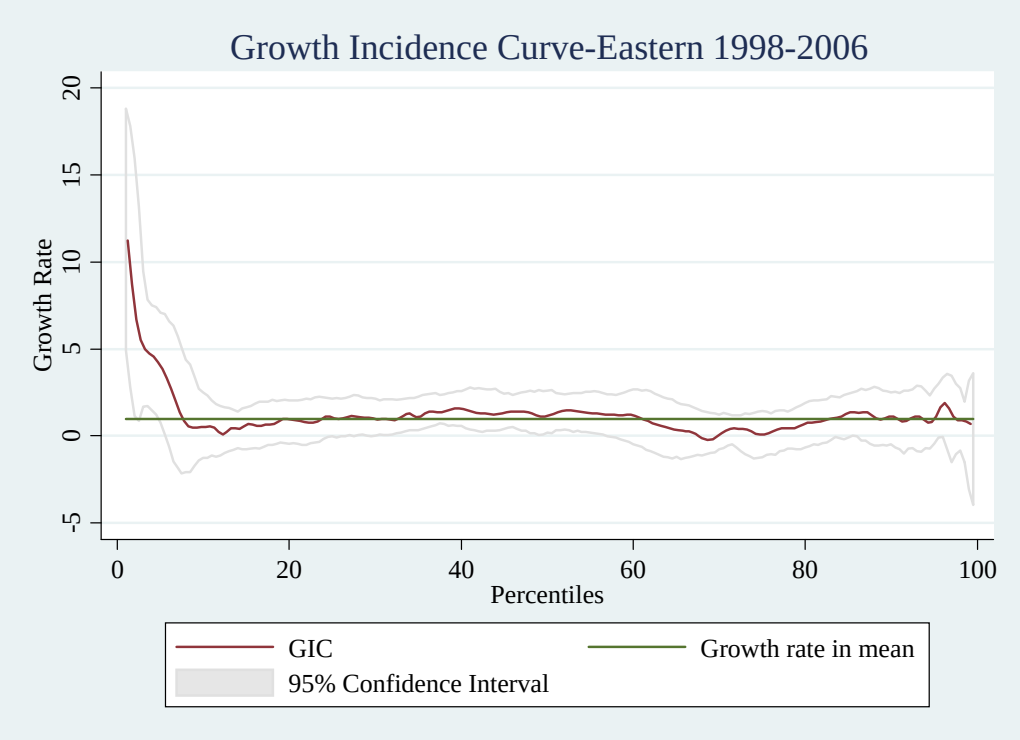

Figure 8: Growth Incidence Curve, Eastern Province, Zambia1998-2006

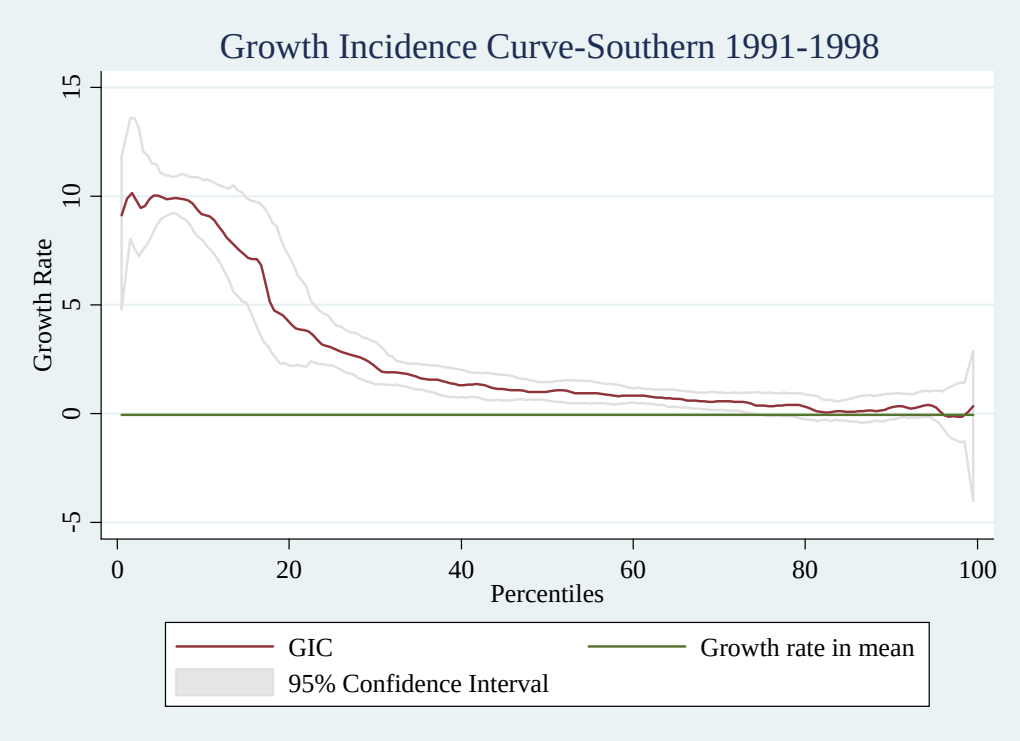

Figure 9: Growth Incidence Curve, Southern Province, Zambia, 1991-1998

