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**One Kind of Freedom:
Poverty Dynamics in Post-Apartheid South Africa**

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POVERTY DYNAMICS IN POST-APARTHEID SOUTH AFRICA**

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Summary— The legacy of apartheid had much to do with the extraordinary levels of inequality and human insecurity found by the first ever nationally representative living standards survey undertaken in South Africa in 1993. Drawing on a 1998 re-survey of households in the 1993 study, this paper explores whether this legacy has been superseded, or whether apartheid's end has been only one kind of freedom that has left households in a poverty trap from which they cannot escape. The evidence indicates that significant numbers of South African poor are trapped in chronic, structural poverty, lacking the assets and entitlements needed to successfully escape poverty over time.

ONE KIND OF FREEDOM: POVERTY DYNAMICS IN POST-APARTHEID SOUTH AFRICA

1. INTRODUCTION

Analysis of South Africa's first nationally representative household income and living standards survey¹ indicated that half of all black South Africans lived in poverty in 1993, a stunning portrayal of material deprivation, inequality, and human insecurity found in the midst of an upper middle income country with a per-capita income in excess of \$3000.² In a report for the South African Inter-Ministerial Committee on Poverty and Inequality, May, *et al.* (1998) calculated the UNDP's Human Development Index (HDI) for specific South African ethnic and regional groupings in 1992, and found that the HDI for the "African" population of South Africa ranked between the HDI of Swaziland and Lesotho, while the HDI for whites was between that of Italy and Israel.

Drawing on a 1998 re-survey of households in the 1993 dataset, this paper explores post-apartheid poverty dynamics, asking whether the end of apartheid has simply been only one kind of freedom³ that has left a majority of non-white households stuck in a poverty trap from which they cannot escape. The goal of this paper is to not

¹ Confronted by the absence of information on living conditions in South Africa, a delegation from the African National Congress and the Congress of South African Trade Unions asked the World Bank in 1992 to organize a national living standards survey that could be used to inform policy making in post-apartheid South Africa. The result was the Project for Statistics on Living Standards and Development (PSLSD) that interviewed a nationally representative sample of nearly 9000 households between September and December of 1993, approximately six months before the election of Nelson Mandela.

² See the studies of Klasen, 1997; Liebbrandt, Woolard, and Woolard, 1997; and, Moller and Jackson, 1997. In addition, using several national surveys undertaken subsequent to the 1993 survey, Liebbrandt and Woolard (1999) calculate a suite of consumption-based poverty measures to confirm this picture of racially determined poverty.

³ The term comes from Ransom and Sutch's (1976) poignant description of persistent poverty in the post-slavery US South.

only document the gross degree of mobility into and out of poverty between 1993 and 1998, but also to look for clues regarding the degree to which those observed to move out of poverty were simply “stochastically poor” in 1993 (*i.e.*, unlucky in 1993), or whether the new freedoms permitted by the post-apartheid economy enabled them to successfully accumulate and structurally move out of poverty.

This paper is organized as follows. Using concepts from dynamic programming analysis, section 2 develops the dynamic analogues to the conventional single period poverty measures that are needed for the empirical analysis. Section 3 below then introduces the 1993-1998 panel dataset and describes the South African macroeconomic situation over this time period. Section 4 explores the dataset as two cross-sections, documenting a pattern of increasing poverty and inequality. Section 5 then exploits the panel nature of the data and explores mobility within the South African income distribution using transition matrices. Descriptively interesting in their own right, these transition matrices also provide a device with which to study some of the correlates of income mobility. While the precise results are sensitive to the poverty line chosen, this poverty transition analysis finds that approximately one third of those households classified as poor in 1993 were above the poverty line in 1998. This gross transition figure does not, however, distinguish households that were in poor in 1993 because they had been unlucky from those that were able to engineer a structural escape from poverty. Nor does it tell us how many of the households that were poor in 1998 were caught in a poverty trap from which they are unlikely to escape. Using various measures of shocks to distinguish unlucky from structurally poor households, it is estimated that about 60%

of South Africa's poor households are caught in a chronic, post-apartheid poverty trap. Finally, Section 6 concludes the paper.

2. DYNAMIC POVERTY CONCEPTS

Using data from the 1993 national household survey, Carter and May (1999) characterized what might be termed the class structure of poverty in South Africa immediately following the apartheid era. They showed that the poor were disproportionately found among households that shared similar endowments and faced similar constraints to the use of those endowments. They also statistically identified an asset poverty line, meaning the line that divides asset and entitlement combinations that map into an *expected* livelihood above the income poverty line versus those combinations that map to an expected livelihood below that line.

Formalizing these ideas a bit will help lay the groundwork for developing the dynamic poverty concepts needed for this paper. First, let \underline{V} denote the standard poverty line—*i.e.*, the level of material well-being below which a person is said to be poor. In practice, \underline{V} is often approximated by scaled per-capita income or expenditure. Second, define $V^*(A)$ as the maximal level of well being that a household i can expect given its vector of assets and entitlements at time t (A_{it}) and the structure of the economy:

$$(1) \quad \begin{aligned} V^*(A) \equiv & \text{Max } E[u(c)] \\ & \text{subject to} \\ & c \leq (F(A, \mathbf{q}) - P(A_{it+1} - A_{it})) / n \end{aligned}$$

where n is the number of scaled adult equivalents in the household and $F(\cdot)$ is a generalized earnings or livelihood function that gives the net purchasing power available to the household as a function of its assets and endowments and the stochastic shocks, \mathbf{q} ,

that it receive. Note that a household's endowments could include the social capital of familial relationships that "pay off" when the household experiences a negative shock, as well as other forms of social and market-purchased insurance.⁴ For simplicity, the budget constraint is written as if all assets and entitlements can be purchased and sold at given market prices.

For household i at time t , the difference between its actual or realized level of wellbeing (V_{it}) and its expected level is:

$$(2) \quad V_{it} - V^*(A_{it}) = e_{it},$$

where e_{it} measures stochastic shocks or entitlement failures. While poverty analysis is often cast in terms of realized levels of wellbeing, V_{it} , Carter and May (1999) estimate $V^*(A)$ directly to explore the structural or asset basis of poverty in terms of asset poverty lines (\underline{A}), defined as:

$$(3) \quad \underline{A} = \{A \mid V^*(A) = \underline{V}\}.$$

In words, \underline{A} is the locus or combination of assets that yield an expected level of wellbeing exactly equal to the single period poverty line. Figure 1 illustrates this asset poverty line for the (visually) simple case in which the asset and entitlement vector is one-dimensional.

While informative about structural factors related to poverty in the immediate post-apartheid era, the asset poverty line does not tell us about the dynamics of post-apartheid income distribution. While the literature on poverty dynamics often distinguishes transitory from chronic poverty, it is analytically and politically important

⁴ One way in which social relations pay off is by caring for household members (*e.g.*, effectively reducing n in (1) above) as Zimmerman (1999) and others have discussed.

to move beyond headcounting enumeration of those who do and do not move out of poverty, and distinguish between structurally distinct forms of transitory and chronic poverty.

