

**Earnings and Employment Dynamics for
Africans in Post-apartheid South Africa:
A Panel Study of KwaZulu-Natal**

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Abstract

The labour market is central in determining individual and household well-being in South Africa. Therefore, an understanding of earnings and employment dynamics is a key policy issue. However, the absence of panel data has constrained empirical work addressing these topics. This paper conducts such a study using a regional panel data set, the KwaZulu-Natal Income Dynamics Study (KIDS). The authors find that, on average, working aged Africans in KwaZulu-Natal experienced large gains in earnings during the 1993 to 1998 period. These gains were progressive in nature, with the highest quintile of 1993 earners and those originally employed in the formal sector actually experiencing zero or negative growth in their average earnings. The average gain in earnings varied substantially depending on the employment transitions that labour force participants experienced. Obtaining formal sector employment is found to be an important pathway to growth in earnings, yet the vast majority of those who get ahead do so by retaining employment in a given sector or moving to the informal sector. The dynamism of the informal sector over this period is shown to be an important contributor to the progressive growth in earnings. Government policies that seek to increase employment and earnings in the informal as well as formal sectors are recommended. Understanding the constraints preventing the vast number of unemployed from engaging in informal employment is shown to be a key issue for future work.

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I. Introduction

The problems of low labour market earnings and unemployment are at the forefront of debates about labour market policy in contemporary South Africa. High and rising unemployment rates contribute massively to poverty, but many people also earn little in the labour market because they work for few hours per week or receive low hourly wages, particularly in the informal sector. For individual South Africans, moving between the categories of unemployment, informal sector work and formal employment usually means big shifts in earnings and well-being. To understand poverty and inequality in South Africa, it is therefore crucially important to examine earnings dynamics and the patterns and dynamics of shifts (or transitions) between the categories of involvement in the labour market.

The orthodox view of contemporary labour market dynamics in South Africa points to very low entrance rates into regular employment (i.e., the opportunities to move into formal sector employment are small in comparison to the number of people wanting to make this move). Recent studies confirm this by showing that while there was growth in formal sector employment in the late 1990s, this was far short of the number of jobs required to match new entrants (Poswell, 2002, Statistics South Africa, 2002).

On the earnings side, real wages in regular employment have stayed constant or increased despite the fall in employment (Fields, Leibbrandt and Wakeford, 2000, Fedderke and Mariotti, 2002). Wage trends thus appear to be insensitive to unemployment. It has been argued that this wage rigidity, due primarily to labour market legislation, contributes to the inability of the labour market to create formal sector jobs and to a lack of integration of earnings and conditions of employment between the formal and informal sectors of the economy (Nattrass, 2000a).

Most recent analyses of these employment and earnings issues have carried out econometric modeling using national data from surveys such as the 1993 survey conducted by the South African Labour and Development Research Unit (SALDRU) at the University of Cape Town or the 1995 October Household Survey conducted by Statistics South Africa. Data from these surveys provide 'snapshot' views of the operation of the labour market at one point in time. Using these data, studies have revealed the importance of a range of factors including race, gender, education, and location in the determination of both employment and earnings (Hofmeyr, 2000; Fallon and Lucas, 1998; Borat and Leibbrandt, 2001; Kingdon and Knight, 2000 and 2001a). In addition to these factors, hours of work, public/private divisions, industry, occupation, union membership and racial and gender discrimination have also been shown to be significant determinants of earnings (Moll, 1993; Mwabu and Schultz, 1996, 1998, 2000; Jensen, 1999).

Given the static nature of these data, the authors have been appropriately reluctant to make simple extrapolations from their analyses of the labour market at one point in time to dynamic earnings and employment issues. A number of empirical studies have explicitly attempted to deal with these dynamic questions by comparing data from at least two cross-sectional surveys. These studies have shown that one can use these series of cross-sections to profile accurately employment, unemployment and earnings changes at aggregate and even disaggregated levels. The analysis of aggregate, sectoral and occupational employment trends has highlighted the impacts of trade and technology in driving formal sector employment changes (Bhorat and Hodge, 1999; Edwards, 2000).

The analysis of unemployment has shown that both measured unemployment rates and the profile of the unemployed are robust across data sets and across time (Klasen and Woolard, 1999; Natrass, 2000b; Kingdon and Knight 2001a). The analysis of earnings has revealed a persistence of large earnings inequalities (Moll, 2000; Borat, 2000), large average earnings differences by race and gender that cannot be accounted for by measurable characteristics of the earners (Moll, 2000; Allanson et al, 2000; Rospabe, 2001), and large average wage premia for unionised African workers (Rospabe, 2001; Hofmeyr and Lucas, 2000; Michaud and Vencatachellum, 2001).

This use of a series of cross-sectional surveys has added to our understanding of the evolving nature of the labour market over the 1990s. However, there are inherent difficulties associated with using a series of cross-sections to explore labour market dynamics. If the data sets tell similar stories over time, as is the case with the unemployment studies, there is no way of knowing whether this is because the labour market has operated in a stable fashion between the surveys or whether there have been changes in earnings and employment for certain individuals and groups but these changes have netted out to very similar aggregate snapshots. Generally, repeated cross-sections cannot deal with the movement of people between labour market segments or between jobs within sectors or with related real earnings changes over time. This is a particular concern if policy makers are really interested in knowing which specific individuals or groups are experiencing movement in the labour market and, in particular, who are the winners and losers from the current operation of the labour market.