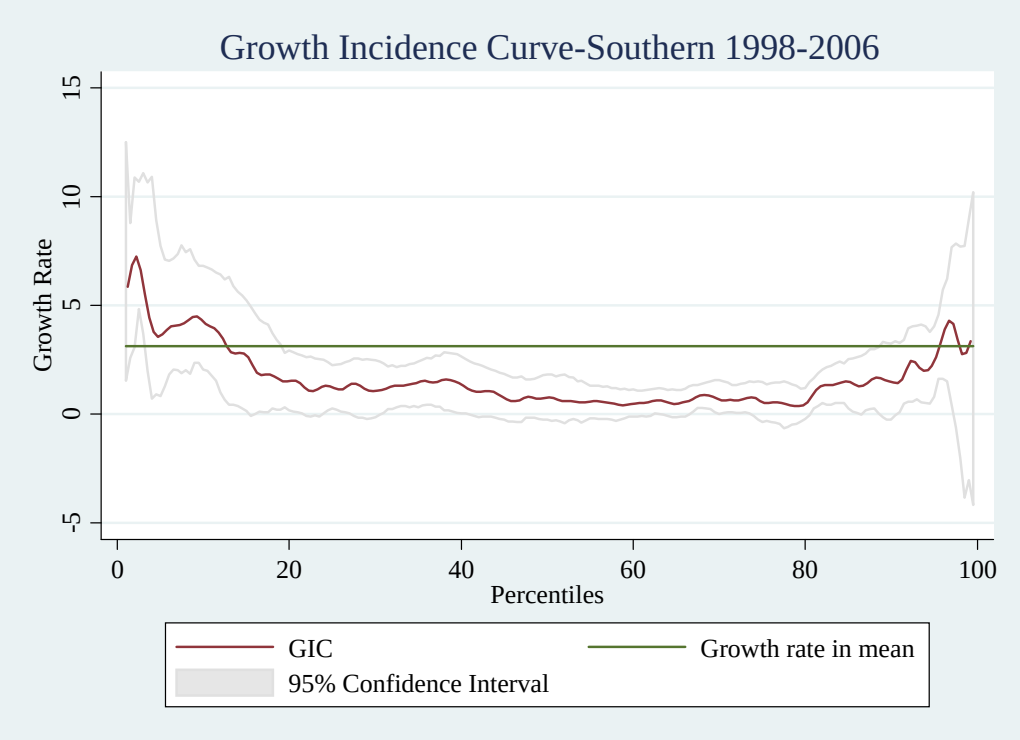

Figure 10: Growth Incidence Curve, Southern Province, Zambia, 1998-2006

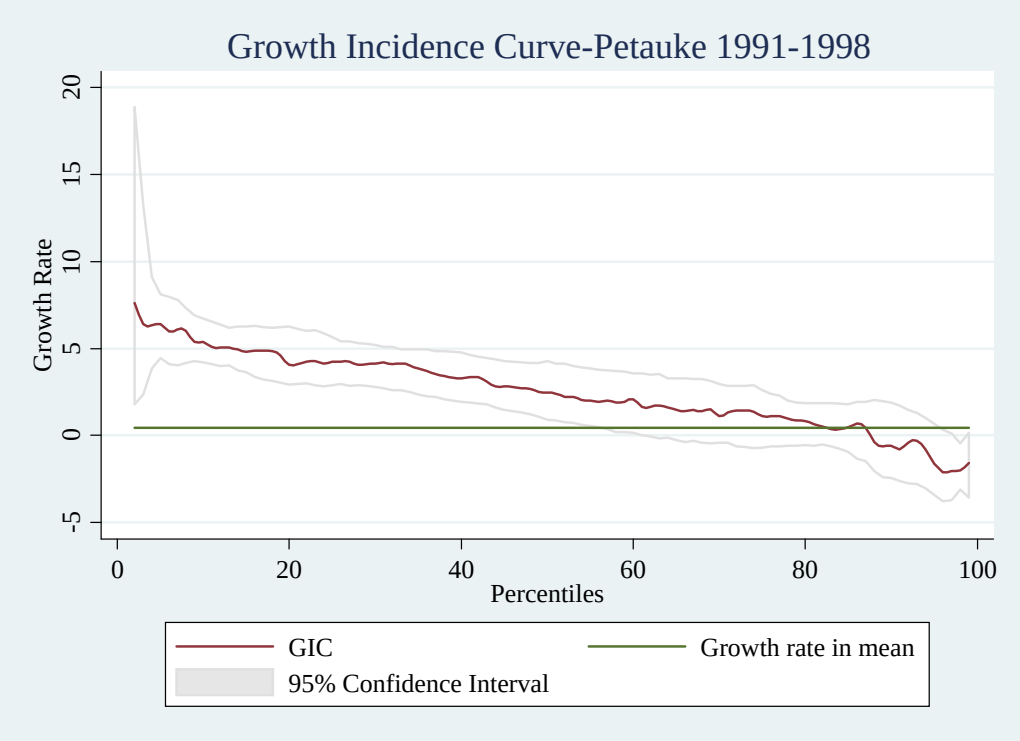

Figure 11: Growth Incidence Curve, Petauke, Eastern Province, Zambia 1991-1998