Clues about these distinct types of poverty have begun to emerge from several disciplines. Within neoclassical economics, recent theoretical analyses explore the circumstances under which some poor agents may get caught in a poverty trap from which neither time, nor the opportunity to save and accumulate assets will deliver them. Provocative contributions include Bannerjee and Newman (1993), Mookherjee and Ray (1999) and Zimmerman and Carter (1999). In all these analyses, risk and vulnerability play key roles in creating poverty traps. Davies (1996) offers complementary insights from an anthropological perspective, noting that there are two forces that interact when households experience an economic shock: resilience and sensitivity. While the former refers to the depth of the impact of a shock on a household's well-being, resilience refers to the ability of the household to recover from the shock. Households that are highly sensitive to shocks, with a low resilience are in an extremely hazardous state and may be forced to sell off or neglect the accumulation of productive assets in order to survive. In the face of multiple shocks over time, households may thus ratchet down over time to the point at which they become trapped in a situation of structural poverty. As in the neoclassical analyses, what might be termed *accumulation failure* rests at the heart of Davies' understanding of persistent, structural poverty.

To initiate empirical analysis of these concepts, we need to first define dynamic analogues to the single period poverty lines. First, recalling that \underline{V} is the standard single period poverty line, define the dynamic poverty line (\underline{J}) as:

$$(4) \quad \underline{J}(\underline{V}, \mathbf{d}_p) = \left(\sum_{t=0}^{\infty} \mathbf{d}_p^t \underline{V} \right),$$

where t indexes years and \mathbf{d}_p is a discount factor. In words, \underline{J} is the present value of a sequence of poverty level living standards. In the multi-period analogue to (1), define the maximal stream of livelihoods that household i can expect given its initial asset endowment of A_{i0} as:

$$(5) \quad J^*(A_{i0}) \equiv \max_{\{c_{it}, A_{it}\}} E_0 \left\{ \sum_{t=0}^{\infty} \mathbf{d}_i^t u(c_{it}) \right\}$$

subject to:

$$c_t \leq F(A_{it}, \mathbf{q}_{it}) - P_{At}(A_{it+1} - A_{it}),$$

where \mathbf{q}_{it} is the stochastic shock to the household's livelihood generation process, and \mathbf{d}_i is the household's discount factor. Using (4) and (5), a household can be defined to be dynamically poor if their long term expected stream of (optimized) utility is less than that certain equivalence value of a stream of single period poverty living standards:⁵

$$J^*(A_{0i}) < \underline{J}$$

Households caught in a poverty trap would be dynamically poor by this definition.

Analogous to $V^*(A_{it})$ defined by the single period problem (1), the value function for the dynamic optimization problem, $J^*(A_{i0})$, is also defined over the space of assets

⁵ Because it is defined in terms of expected utility, the dynamic poverty line \underline{J} thus contains the desirable property that it is sensitive to the degree of transitory poverty risk that the household faces in the future. A slight generalization would be to rewrite (4) as $\underline{J}(\underline{V}, \mathbf{d}_p, \mathbf{r}) = \left(\sum_{t=0}^{\infty} \mathbf{d}_p^t \mathbf{r} \underline{V} \right)$, where the parameter \mathbf{r}

adjusts the certainty equivalence level of the persistent poverty line, and hence change the sensitivity of the dynamic poverty line to the risk of transitory poverty shocks. Note also that the impatience of the dynamic poverty line can be adjusted using the discount factor, \mathbf{d}_p . In practice, examination of a family of such measures would provide insight on transient versus chronic poverty.

and entitlements. Exploiting this similarity, we can use (4) and (5) to define the dynamic asset poverty line, \underline{A} :

$$(6) \quad \underline{A} = \{A \mid J^*(A_0) = \underline{J}\}$$

This dynamic asset poverty line divides those asset combinations from which successful accumulation and escape from poverty is possible, from those combinations from which it is not. In the more colorful language of Zimmerman and Carter (1999), the dynamic asset poverty line is the “Micawber Threshold” that divides those able to engage in a virtuous Victorian circle of accumulation from those who cannot.⁶ Figure 1 illustrates the dynamic poverty line or Micawber threshold for a hypothetical case in which a non-trivial poverty trap is assumed to exist for those with initial endowment levels below \underline{A} .

The empirical question is whether such traps exist.

Using these dynamic poverty concepts, we can now define distinct types of chronic and transitory poverty. Table 1 places each of these types of poverty into the categories of a standard poverty transition matrix. As can be seen in Table 1, there are two distinct groups who can appear to be transitorily poor:

- *Stochastic Poor* whose first period asset base would be expected to yield a livelihood above the poverty line, but who were pushed below the poverty line by negative livelihood shocks (or stochastic entitlement failures) in the initial period (1993 in our empirical case). The Stochastic Poor thus enjoy asset position above the asset poverty line, and in Figure 1 and are illustrated by asset level $A''' > \underline{A}$. A first period entitlement failure ($e''' < 0$) pushes realized wellbeing or expenditure below \underline{V} , but the household subsequently regresses to mean or expected livelihood level, $V^*(A''')$ in later time periods.

⁶ Named after David Micawber of Charles Dickens *David Copperfield* who encouraged young lads to sacrifice and accumulate, Zimmerman and Carter’s (1999) follow Lipton (1993) and use the term the Micawber threshold to evoke the idea that there may be types and depths of poverty from which not even a forward looking willingness to sacrifice and save can eradicate.

- *Structurally Transitorily Poor* whose first period assets would have been expected to yield a sub-poverty living standard (*i.e.*, they were below the asset poverty line, \underline{A}), but who over time successfully augment their asset base or set of entitlement such that in later periods they are above the asset poverty line. Such households would thus be in the space of feasible accumulation between \underline{A} and \underline{A} in Figure 1 and move over time from A'' to A''' .

Note that the observation households in either group would imply the inability of individuals to smooth consumption over time.⁷

In contrast to these two groups that are observed to be non-poor in later periods, there are several groups of households who are poor in these later periods:

- *Accumulation Failures* who are structurally poor in the initial period and who over time fail to accumulate the assets or entitlements necessary to lift them above the asset poverty line. Such households are below both \underline{A} and the \underline{A} , and while they may oscillate up and down around a point like $V^*(A')$, they face structural constraints that prevent the asset accumulation that would permit them to systematically escape poverty.
- *New Poor* households comprised of three distinct sub-groups:

A group of structurally poor who were observed above the poverty line in 1993 (despite being below the asset poverty line) because of good fortune in that period. In Figure 1, such households are illustrated by asset level A'' . A first period entitlement windfall ($e'' > 0$) pushes realized wellbeing or expenditure above \underline{V} , but the household subsequently regresses to their expected livelihood level, $V^*(A'') < \underline{V}$. A similar case could exist for households with asset level A' .

A group of stochastic poor whose assets entitlements would predict them to be above the poverty line in both periods, but whose 1998 living standard was brought down by income shocks in 1998. Households in this group move from points like $V^*(A''')$ in the first period to $V^*(A''') + e'''$ in the second ($e''' < 0$).

⁷ In the absence of intertemporal borrowing constraints, individuals would be expected to adjust current consumption to permanent income levels, suggesting in our case that 1993 livelihood levels would have reflected expected increases in 1998 income. Similarly, absent borrowing constraints, individuals would be expected to borrow funds to insulate contemporaneous consumption from 1993 income shocks.