To study these important dynamic issues more thoroughly we need the kind of longitudinal data from panel studies that has not been available until very recently. In this paper we use the panel data from the KwaZulu-Natal Income Dynamics Study (KIDS). KIDS provides data on a panel of African and Indian households in urban and rural parts of the province of KwaZulu-Natal, with surveys conducted in 1993 (as part of the countrywide SALDRU survey) and again in 1998. The panel data set, described in detail by May et al. (2000), contains information on workers, their earnings, the sector of the economy in which they work, and many more features of the households in which they live. Most previous work using the KIDS data has focused on household-level issues (Carter and May, 2001; Fields et al., 2002a and 2002b, Leibbrandt and Woolard, 2001; Maluccio et al., 2000).

Excluding other work by the authors, only a few studies to date have dealt with earnings and employment mobility at the individual level (Keswell 2000 and 2002, Dinkelman 2002). Keswell (2000) constructed mobility matrices for terciles (i.e., thirds) and quintiles (fifths) of the earnings distribution, and estimated equations exploring the key determinants of transitions between various labour market states. A key finding of his study is that individuals and households in the bottom and top groups of the income distribution exhibit much less mobility (as gauged by change in tercile or quintile) than those in the middle. Keswell (2002) supports this contention and goes on to argue that it is this uneven mobility pattern that undergirds increased inequality within the panel between 1993 and 1998. Dinkelman (2002) uses the panel to ascertain whether those searching for employment in 1993 have a higher probability of being in employment in 1998 than those who said that they wanted a job but were not searching in 1993. She finds that the searching unemployed are more likely to be employed in 1998. Her multivariate analysis indicates that household and community effects are more important in driving success in finding employment than demographic variables such as education, age and location.

In this paper, we use the KIDS panel data to answer three questions about the earnings change experienced by African labour force participants in post-apartheid KwaZulu-Natal. First, how did earnings change for African labour force participants as a whole? Secondly, how did initially low-earning African labour force participants fare in absolute terms and relative to those who were initially high earners? Thirdly, to what extent is the progress made by labour force participants driven by transitions between employment and unemployment, or between informal sector and formal sector employment, and to what extent is progress driven by other factors?

We reach the following major findings. First, African labour force participants in KwaZulu-Natal experienced large gains on average, although there is large variation around this average. Second, low initial earners had large average gains, faring better than those who started with high initial earnings. Third, transitions between employment and unemployment and between formal and informal employment have a strong impact on real earnings, but these real earnings changes are not always as we might expect. In particular, movements from formal to informal employment are frequently accompanied by real earnings *gains*. Additionally, the sizeable earnings changes that take place for those who do not experience a change in sector implies that dynamics within sectors also deserve attention. Demographic variables in particular, education and gender are found to make surprisingly little difference.

II. Data and Methodological Choices

The data used in this analysis comes from the KwaZulu-Natal Income Dynamics Study, January 2003 re-release. The survey probability weights were corrected to incorporate the loss of households that accompanied the re-release.¹ All statistical analysis incorporates these weights and standard errors are corrected to account for clusters.

Labour market analysis is conducted on a sample of 1,079 individuals who were 25 to 54 year old residents of KIDS panel households in 1993 and were again resident in 1998.² The age restriction is designed to capture changes in labour market outcomes for people who were actively engaged in the labour force throughout the 1993 to 1998 time-period. In essence, we seek to define a set of dynamic labour force participants, excluding those in the process of entering or exiting the labour force for demographic reasons.³ Fifteen percent of sample individuals in the 25-54 year old age range reported being unavailable for work in both 1993 and 1998 and were also excluded from analysis. An individual is deemed unavailable if he/she: (1) reported not working and (2) gave as the reason for not working something other than having searched but could not find work or there were no jobs available.

This definition of a dynamic labour force participant is quite inclusive. Kingdon and Knight (2000a) provide compelling evidence that discouraged workers, i.e., those who report they were not employed because no jobs were available, should be considered full members of the labour force. Using this broad definition of unemployment, cross-sectional surveys place the unemployment rate in South Africa in the 31 percent-39 percent range in the late 1990s (Kingdon and Knight, 2000b). Our definition actually goes one step further by including as dynamic labour force participants those who reported being unavailable in one period, but actively engaged in the labour force in the other. This definition relies on the premise that many people who say they are not

working because they are retired or mentally disabled or other such reasons are actually discouraged workers whose own past or future behaviour reveals they would likely take a job if one were available.

Among those who are employed, workers are characterised as formal or informal. A worker is said to be a “formal sector worker” if he/she was employed in a wage job that was expected to last indefinitely or if he/she was a professional self-employed person. On the other hand, a worker is said to be an “informal sector worker” if he/she was in casual wage employment (a wage job that is of limited or uncertain duration), in non-professional self-employment, or in domestic service.⁴ In this study, a person’s work status is classified as either unemployed, informally employed, or formally employed.

All earnings and earnings change data are in terms of real monthly earnings using 1993 Rand as the numeraire.⁵ In addition to cash payments, earnings include food, housing, and transportation subsidies that are paid by the employer. The earnings for self-employed persons require more assumptions and suffer from the fact that 1998 figures are based on profits earned in the previous month rather than average monthly profits.⁶ Agricultural home production could not be broken out on an individual level and is thus excluded from the personal earnings measure. For the most part, this does not seem to be a major loss as such home production is best thought of as supplementing labour earnings rather than substituting for other labour earnings.⁷ Earnings from wage work in the agricultural sector are included.

The last note that we make concerning our earnings variable is that it undoubtedly contains some measurement error. In assessing how this will impact our results we first need to define the properties of such measurement error. We will follow a standard depiction of such measurement error, assuming that it is an additive, mean zero error term, independent of all observable characteristics and independent across time. In this case, our reported average change in earnings for the panel as a whole or by initial characteristics, other than initial earnings, should still be accurate reflections of the true underlying relationship.