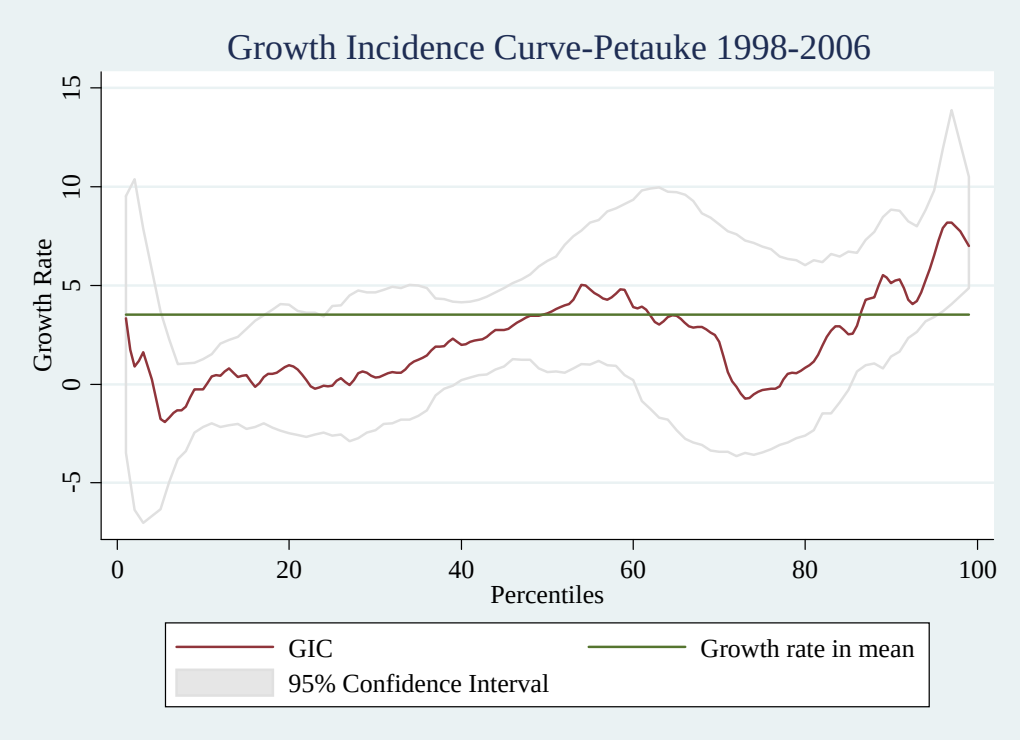

Figure 12: Growth Incidence Curve, Petauke, Southern Province, Zambia, 1998-2006

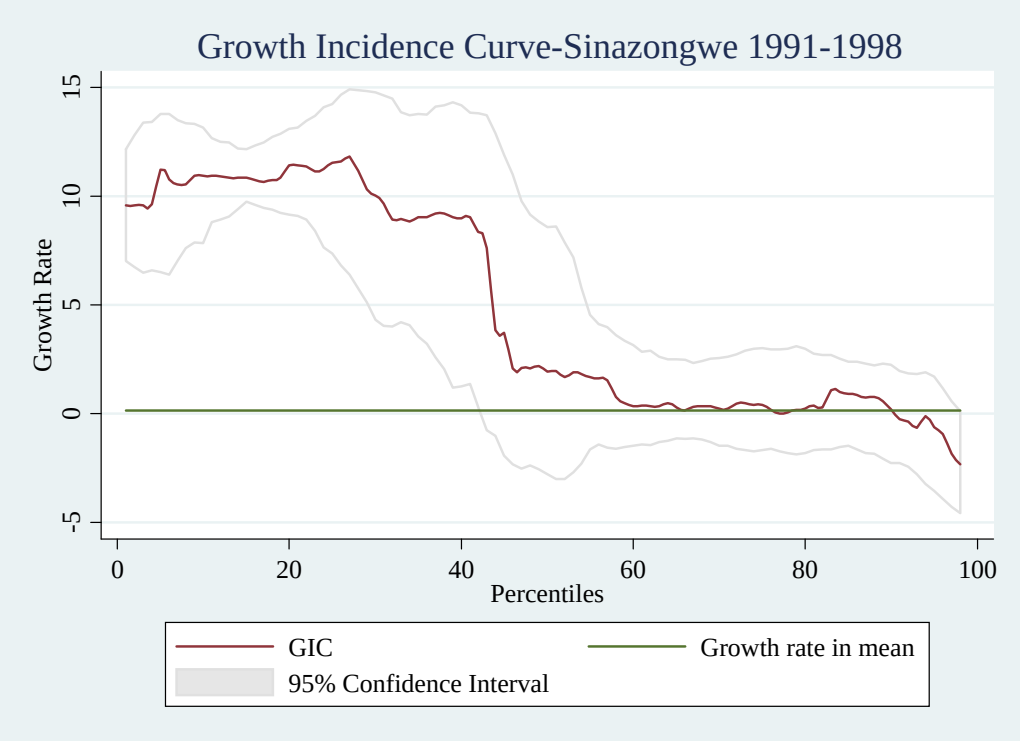

Figure 13: Growth Incidence