A group of new structural poor who experienced an asset shock or other deterioration in their entitlements between 1993 and 1998. Households in this group fall from an asset position like A''' to A'' , or A' .

In addition to these groups, we also have the non-poor as well as households that experienced consecutive positive or consecutive negative entitlement shocks in the two survey periods.

Distinguishing between these various groups is important from a variety of perspectives. A society in which even structural poverty is transitory is clearly very different from a society in which large numbers of the poor are caught below the Micawber Threshold in a structural circumstance of accumulation failure. The policy implications clearly also differ between the two circumstances. In one, time is an ally that eliminates chronic poverty. In the other, time merely oversees the chronic reproduction of a poverty class.

Using panel data on approximately 1200 households in the South African province of KwaZulu-Natal, this paper will now try to identify these various sorts of dynamic poverty. One approach would be to estimate the asset and dynamic asset poverty line. Another approach, and the one developed here, is to try to use information on shocks to separate out stochastic forms of poverty and poverty transitions from structural ones.

3. THE KWAZULU-NATAL INCOME DYNAMICS STUDY (KIDS)

Several well-known panel data sets exist which have been used to analyse a range of issues. Selected examples include the determinants of income mobility using the the Cote d'Ivoire Living Standards Survey (Grootaert and Kanbur, 1995), access to rural

assets using the International Crops Research Institute Semi-Arid Tropics Village Level Studies in India (Gaiha and Deolalikar, 1993) and the influence of family history on children's well-being using the Panel Study of Income Dynamics in the United States of America (Brooks-Gunn et al, 1993). Baulch and Hoddinott, (1999) provide a useful review of further examples.

In the spirit of promoting similar analysis in South Africa, in 1998, the KwaZulu-Natal Income Dynamics Study (KIDS) reinterviewed households from the 1993 PSLSD study (see note 1) that were located in the KwaZulu-Natal province.⁸ This province is home to approximately 20% of South Africa's population of 40 million and was formed in 1994 by combining the former Zulu homeland with the old Natal province. Although KwaZulu-Natal is not the poorest province in South Africa, it arguably has the highest incident of deprivation in terms of access to services and perceived well-being (Klasen, 1997; Leibbrandt and Woolard, 1999). KwaZulu-Natal is also home to most of South Africa's ethnically Indian people who constitute 12% of the province's population. Africans comprise about 85% of the province's population, with people of European descent (largely British) comprising most of the remainder.

The 1993 to 1998 period covered by the KIDS data overlaps Nelson Mandela's presidency. During this time, the South African government's orientation toward addressing the problems of poverty and inequality underwent some marked shifts, in language and emphasis, if not in substance. The 1996 closure of the Office of the Reconstruction and Development Program (RPD) signaled to some an at least symbolic

⁸ The decision to reinterview only the KwaZulu-Natal subsample was based on financial and data quality limitations. The original PSLSD was not designed as a panel study, and it was only through fortuitous circumstances that records were available on the surveyed KwaZulu-Natal households that made reinterview feasible.

reduction in the priority given to improving the access of the majority of South Africans to adequate shelter, sanitation and education. While programs to provide such social services continued to reside within relevant ministries, the dominant acronym in South African public policy debate shifted from the RDP to the GEAR (Growth, Employment and Redistribution), the label attached to the government's macroeconomic stabilization and structural adjustment framework. Irrespective of the dominant policy orientation, or shifts therein, a five year presidency is scant time to resolve social problems of the magnitude measured by the 1993 PSLSD survey. Nonetheless, identifying the nature and severity of chronic poverty and its attributes is a clear priority.

The macroeconomic environment conditions the economic possibilities for individual households. During the 1960's the South African economy grew at some 6% per annum, while total employment grew in line with population growth at 3% per annum. However, by the late 1980's the real economy was shrinking, as was formal sector employment. After the country's first democratic elections in 1993, this trend was briefly reversed with sustained growth throughout 1995. But by the middle of 1998, economic growth fell to less than 0.5% per annum. As a result, throughout the period between the two waves of the KIDS survey, aggregate growth was scant, limiting the income earning opportunities for the majority of South Africa's population. According to official statistics, formal employment declined by some 12%, or some 642,000 jobs between 1993 and mid 1998 (CSS ,1993; Stats SA, 1999a). Job losses were highest in those sectors that largely employ unskilled labour, with the manufacturing sector suffering a 6% loss in jobs between 1993 to 1998, compared to 21% in construction 27% in mining (Stats SA, 1999b, and CSS, 1994).

The South African government's response to this period of poor economic performance has been constrained both by international economic trends as well as by inherited fiscal realities. The apartheid government left a total public debt of R189.9 billion of which foreign debt amount to some R5.2 billion (SARB, 1999). Between 1993 and 1998, some 6.7% of GDP, and 24% of the budget has annually been absorbed by interest on this debt. Further, in line with the conservative macroeconomic stance taken by the GEAR, government contained growth in public expenditure and reduced its public-sector borrowing requirement from 9.3% of GDP in 1993/4 to 3.4% in 1998/9. Despite this fiscally conservative stance, there was an increase in the share of total expenditure going to social services during Mandela's presidency. With a decrease in the budget share allocated to military expenditures, the social services share rose from 54% in 1994 to 60% of non-interest spending in 1997/98. Of this allocation, education has received the largest share followed by health, social security and housing (DoF, 1998)

Against this macroeconomic backdrop, the KwaZulu-Natal households from the 1993 PSLSD study were reinterviewed over the three month span stretching from March to June, 1998. Because the number of white households interviewed in KwaZulu-Natal in 1993 were few and clustered in just several enumerator districts, they were eliminated from the study, creating a potential starting sample of about 1400 households from the 1993 survey. Because the 1993 survey sampled physical dwellings (and then built up households based on the set of people who lived in those dwellings⁹), decisions had to be made about the definition of the unit that was to be reinterviewed in 1998. For each

⁹ A household was defined as the group of people who lived in the dwelling for at least 15 days out of the year and shared food and other resources when co-resident in the dwelling. In addition, a "resident" household member was a person who additionally had lived in the dwelling at least 15 out of the 30 days prior to the survey.

household in the 1993 survey, a set of core household members was identified based on age, economic activity and likely status and decision-making power within the household.¹⁰ The fieldwork protocol developed dictated that in the event that a 1993 household fractured (in the sense that core people split off into multiple household units), then both of the new units would enter the 1998 survey.

The study presented here can thus be seen as a random panel study of the households of 1993 core economic decision-makers. Note that this sample is not representative of the universe of 1998 core decision-makers as it obviously excludes (largely younger) individuals who were not yet core decision-makers in 1993. Of the KwaZulu-Natal households identified in the 1993 survey, 1183 were successfully located in 1998 (including some 50 who had moved to a new location). Of these 1183 households, 50 had fractured in the sense that core people no longer lived together, creating a 1998 sample of 1223 households. For purposes of the analysis in this paper, these 50 fractured households were recombined, yielding 1183 households. Data problems reduced the usable observations. The next section discusses attrition from the sample.