The intuitive problem with comparing reported earnings change to initial earnings is that the reported change in earnings has, as one of its components, the same realization of measurement error that was found in the initial reported earnings. This can lead to a spurious negative correlation and cause us to overstate the extent to which the initially poor get ahead relative to the initially non-poor.⁸ One way to get around this is to compare reported change in earnings to an estimated initial earnings variable which has been cleansed of measurement error. In earlier work, the authors have used this approach and found the progressive nature of earnings changes discussed below to be robust to these concerns (Cichello et al., 2001b).⁹

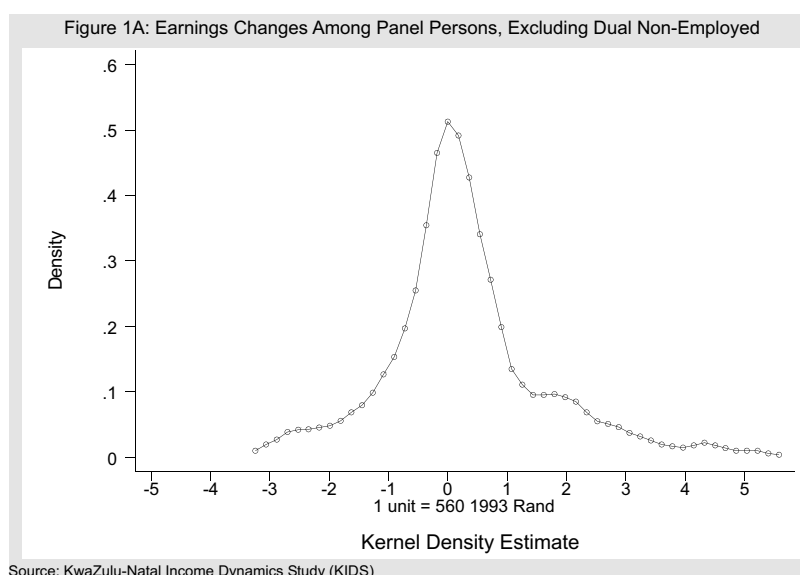
Such an estimation approach to rid the influence of measurement error is not feasible in the multivariate section of this paper. In this case, estimation via an instrumental variables approach requires a variable that effectively predicts initial earnings yet is uncorrelated to earnings change except through the correlation with initial earnings. We were not able to find such a variable.

III. Did African Workers Get Ahead or Fall Behind in KwaZulu-Natal?

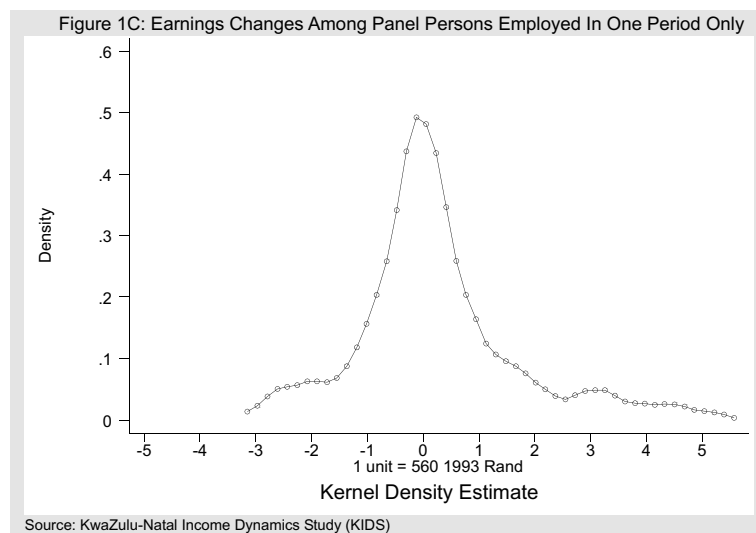
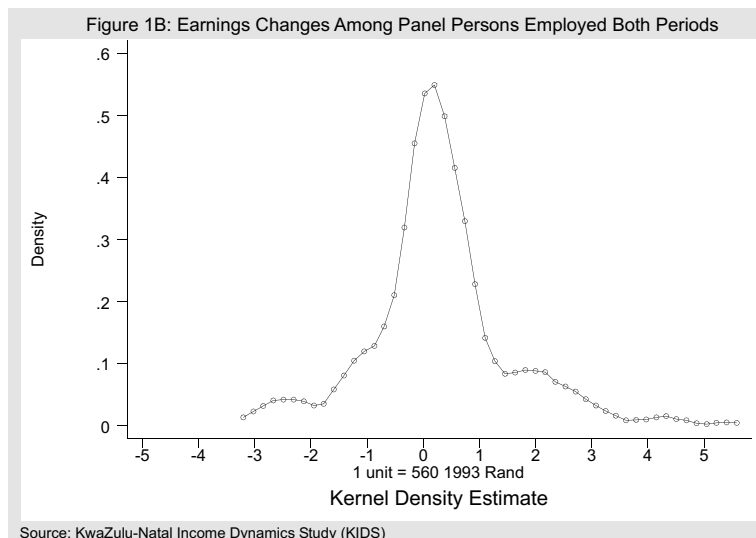
Panel individuals gained an average of R136 over the four and a half year period. Given that the average earnings among panel members was R367 in 1993, this is equivalent to an increase in average earnings of 7.1 percent per annum. This level of earnings growth is surprisingly high, particularly given that the annual Gross Domestic Product (GDP) growth rate in South Africa in this time period was approximately 2.7 percent.¹⁰ There are a variety of reasons why the two rates could be so disparate. First, analysis in this study looks only at earned income, rather than all components of GDP. Second, the study is not for the entire South African population, but is restricted to prime-aged African workers in KwaZulu-Natal. Still, the strength of these gains was surprising to the authors. In order to ensure that this result is not driven by changes of just a few individuals or a large erroneous response, we also recalculated the growth rates excluding the top and bottom 1 percent of earnings changes. In this case, the average earnings gain was R109 or 6.2 percent per annum. Thus, the conclusion that panel participants enjoyed a sizeable average gain in earnings, is robust to concerns that it is driven by just a few individuals in the sample.