Curve, Sinazongwe, Southern Province, Zambia 1991-1998

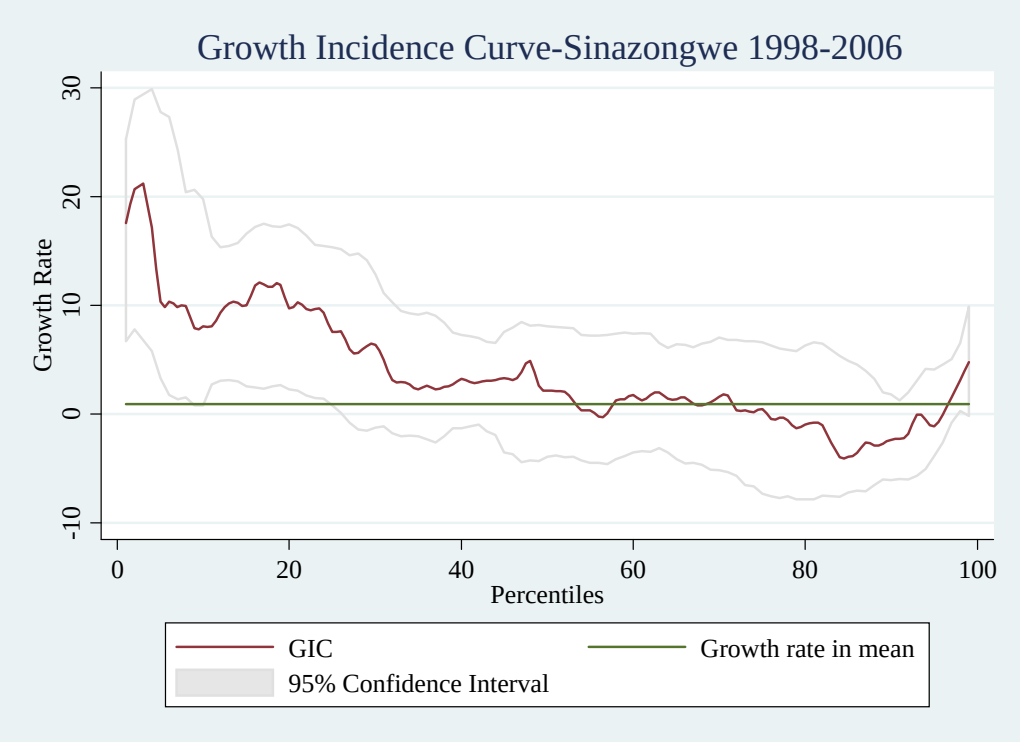

Figure 14: Growth Incidence Curve, Sinazongwe, Southern Province, Zambia 1998-2006

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