4. CHANGES IN POVERTY AND INCOME DISTRIBUTION, 1993-1998

Table 2 presents a headcount poverty measure constructed using the 1993 household subsistence line calculated by the Institute for Planning Research at the

¹⁰ The idea was to identify what might more conventionally be called heads of household. While the 1993 survey identified one such individual for each dwelling, analysis of this headship data revealed that the head was almost inevitably the oldest resident of the dwelling. While the decision-making power and social status of these individuals is doubtlessly real, the concern was that focussing solely on them would overlook other relevant household decision-makers. This concern is supported by Budlender's (1999) analysis of the problems associated with the 'head of household' concept in South Africa.

University of Port Elizabeth. Using this line about 33% of the South Africa's population was poor in 1993, with an average expenditure shortfall of R90, or about 38% of the scaled IPR line of R237 per-adult equivalent per-month.¹¹ Also reported is a second degree Foster-Greer-Thorbecke poverty measure and a shelter-sanitation and energy score discussed in more detail below. Table 2 also gives the same poverty statistics when a poverty line equal to half the IPR is used. This line is approximately equal to the dollar-per-person per-day line that is sometimes used as a rule of thumb indigency line.

Examining first the 1993 poverty measures for this sample of 1177 households, we see in Table 2 that these KwaZulu-Natal households had lower poverty rates than the national figures calculated using the full 1993 PSLSD data for the non-white population. The differences are most striking when looking at the measures based on the lower poverty line for which the headcount and FGT measures are noticeably lower for KwaZulu-Natal than for the national level. These difference are not surprising given that the poorest areas of South Africa are outside KwaZulu-Natal.

The third column of figures in Table 2 presents in square brackets the suite of 1993 poverty measures for those households that were not successfully reinterviewed in 1998.¹² Comparing these figures with the 1993 measures for those households that were

¹¹ The number of scaled adult equivalents for a household i is given by: $SAE_i = (K_i + A_i)^{0.9}$, where K_i is the number of resident household members below the age of 15 and A_i is the number of household residents who are 15 or older. The IPR poverty line, which was defined for a standard family size, was then converted into a scaled, per-capita basis. The reported poverty figures thus concern households that had total expenditure levels per-scaled adult equivalent below this scaled per-capita poverty line. Total monthly expenditure was used in preference to measured income on the grounds that it better represents permanent income than do income flows over a short recall period.

¹² The 1998 expenditures were deflated using a community specific price index that was based on a set of 12 commodities and prices from both formal and informal shopping places.

reinterviewed gives some idea about the nature of the attrition that took place. As can be seen, the 1993 headcount measure of poverty using the IPR line is lower for those households that were not located for reinterview versus those that were reinterviewed (27% versus 34%). At the same time, the headcount measure of poverty at the lower poverty line was slightly higher among attrition households (7% versus 6%). These figures suggest that attrition impacted most heavily on the tails of the income distribution.¹³

Comparing the 1998 measures with the measures based on the same cohort of households in 1993, we see that the expenditure-based poverty measures increased.¹⁴ The basic headcount measure increased from 35% to 42%, while the headcount using the lower poverty line increased from 6% to 9%. While both of these headcount measures increased, the severity of poverty for individuals below the lower poverty line diminished as the FGT measure held steady and the average income shortfall for households below this lower line decreased from 26% to 21%. In contrast, the average income shortfall for those below the IPR poverty line increased from 30% to 34% of that poverty line, and the FGT measure rose sharply. A bright spot in the picture is the improvement in the shelter-sanitation-energy source scores. Lower values for this score indicate better shelter, sanitation and energy sources. The scores range from 4 (best) to 16 (worst). The improvement in the average score likely reflects the efforts of the Mandela government to provide poor communities with improved housing and piped water.

¹³ As analyzed in some detail by Maluccio *et al.* (1999), this pattern of attrition is consistent with what we know about survey quality problems in some Indian communities in 1993 and the bankruptcy of commercial farms that eliminated several poor farm worker communities.

¹⁴ Expenditure levels for 1998 were deflated using community level price indices.

Figure 2 displays the empirical cumulative distribution function (CDF) of per-scaled-adult equivalent total real monthly expenditures for both 1993 and 1998. The dotted vertical lines shown on the graph are multiples of the scaled IPR poverty line used in Table 2. The CDFs for the 1993 and 1998 cross at an expenditure level of R350, an amount that is approximately one and half times the IPR poverty line. Below that level, the 1998 CDF lies clearly above that for 1993, indicating that there are greater numbers of households at the lower end of the distribution in 1998 than in 1993. The Kolmogorov-Smirnov statistic rejects the hypothesis at the 0.1% level that the 1993 and 1998 samples were drawn from the same distribution, indicating a statistically significant shift in the expenditure distribution.¹⁵

At the upper end of the income distribution, differences between 1993 and 1998 are less pronounced. Above an expenditure level of R350, the 1998 CDF either coincides with or lies below the 1993 CDF, indicating that there are larger numbers of better-off households in the upper end of the distribution. The differences between the two distributions are modest at this level. For example, 13% of the households in 1998 enjoy expenditure levels in excess of three times the IPR poverty line of R714, whereas only 12% of households are observed above that level in 1993. Reflecting these changes in the income distribution, the Gini coefficient rose by 4 points over the 1993-1998 period, increasing from 0.38 to 0.42.¹⁶

¹⁵ The distribution free Kolmogorov-Smirnov test compares the empirical cumulative density functions for two distributions, asking if the largest difference that occurs between the two functions is so large that it is unlikely to have happened based on random draws from identical distribution.

¹⁶ This Gini is much more modest than the figures commonly reported for the South African economy as a whole because the KIDS sample excludes the white population.

This increase in the upper tail of the income distribution arguably signals an increase in “productive inequality” that reflects the desirable operation of an incentive system that encourages accumulation of skills and human capital (Sheehan and Iglesias, 1998). By placing a ceiling on the job and income earning possibilities for non-whites, apartheid is likely to have maintained artificially low levels of inequality among the non-white population. Its demise might be expected to lead to the inequality-increasing shift seen in the upper tail of the distribution function. However, this logic does not explain the deterioration in the lower tail of the income distribution.

5. Income and Class Mobility

While provocative in its portrayal of an unequalizing post-apartheid income distribution process, the analysis in the prior section is uninformative about the degree to which the high and increasing levels of poverty reflect structural versus transitory factors. Exploiting the panel structure of the KIDS’ data, this section garners some first insights into the severity of chronic poverty and its nature.

(a.) Income Mobility and Poverty Transitions

The transition matrix displayed in Table 3 presents mobility information in the form of the percentage of households in each income 1993 expenditure class (given by the rows of the table) that was observed in the 1998 expenditure classes (the columns of the table). Note that these classes are defined in terms of absolute income levels, not percentiles of the expenditure distribution. The main diagonal elements of the matrix are printed in bold and show the percentage of households in each row that did not change their position over the 1993 to 1998 period.