Despite these large average gains, an alarming 30 percent of the panel population were dual zero earners, having no change in earnings, chiefly because they were not working in either period.¹¹ Still, considerably more people were getting ahead than falling behind, with 40 percent experiencing positive gains and 30 percent experiencing declines.

Figure 1A presents a kernel density function of the earnings changes, excluding the previously mentioned dual zero earners. The x-axis is normalised, with each unit representing R560, the low earnings line.¹² It is clear that many individuals have experienced earnings changes of a sizable magnitude. Even if dual zero earners are included, fully 40 percent of panel participants reported positive or negative changes with magnitudes greater than one half the low earnings line (R280).



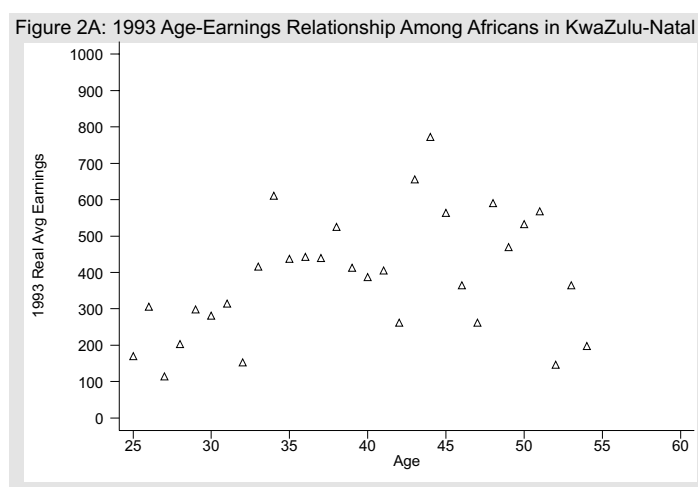
The prevalence of large earnings changes was not driven solely by people moving into and out of unemployment. Large changes in earnings were also quite common among those who were working in both periods. Figure 1B presents a kernel density function of earnings changes for those working in both periods while Figure 1C presents a kernel density of those employed in one period only. Clearly, the right side of Figure 1C predominantly represents those who were unemployed in 1993 and employed in 1998 and the left hand side similarly represents those who moved from employment in 1993 to unemployment in 1998. Earnings changes presented in Figure 1B include earnings changes for people moving between formal and informal sectors as well as for people who remained in a given sector. On the whole, the diagrams are similar, suggesting that employment in both periods does not necessarily imply a small earnings change experience.



Further details on how the changes in earnings are related to specific work status transitions will follow in the latter part of this paper. For example, earnings changes for those who move into employment would be predominantly on the right hand side of Figure 1C and therefore have the expectation of being positive and large. The main point of this section is to show that the change in earnings for panel participants, though varied and often involving sizable changes, were more positive than negative and gave rise to strong gains in average earnings.

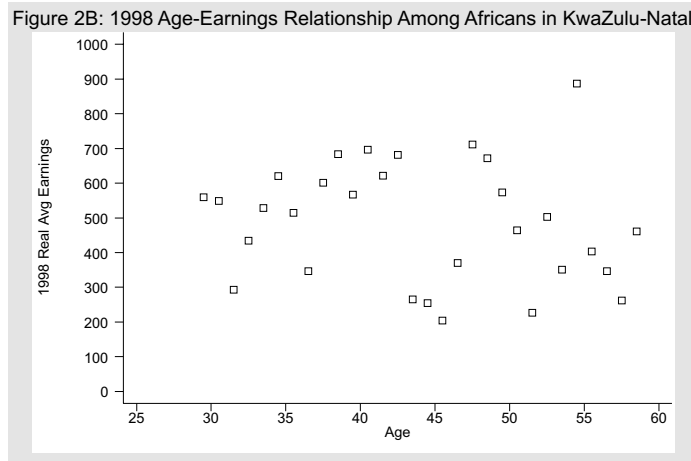
These results present a fairly optimistic picture of the earnings changes experienced by the African labour force in KwaZulu-Natal since the end of apartheid. While there are still large pockets of stagnation, the average change in earnings for prime-aged workers is large and positive. As we are analysing longitudinal data, this increase in average earnings does not necessarily imply that people have higher expected lifetime earnings. If workers are simply moving along a fixed upward sloping age-earnings profile, we would still typically expect average earnings to increase over the 5 year period.

Figures 2A-2C suggest that these gains go beyond the increases typically associated with aging four and a half years in the KwaZulu-Natal labour market. Treating the panel respondents' 1993 earnings as a cross-section and graphing the average earnings by age, we observe the typical concave age-earnings profile in 1993 (Figure 2A). Earnings regressions on basic exogenous variables (not shown) show a significant concave effect in 1993. The age effect is significant in predicting employment and in predicting earnings within the formal sector but age was not a significant factor in predicting earnings within the informal sector.