With the exception of the best-off group in 1993, none of the main diagonal elements exceed 50%, signaling substantial mobility among expenditure classes.¹⁷ However, focusing solely on those households that were below the scaled IPR poverty line in 1993 (the shaded portion of the table), it can be seen that about 65% of them remained below the poverty line in 1998. If one uses half of the IPR line as an indigency measure, then 17 % of the 66 households that were indigent in 1993 remained indigent in 1998.

Looking at the next two expenditure classes (those that had 1993 incomes between 1 and 1.5 times the IPR poverty line), we see that about one third of them had moved up to higher income groups in the 1998 survey, while about 45% had fallen below the IPR poverty line. The observed shift in the CDF seen in Figure 2 would thus seem to be the product of a relatively large group of chronically poor and a process of bifurcation among those just above the poverty line in 1993, with just about half that group falling behind, and the other half holding steady or moving ahead.

(b.) Class and Poverty Transitions

Building on the notion that the poor and vulnerable are better identified by the characteristics of their claiming strategies or system of entitlements (rather than by income or expenditure levels measured on a one-time basis), Carter and May (1999) developed a class typology based on a clustering analysis. We turn in this section to see if their classification helps distinguish the chronically from the transitorily poor.

¹⁷ The stability of this group is partially an artifact of the fact that it is an open-ended category.

Table 4 adopts the Carter-May definition and displays the resulting class structure for the KIDS sample (the table notes give the class definitions). Compared to the earlier Carter-May study, which analyzed only rural households from across South Africa, the KIDS sample (with its large urban component) contains a lower percentage of marginalized households and a higher percentage of entrepreneurial households. It should be noted that the PSLSD sample frame is likely to have undercounted the number of marginalized urban households. Table 4 also displays headcount poverty measures for both 1993 and 1998 based on a household's 1993 class position. Two mobility measures are also provided: The percentage of initially poor households that moved to a non-poor status in 1998, and the percentage of initially non-poor who were measured to be poor in 1998.

Matching the increase in the overall poverty headcount measure from 35 to 42%, the headcount measures increase for all classes except for welfare dependent households. For this latter class, 50% of the 1993 poor escaped poverty, while 27% fell from being non-poor to poor. These changes presumably reflect the deracialization of welfare payments under the Mandela government and the concomitant increase in the coverage and benefit levels. These figures, as well as the shelter-sanitation-energy needs-based index scores in Table 2, evidence the impact of targeted social spending.

While numerically small (with only 24 observations in the class), the class of marginalized households shows the smallest level of upward mobility (poor to non-poor) of 24%. The larger class of remittance-dependence households shows a similarly low level of upward mobility (29%) and the highest level of downward mobility as 44% of the non-poor 1993 remittance-dependent households became poor in 1998. The other

group that most closely matches the remittance-dependent households is comprised of households that in 1993 were primarily or partially dependent on wages from the jobs in the secondary labor market.¹⁸ Downward mobility is 41% to 44% for these households, while upward mobility is 25% to 36%. In contrast, households with a strong basis in the primary labor market exhibit low downward mobility (13% to 22%) and modest upward mobility (38%). Overall, the mobility levels observed for households linked into the primary market are more consistent with patterns of transitory poverty, whereas the marginalized, remittance dependent and secondary labor market households appear to be caught in structurally disadvantageous circumstances.

(c.) Measuring Entitlement Failures and Entitlement Losses

While the Table 3 transition matrix analyzed above provides information on the incidence of chronic versus transitory poverty, it reveals little about the extent to which the mobility of the transitorily poor is the result of successful accumulation, or whether it is simply driven by stochastic factors. In an effort to distinguish these cases, this section will examine the stochastic factors that shape poverty transitions and thereby separate the stochastically poor from the structurally poor.

The discussion in the introduction above suggested two types of shocks related to income mobility and poverty transitions. The first of these are negative shocks or “entitlement failures” that occur when the realized living standards falls below that which would be predicted based on the households assets and entitlements. Positive values of these shocks will be called “entitlement windfalls.” The second type of shock occurs

¹⁸ While the merits of a segmented labor market view can be debated in general, the labor market in apartheid South Africa has long been recognized as being highly and visibly segmented (Burawoy, 1975).

when the household experiences an unexpected, permanent reduction in its asset base or set of entitlements (*e.g.*, a wage earner suddenly dies, a fire destroys a business, or a friend, family member or government abandons or reneges on a longstanding remittance or other financial transfer). These asset shocks will be called “entitlement losses.”

By estimating the livelihood function, or expected well-being, $V^*(A_{it})$, we can use (2) to obtain an estimate of entitlement shocks, e_{it} . For reasons detailed in Carter and May (1999), there are a number of reasons why $V^*(A_{it})$ should depart from strict linearity or asset additivity. Following on the methodological suggestion of that paper, we employ flexibly local regression methods to approximate the livelihood regression surface for each time period.¹⁹ Residuals from those regressions were recovered and are used in the analysis below as measures of entitlement shocks.

To measure entitlement losses the KIDS survey queried all respondents about the economic shocks experienced over the 1993-1998 period. For each shock, information was solicited to measure its economic costs. In the case of the theft or destruction of a physical asset, respondents were asked to supply the (asset) value of the item lost. When a wage earner was permanently disabled, a social welfare payment eliminated, or a source of remittance cut off, respondents were asked to report the resulting decrease in monthly income.²⁰ A present value calculation over a twenty year time horizon using a 5% real discount rate was then utilized to approximate the asset value of the lost entitlement. While in principle, this present value formulation makes the loss of

¹⁹ Explanatory variables used in the local regression analysis are educated labor, uneducated labor, rural/urban dummy variable, productive capital, transfer income, and number of adult equivalent consumers. See Cleveland *et al.* (1988) for details on local regression methods.

²⁰ Only when there was evidence of a permanent loss of the income stream was a shock considered an entitlement loss.

human capital comparable to the loss of non-human income earning assets, the analysis below will treat losses of these two sorts of assets separately. The distribution of these shocks, together with that for entitlement failures, will be used in the next section to further explore poverty dynamics in the KIDS sample.

(d.) Using Shocks to Distinguish Stochastic from Structural Poverty

The structure of Table 5 is similar to that for the poverty transition matrix, Table 3. To keep the size of Table 5 manageable, the top three real expenditure categories in Table 3 have been compressed into a single category defined by scaled per-capita expenditure levels in excess of 125% of the IPR poverty line. In an effort to distinguish stochastic from structural poverty, each cell of Table 5 reports information on the shocks received by households exhibiting the mobility pattern defined by each cell.

In Table 5, a household is said to have had an entitlement failure if its estimated residual from the livelihood regression falls in the lowest tercile of the error distribution for the other households in its 1993 livelihood class (*i.e.*, the distribution for those households in the same row of Table 5). A household is said to have experienced an entitlement windfall if its error term places it in the upper tercile of the same distribution. Note that if shocks were unrelated to mobility, then one would expect 33% of households in each cell to be registered as entitlement failures.

Each cell in Table 5 also reports the percent of households in that cell that experienced an entitlement loss. Shocks to physical capital are accounted for separately from shocks to human, political and social capital whose loss was measured as a permanent decrease in monthly income. Overall, entitlement losses of any sort were

relatively rare. If there were no relationship between entitlement losses and mobility, then percentage of households receiving shocks should be similar across cells in any given row.