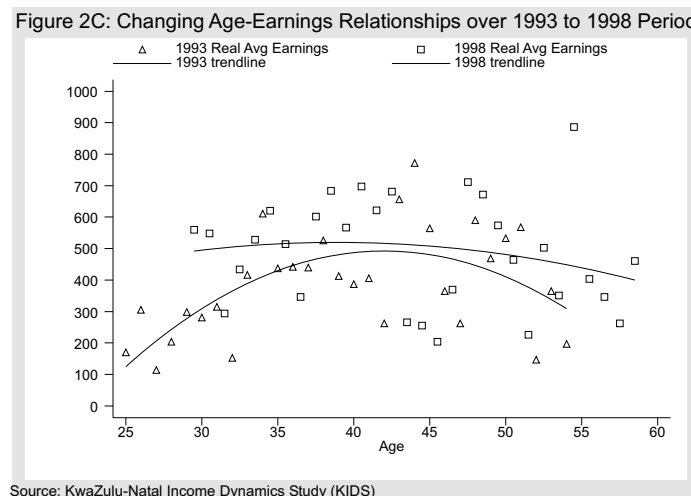
Constructing a similar diagram for panel respondents' 1998 earnings, the age-earnings relationship appears to change quite markedly. Figure 2B does not have the same obvious concave trend seen in 1993. Wald tests on age and age-squared are not significant at the 5 percent level when running 1998 earnings on standard exogenous variables. The concave relationship between age and earnings disappears, even within the formal sector. Interestingly, age is now significant at the ninety percent confidence level for a log earnings equation within the informal sector, but the relationship is convex. Whether this truly implies that experience now matters less

in the formal sector and more in the informal sector would require a deeper investigation and is better suited for future work with cross-sectional data. The effect of age on employment for these 29-59 year olds is not significant.



Additionally, we performed a simulation using the estimated 1993 earnings equation. Giving each person the earnings gain (or loss) predicted by their aging four and a half years led to an estimated change in earnings of R61, well below the R136 found in the sample. Although the age effect was not significant in 1998, a similar simulation was performed using the point estimates from estimated 1998 earnings equation and an average gain of just R12 was predicted due to the aging of the panel sample.

Finally, Figure 2C overlays the scatterplots of average earnings by age on top of one another and plots a quadratic curve through the averages. A look at the data reveals that individuals in 1998 generally earn more than those of the same age in 1993. The 1998 trend line bears this out, lying everywhere above the 1993 line. Thus, we conclude that there has been a genuine shift in the earnings paths.



Source: KwaZulu-Natal Income Dynamics Study (KIDS)

Sample dynamic labour force participants are better off in 1998 than in 1993 on average.

It is important that we are not interpreted as saying that all or even most participants are well-off in 1998. Up to this point we have only assessed average earnings changes. To assess the experience of those at the bottom end of the earnings distribution, Table 1 shows the transition experience by low earnings status across the two periods. A first look at the table is disturbing as it reveals that 62 percent of workers were in low earnings status in both 1993 and 1998. This large magnitude of individuals being stuck in low earnings is heavily linked to the mass (29 percent) of dual zero earners, but shows that a considerable number of individuals are engaged in low paying work.

Table 1: Low Earner Transition Matrix
Number and Percent of Individuals with Earnings Above and Below Low Earnings Line in 1993 and 1998

| Earnings: | Below Low Earnings Line in 1998 | Above Low Earnings Line in 1998 | Total |
|---------------------------------|---------------------------------|---------------------------------|--------------|
| Below Low Earnings Line in 1993 | 549 62.2% | 129* 14.6% | 678 76.8% |
| Above Low Earnings Line in 1993 | 77** 8.7% | 128 14.5% | 205 23.2% |
| Total | 626 70.9% | 257 29.1% | 883 100% |

Low Earnings Line is equal to R 560 (1993R).
* Escape Rate: 19.0%
** Risk Rate: 37.6%

Additionally, those initially earning above the low earnings line appear quite vulnerable to dropping below the low earnings line. In our data, 38 percent of those initially above the low earnings line in 1993 fell below the line in 1998. On the other hand, low earnings in one period does not indicate a lifetime of low earnings. Approximately one out of every five (19 percent of) individuals who were low earners in 1998 were able to escape this status in 1998. If the 38 percent risk rate and the 19 percent escape rate were to persist, the steady state outcome would be a labour force with just 34 percent of the population earning above the low earnings line in any given period. The vulnerability of those above the low earnings line may, therefore, become a prominent issue for labour economists.

In a final assessment of the table, however, we find that it shows considerable gains for workers on the whole during this period. The percentage of workers earning below the low earnings level decreased by 5.9 percentage points between 1993 and 1998. While this 19 percent escape rate is not as large as the 38 percent risk rate, it resulted in many more individuals moving above the low earnings threshold in the current period. Some of the apparent fluidity across the low earnings threshold is undoubtedly a statistical artifact driven by measurement error, but classical measurement error would not be expected to cause such an increase in the percentage of the overall population out of low earnings status.

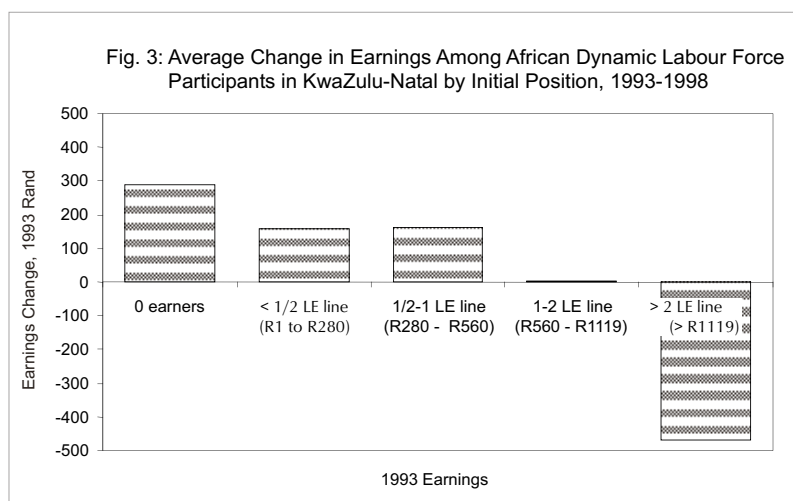
Thus, while a third wave of the panel would be extremely useful to see if those who get out of low earnings status can stay out and to see if the risk rate is reduced, the changes in the 1993 to 1998 period were very positive in reducing the number of individuals earning minimal levels. The percentage of the dynamic labour force earnings above the low earnings line increased by 25 percent.

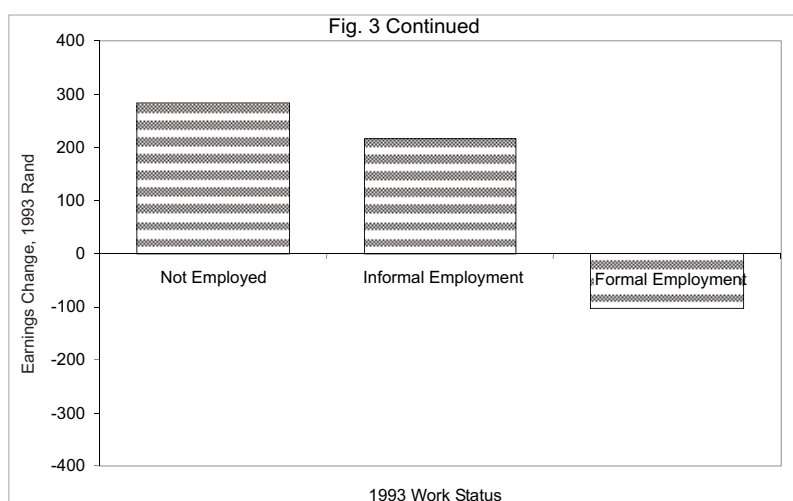
We now turn to a different issue; namely, how did the earnings change experience of those who were in the bottom sections of the earnings distribution in 1993 fare relative to those who were in the upper sections of the distribution in 1993?

IV. Were the Earnings Changes Progressive or Regressive?

Panel Results

Figure 3 presents the average change in real reported earnings by initial earnings category. The results are striking in their progressive nature. Of course, the initially unemployed had to have had positive earnings gains. Nonetheless, the magnitude of the average change (R282) is quite large. Additionally, initial low but non-zero earners showed marked progress, while initial high earners either stagnated or fell in terms of earnings. Those with the highest initial earnings experienced substantial losses in real reported earnings. Not surprisingly, a simple regression of change in earnings on initial earnings shows a statistically significant negative coefficient implying convergence towards the grand mean (-0.43).





Changes by initial work status appear to confirm the progressive nature of changes reported by initial earnings category (see Figure 3). Average earnings changes are estimated to be negative among those initially employed in the formal sector. On the other hand, those initially in the informal sector experience average gains of R216 (R146 excluding outliers). Given that average earnings was R904 among 1993 formal sector workers and R281 among 1993 informal sector workers, the estimated growth rate in earnings is -2.6 percent for those originally in the formal sector and 13.2 percent for those originally in the informal sector. This evidence also helps to alleviate some of the concerns that measurement error might be driving the progressive relationship found in analysis based on initial earnings levels.¹³

What if the panel approach had not been used?

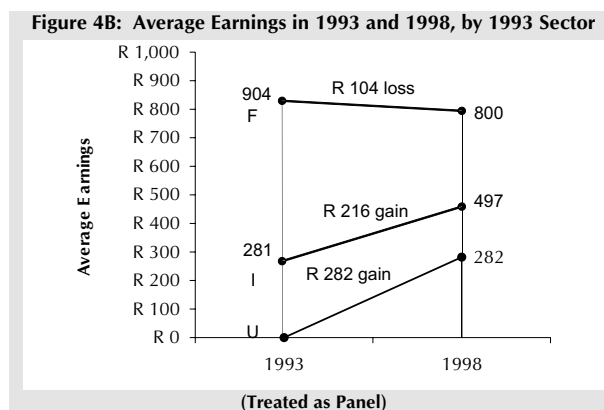
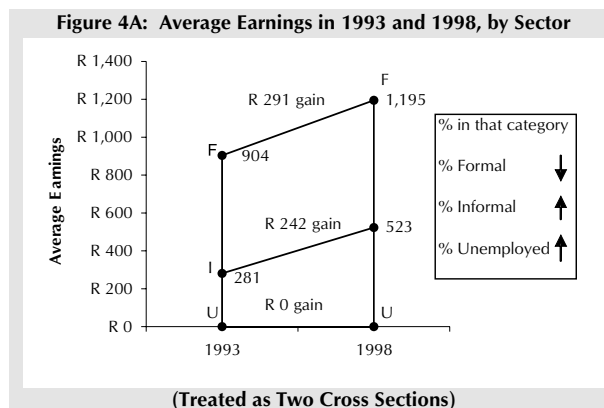
In the results presented above, progress has been measured using the second period earnings minus the same individual's first period earnings. We then assessed how individuals progressed based on specific initial household characteristics that may change over time, such as their initial earnings or work status. This can only be done with panel data. Had we not had a panel or had we chosen not to use the panel feature of the data, a different methodology would have been used. We would have taken the average earnings in the first period for a group of individuals with a given characteristic and compared this with the average earnings from the set of individuals who had that same characteristic in the second period.