Finally, Table 5 also reports the net demographic change for each cell, where a household's demographic change is the difference in scaled, resident adult equivalent consumers in the household between 1993 and 1998. Some of these changes presumably reflect real shocks (*i.e.* unanticipated births, deaths and return migration). However, to the extent that boundaries between households are fluid, and inter-household migration and child fostering serve as a type of social safety net (see Zimmerman, 1999), then we might expect to see those households that shed members improved their situation, and those that acquired new members experienced a deterioration (regression toward the mean) in their situation. From the perspective of a household that receives a sudden increase in its sizes (perhaps as a family member exercises a social claim against this), such changes might be appropriately described as an unanticipated shock, albeit one that is positively correlated with living standards. From the perspective of the household that sheds members, such changes are probably best not considered to be shocks. Irrespective of what we label such demographic changes, their importance in explaining mobility would be reflected in a pattern in which observations to the southeast of the main diagonal of the transition matrix would be expected to have positive demographic changes (*i.e.*, increases in scaled adult equivalent consumers), while those to the right of the main diagonal should tend to have negative values.

As noted in Table 3 above, about one third of the households in the lowest livelihood category in 1993 were observed above the poverty line in 1998. As can be

seen from Table 5, just half of these upwardly mobile households had in fact experienced entitlement failures in 1993, suggesting that they were transitorily poor in 1993. In addition, 61% of those households that moved to a livelihood level in excess of 125% of the poverty line had received a favorable entitlement shock (an entitlement windfall) in 1998, suggesting that some number of these upwardly mobile households were only transitorily non-poor in 1998 in the sense that regression to the mean livelihood would place them again below the poverty line. A final observation about this group of households that got ahead is that on average they shrunk by 1.2 adult equivalent consumers, suggesting that either lifecycle or social sharing mechanisms had come into play to help lift these households above the poverty line.

Looking at the next livelihood category (those with scaled 1993 living standards between 50% of the poverty line and the poverty line), we see that 45% of those 60 household that fell to less than 50% of the poverty line experienced a 1998 entitlement failure, suggesting that their collapse in living standards was of a stochastic nature. It can also be seen that 47% of those who similarly fell back had benefited from an entitlement windfall in 1993, suggesting that their lower 1998 living standard was not surprising given their entitlement base. We can also see that the percentage of households in this group that suffered losses in human capital or social entitlements was 30% higher than the average for households in their 1993 livelihood category. The pattern of upward mobility for this group is quite similar to that for households discussed in the prior paragraph who moved from less than 50% of the poverty line to above the poverty line.

Looking at the group of households that in 1993 were just above the poverty line, we see again evidence that stochastic factors play a strong role in the pattern of

downward mobility. Of those households that fell to livelihoods less than 50% of the poverty line, we see that 69% of them had in fact experienced entitlement windfalls in 1993, suggesting that they were transitorily non-poor in 1993. In addition, this same category of households experienced high rates of asset shocks and large average demographic changes. Somewhat in contrast to this group, those households that fell from just above to just below the poverty line are distinguished by the fact that 51% had 1998 entitlement failures. This group thus appears more likely to be comprised primarily of households that became stochastically transitorily poor in 1998.

Finally, turning to the last category of households in Table 5 (those with 1993 livelihoods in excess of 125% of the poverty line), we see a pattern somewhat similar to that of the prior group. Namely, those few households falling all the way to a 1998 livelihood less than 50% of the poverty line experienced a disproportionate number of asset shocks. In addition, 54% of these households experienced entitlement failures in 1998, while 39% had experienced entitlement windfalls in 1993. As with households in the prior livelihood category, those that fell to just below the poverty line are less easily distinguishable in terms of the shocks that they received.

6. Conclusions

Just over 5 years ago, the legal and political restrictions of apartheid were eliminated, and South Africa's first freely elected, post-apartheid government inherited an economy marked by deep economic inequality and levels poverty and living standards characteristic of much poorer economies. This paper takes a first look at the dynamics of post-apartheid income distribution. Using the KwaZulu-Natal Income Dynamics study of

approximately 1200 non-white households over the 1993 to 1998 period, this paper finds that poverty rates have increased among this population, and that the distribution of scaled per-capita expenditure has become less equal. A transition analysis shows that some two thirds of households below the South African poverty line in 1993 remained there five years later, and relatively large numbers of households that were just above the poverty margin in 1993 fell below that line in 1998.

As stressed in the introduction, it is important to determine the extent to which poor households are stuck in a poverty trap from which neither time nor the now liberalized and free South African economy and polity offer escape. To gain purchase on this issue, this paper has taken several approaches. First, it adopts a class typology originally designed to identify groups whose entitlement bases leave them vulnerable to persistent long run poverty. Analysis of these groups shows that three classes have indeed exhibited the highest levels of persistent poverty, the lowest levels of upward mobility and the highest levels of downward mobility. The first of these classes is a numerically small group of marginalized households who seem possess few assets beyond unskilled labor, few social or political connections and who appear to be going nowhere. The second class is a group of remittance-dependent households, while the third group is comprised of households who in 1993 were dependent on the secondary labor market. On the more positive side, poverty rates have actually fallen for a class of initially quite poor, government transfers-dependent households. Other groups, while exhibiting some degree of downward mobility, have offsettingly high (or higher) degrees of upward mobility, suggesting that poverty among these classes is largely a transitory

phenomenon. Off-setting the vulnerability of the worst-off groups is the improvement in the access to services as measured by average SSEI scores.

In addition to this class analysis, this paper has tried to measure both entitlement shocks (*i.e.*, livelihood outcomes substantially different from what would be predicted based on a household's asset base) and entitlement losses (meaning the destruction or loss of productive assets or social and political claims). Table 1 above uses the shock data that have been analyzed in section 5 to broadly classify the households in the KIDS survey by their structural poverty position. As can be seen, of the 1177 households in the sample, 269 (or 23%) were observed to be chronically poor. Of these, about 16% appeared to have suffered doubled entitlement failures and hence could be classified as stochastically poor. The remainder are likely caught in a poverty trap or are what this paper has termed accumulation failures.

The 139 households (12% of the sample) that were poor in 1993 and non-poor in 1998 appear to be evenly split between those that were stochastically poor in 1993 (and who had recovered to an expected living standard that was above the poverty threshold) and those that were structurally poor in 1993 but who apparently were accumulation successes or otherwise were able to use time and the economy to improve their material well-being.

About 45% of the new poor (the 220 households that were above the poverty line in 1993 but below it in 1998), appear to have been transitorily poor, having experienced a 1998 entitlement failure. Another 30% of these households were probably transitorily non-poor in 1993 and by 1998 had regressed to an expected living standard below the poverty line. Finally, another smaller group (perhaps 10% of the new poor) appear to

have experienced entitlement losses that explain the deterioration in their economic position.²¹ Combining these last two groups with the group of chronically poor, accumulation failures suggest that maybe 27% of households in the panel are chronically poor for structural reasons. This group amounts to over half of the total households in poverty. The passage of additional time may of course lead to a reduction in the size of this group. But for this group the end of apartheid has thus far proven to be only one kind of freedom. If this situation persists, the longer run could witness the continuation of a form of economic apartheid whose eradication will require carefully targeted policies that step well beyond the end of legal discrimination.