Thus, with panel data, we compare how a person is doing today with how that same person was doing before. With cross-sectional data, we compare how groups of people are doing compared to each other at a point in time and then compare how this changes over time. These groups could be high earners versus low earners, formal workers versus informal workers, or other such comparisons. If people did not swap positions, then these two approaches would both be addressing the same question. It is important to recognise that the answers in the cross-sectional setting may offer little guidance to the answers in the longitudinal setting. As we shall now show,

this is not only true in theory, but also in practice.

In the case of the progressive nature of changes in individual earnings in KwaZulu-Natal, the answers using the 1993 and 1998 data as two cross sections prove to be strikingly different. First, the Gini coefficient, a commonly used indicator of inequality, rose from .737 in 1993 to .739 in 1998. This implies increased inequality. Additionally, among workers, the percentage of persons employed in the relatively low paying informal sector increased from 36.7 percent to 42.7 percent. This cross sectional picture is in accord with the orthodox view on the labour market that was spelled out in the introduction to this paper. It also resonates with the pre-existing literature that employment of highly-skilled workers in South Africa has been increasing while that of less-skilled workers has been decreasing (Whiteford and Van Seventer, 2000, Edwards, 2000). These cross-sectional facts seem to imply that cumulative advantage (the idea that the rich capitalise on connections and other benefits from their early advantage to gain even greater economic advantage) and labour market twist (the belief that the world labour market has had an increased demand for high skilled workers and decreased demand for low skill workers) had been the dominant forces.

The differences between the cross-sectional and panel results are seen clearly by comparing Figures 4A and 4B. Figure 4B shows the previously discussed progressive average change in



earnings, based on initial work status. Figure 4A shows the average monthly earnings among workers in different employment sectors in 1993 and 1998. The average monthly earnings among formal workers was R904 in 1993 and R1,195 in 1998, a gain of R291. The average monthly earnings among informal workers was R281 in 1993 and R523 in 1998, a gain of R242. The average earnings of unemployed workers was, of course, zero Rand in both periods, implying no gain or loss. The cross-sectional patterns show earnings gains of similar magnitudes in the formal and the informal sectors and, of course, no earnings gain among those not employed.

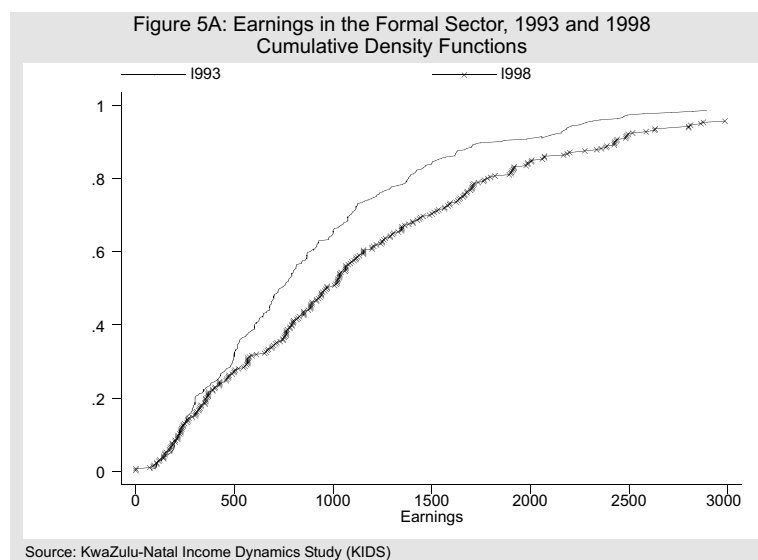
Table 2 starts a more detailed, cross-sectional interrogation of the changes in the earnings from formal employment. It shows that the average earnings for those working in formal employment in 1998 were 32 percent greater than the average earnings for those engaged in formal employment in 1993. The earnings level at the 75th percentile of the formal sector earnings distribution in a given year grew substantially more in percentage as well as absolute terms than the earnings level at the 25th percentile of the earnings distribution.

| | 1993 | | 1998 | | 1993 to 1998 | |
|------------------------|----------|------|----------|-------|----------------------------|---------------------|
| | Earnings | s.e. | Earnings | s.e. | Change in Average Earnings | Percentage Increase |
| <u>Formal Sector</u> | | | | | | |
| Average | 904.2 | 86.9 | 1,194.9 | 127.8 | 290.7 | 32% |
| 25th Percentile | 415.4 | 43.2 | 460.4 | 49.2 | 45.0 | 11% |
| 50th Percentile | 741.7 | 34.3 | 969.3 | 48.7 | 227.6 | 31% |
| 75th Percentile | 1,218.7 | 69.7 | 1,658.3 | 101.4 | 439.6 | 36% |
| <u>Informal Sector</u> | | | | | | |
| Average | 281.0 | 61.6 | 523.0 | 64.2 | 242.0 | 86% |
| 25th Percentile | 57.0 | 8.8 | 113.5 | 16.0 | 56.5 | 99% |
| 50th Percentile | 165.0 | 24.5 | 290.8 | 27.5 | 125.8 | 76% |
| 75th Percentile | 300.0 | 33.2 | 567.4 | 48.0 | 267.4 | 89% |