²¹ The downward mobility of the remaining 16% of this group cannot be accounted for by shocks.

Table 1
Decomposing Poverty Transitions in South Africa
(% Surveyed Households)

		1998	
		Poor	Non-Poor
1993	Poor	<i>23% Chronically Poor, of which:</i>	<i>11% Got Ahead, of which:</i>
		<ul style="list-style-type: none"> • 14% Dual Entitlement Failures • ~86% in Poverty Trap 	<ul style="list-style-type: none"> • 46% Stochastically Poor in 1993 • ~54% Structurally Poor in 1993
	Non-Poor	<i>18% Fell Behind, of which:</i>	<i>46% Never Poor, of which:</i>
		<ul style="list-style-type: none"> • 30% Chronic Poor, but fortunate in 1993 • 45% Stochastically Poor in 1998 • 9% New Structurally Poor 	<ul style="list-style-type: none"> • 19% Dual Positive Shocks and vulnerable • ~81% Structurally non-poor

Table 2

	National Sample, 1993 PSLSD		KIDS KwaZulu-Natal Sample	
	<i>All Groups</i>	<i>Non-White</i>	<i>1993</i>	<i>1998</i>
<i>Headcount Poverty Measures</i>				
line 1 (1993 R237 /month*)	33.4%	39.4%	35.0% [27.7%]	41.8%
line 2 (0.5*line1 ≈ \$US1/day)	10.8%	12.7%	5.7% [6.8%]	9.6%
<i>Average Income Shortfall of Poor (% of poverty line)</i>				
line 1	37.9%	38%	30% [32%]	34%
line 2	27.7%	28%	26% [30%]	21%
<i>Foster-Greer-Thorbecke-2</i>				
line 1	0.064	0.08	0.04 [0.04]	0.06
line 2	0.012	0.015	0.007 [0.009]	0.007
<i>Shelter, Sanitation, Energy Score</i>	7.9	8.6	9.0 [8.1]	8.4
<i>Gini Coefficient</i>	0.55	0.45	0.38 [0.39]	0.42
<i>Number of Households</i>	8769	7424	1177 [263]	1177

Figures in square brackets are the 1993 data for those households that could not be relocated for reinterview in 1998.

* IPR poverty line as scaled for standard reference household.

Table 3: Poverty Transition Matrix
(% of Row)

		1998 Scaled Per-Capita Expenditure Classes (1993 Rand)					
		$\leq 0.5 PL$	$\leq PL$	$\leq 1.25 PL$	$\leq 1.5*PL$	$\leq 2.5*PL$	$\geq 2.5*PL$
1993 Scaled Per-Capita Expenditure Classes	$\leq 0.5 PL$ [66 obs]	16.7	48.5	7.6	7.6	16.7	3.0
	$\leq PL$ [342 obs]	17.5	48.5	8.8	5.8	16.7	2.6
	$\leq 1.25 PL$ [146 obs]	8.9	40.4	13.0	8.2	21.2	8.2
	$\leq 1.5*PL$ [142obs]	7.7	39.4	10.6	10.6	19.7	12.0
	$\leq 2.5*PL$ [270 obs]	4.8	19.3	13.7	8.9	28.5	24.8
	$> 2.5*PL$ [211 obs]	1.9	5.7	7.1	5.2	23.2	56.9

Table 4: Poverty Levels and Transitions by Economic Class

Class*	Class Size (%)	1993 Poverty Headcount	1998 Poverty Headcount	Upward Mobility (% of 93 Poor)	Downward Mobility (% of 93 Non-Poor)
<i>1. Marginalized</i>	2.0	25	46	24	31
<i>2. Welfare Dependent</i>	8.7	49	41	50	27
<i>3. Remittance Dependent</i>	21	40	54	29	44
<i>4. Secondary Wages</i>	13	46	49	36	36
<i>5. Primary Wages</i>	19	14	20	38	13
<i>6. Mixed with Secondary Wages</i>	19	49	57	25	41
<i>7. Mixed with Primary Wages</i>	15	26	31	38	22
<i>8. Entrepreneurial</i>	2	0	13	--	13

* *Marginalized* households have no access to wages or remittances from formal sector opportunities, and have no access to welfare transfers. *Welfare Dependent* households have access to welfare transfers (pensions), but receive no wage or remittance payments. *Remittance Dependent* households have access to a remitted income, although no direct wage income is received. *Secondary Wages* households have wage income earned by people living at home employed in a 'secondary' labor market, defined as those occupations with limited security, skill requirements or opportunity for vertical mobility. *Primary Wages* households have access to wages earned by people living at home employed in the 'primary' labor market. *Mixed with Secondary Wages* households combine wages earned in the 'secondary' labor market with modest small business and other self-employment income. *Mixed with Primary Wages* households combine wages earned in the 'primary' labor market with small business and other self-employment income. *Entrepreneurial* households earn incomes in excess of R1000 per month from agricultural or other self-employment activities. For more detail, see Carter and May (1999).

Table 5: Shocks and Poverty Transitions
(% of households in each cell unless otherwise noted)

		1998 Scaled Per-Capita Expenditure Classes (1993 Rand)				
		$\leq 0.5 PL$	$\leq PL$	$\leq 1.25 PL$	$> 1.25 PL$	
1993 Scaled Per-Capita Expenditure Classes	Number of Households	11	32	5	18	
	1993 Entitlement Shocks*					
	Windfalls	46	44	0	22	
	Failures	0	31	40	50	
	1998 Entitlement Shocks					
	Windfalls	18	25	40	61	
	Failures	36	34	40	22	
	Entitlement Losses***					
	Hum., Soc. & Pol. K	18	13	20	17	
	Physical Capital	27	31	80	17	
	Demographic Shock****	0.7	-0.1	1.6	-1.2	
	<hr/>					
		Number of Households	60	166	30	86
		1993 Entitlement Shocks				
		Windfalls	47	34	47	21
		Failures	20	27	30	54
	1998 Entitlement Shocks					
	Windfalls	15	22	57	64	
	Failures	45	38	17	20	
	Entitlement Losses					
	Hum., Soc. & Pol. K	18	16	13	8	
	Capital	20	21	23	29	
	Demographic Shock	0.4	-0.1	-0.4	-0.7	
<hr/>						
	Number of Households	13	59	19	54	
	1993 Entitlement Shocks					
	Windfalls	69	39	42	19	
	Failures	15	19	26	54	
	1998 Entitlement Shocks					
	Windfalls	23	15	47	54	
	Failures	15	51	5	26	
	Entitlement Losses					
	Hum., Soc. & Pol. K	15	9	16	13	
	Physical Capital	39	19	32	26	
	Demographic Shock	1.5	0	0.1	-0.3	
<hr/>						
	Number of Households	28	120	67	405	
	1993 Entitlement Shocks					
	Windfalls	39	28	24	37	
	Failures	36	28	34	34	
	1998 Entitlement Shocks					
	Windfalls	3.6	3.3	7.5	49.6	
	Failures	54	43	54	25	
	Entitlement Losses					
	Hum, Soc. & Pol. K.	18	7	9	9	
	Physical Capital	7	16	18	22	
	Demographic Shock	1.3	0.7	0.5	0	

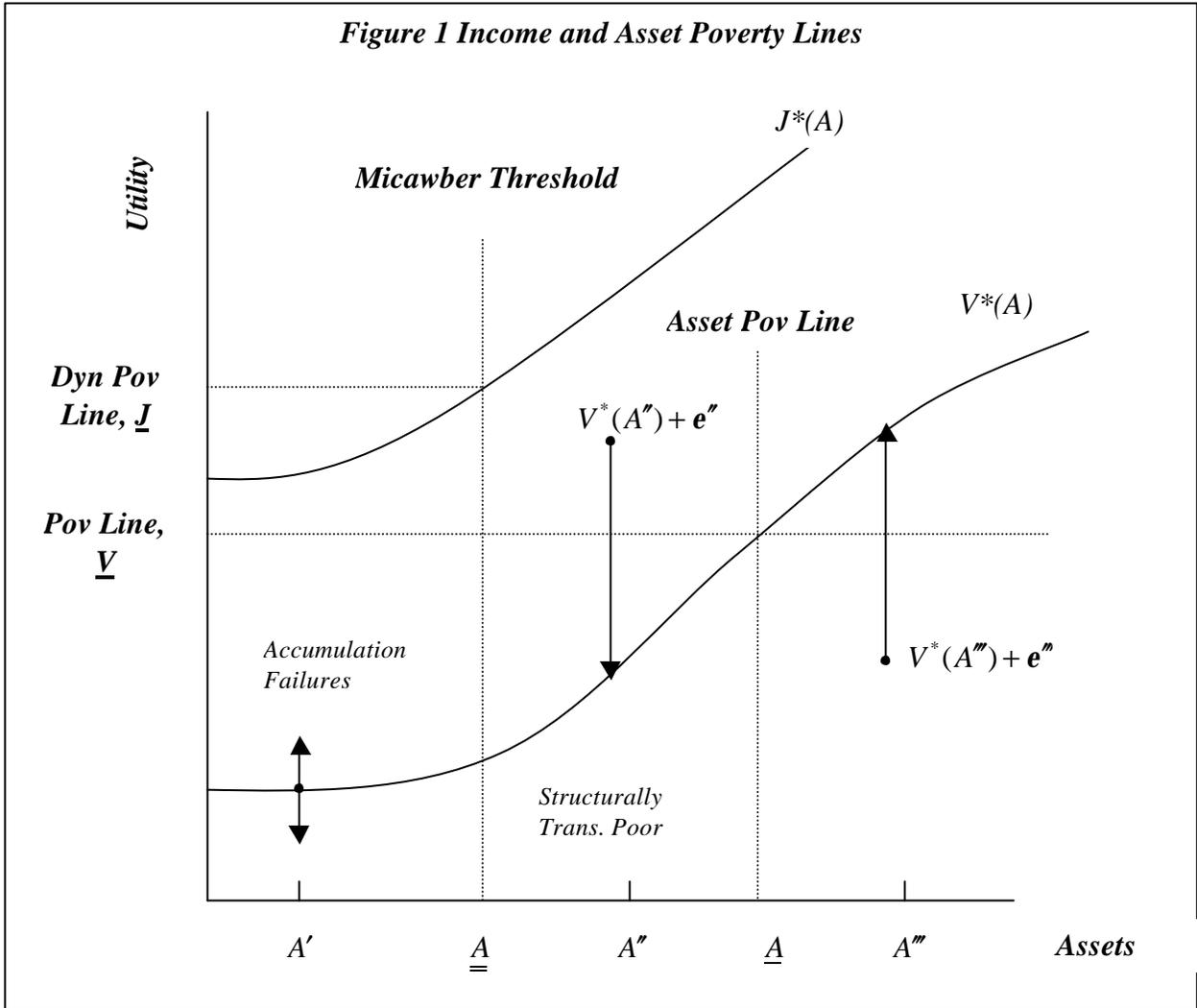
Notes to table 5

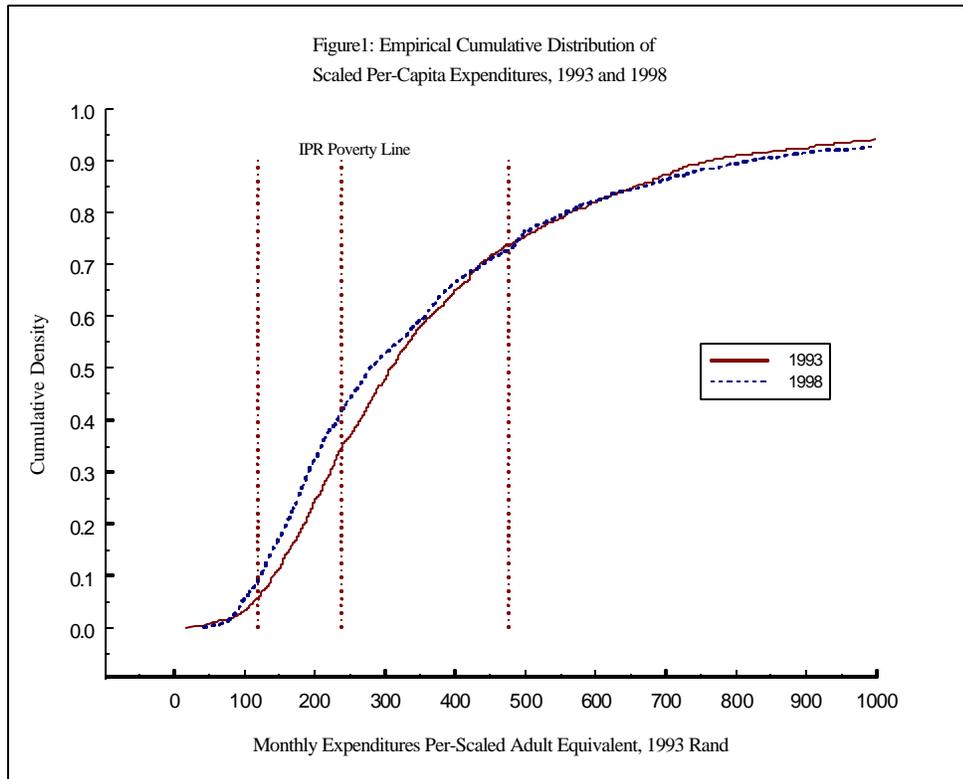
* A household is classified as an entitlement failure (windfall) if its estimated livelihood regression residual is in the bottom (top) tercile of the distribution for households in its 1993 livelihood category. The figures in the table report the percent of households in each cell that fall in these tails of the shock distribution.

*** A household is an entitlement loser if it experienced a negative shock to its stock of productive assets (physical capital), or in its stock of human, social and political capital (or entitlements). The figures in the table report the percent of households in each cell experiencing such shocks.

**** Demographic shocks are measured as the net increase from 1993 to 1998 in the number of scaled adult equivalents resident in the household.

Figure 1 Income and Asset Poverty Lines





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