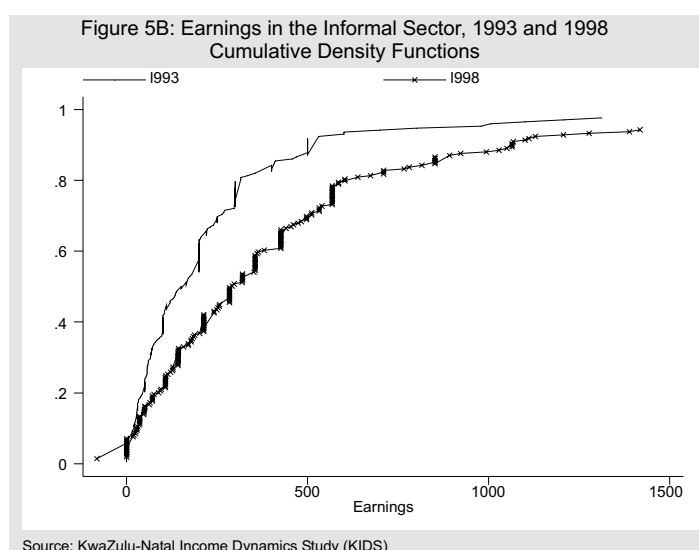
Source: KwaZulu-Natal Income Dynamics Study (KIDS)

Figure 5A overlays the cumulative density functions for the 1993 and 1998 formal sector earnings distributions. This figure shows that earnings among the lower earners in formal employment (up to roughly the 30th percentile) were similar in the two years. On the other hand, earnings were much higher in 1998 than in 1993 for those in the higher percentiles of their respective formal sector distributions, as denoted by the horizontal gap in the two cumulative density functions.

Using this information alone, one might be tempted to conclude that things were getting better for the initially most advantaged. However, jumping to this conclusion disregards several facts: the reduction of formal sector employment, the fact that individuals move between formal and informal or unemployed positions, and the fact that individuals who were formal in both periods often trade places within the earnings distribution. Analysis of longitudinal data at the start of this section shows that earnings did not improve for the initially most advantaged.



Moreover, there is much less support for cumulative advantage from a closer cross sectional examination of earnings from informal employment. The average earnings derived from informal employment in 1998 was R242 larger than the comparable average earnings in 1993. While this gain was similar to the R291 increase in average formal employment earnings, it implied a stunning 86 percent increase in average informal employment earnings in just four and a half years. This large increase in average earnings occurred at a time when 24 percent more panel persons were engaged in informal employment compared to 1993. Additionally, changes in earnings were greater in percentage terms (though not in absolute terms) at the 25th percentile of the respective earnings distributions (99 percent) than they were across the 50th percentile (76 percent) or 75th percentile (89 percent). Figure 5B shows that gains across percentiles of the distribution were realized at lower percentiles in the informal sector as compared to the formal sector and that these gains were already quite substantial in comparison to the initial level of earnings.



This pattern of changes in the employment and earnings levels of those working in the informal sector in 1993 and 1998 suggests that the informal sector could have played an important role in the progressive nature of changes. The informal sector is often thought of as a middle ground between unemployment and formal sector employment. An increased number of individuals employed in this sector in 1998, therefore, is seen to imply gains for those moving from the unemployed and, typically, losses for those moving from the formal sector. Increased average earnings within the sector implies further progressivity (assuming this change is uncorrelated to initial sector of employment) as it implies lower losses for those coming from the formal sector and greater gains for those coming from unemployment or who were in the informal sector. Additionally, while the informal sector is thought of as a “middle” ground, the 1993 average earnings of informal workers were actually well below the 1993 average earnings of all dynamic labour force participants. Thus, changes for those who remain in the informal sector (if they had comparative initial earnings) would be movements starting below the grand mean and moving towards the grand mean.

The changes in average earnings in the informal sector suggest that the large average gains in earnings are partially due to the increased activity in the informal market. The informal sector's contribution to total earnings among Africans moved from 15 percent in 1993 to 25 percent in 1998. The gain in the informal sector wage bill accounted for approximately one half of the overall increase to the total wage bill. This may somewhat overstate the extent to which the informal sector drove the growth in average earnings as some of the informal employment likely was replacing what was previously formal sector employment and earnings. Yet, the data are highly suggestive that the informal workers were seizing new earnings opportunities that did not exist in 1993. The strength of these gains strongly contributed to the positive growth story that emerges.

The increased earnings at all levels of the distribution of informal sector earnings, particularly in the lower end of the distribution, are also important to note because they only further add to the quandary of why more of the unemployed do not enter the informal sector.¹⁴ A recent article by

Kingdon and Knight (2001b) concludes that either the jobs left available in the informal sector are of such low pay that there really is little “choice” or there are restrictions to entering this sector which implies that the informal sector is not a “free entry” sector. The substantial inflow into informal employment among panel households suggests either that some restrictions are being removed or that the potential gains are now large enough so that workers evade the restrictions that remain or risk the punishments for violating the restrictions. Yet, this is not to imply that these restrictions are easily overcome and no longer a concern. On the contrary, the opportunities in the informal sector appear more bountiful than ever and yet we still observe 45 percent of the population in unemployment. The quandary remains as large as ever.

In summary then, we started this section by using our panel data to show that the change in the labor market for Africans in KwaZulu-Natal has been quite progressive in nature. Those starting in the best employment positions (formal workers and workers earning more than twice the low earnings line) experienced earnings losses on average (see Figure 4B). Those starting in the informal sector experienced sizable gains on average. The unemployed, of course, averaged positive earnings gains, the magnitude of which was surprisingly large.

We then showed that this did not accord with the picture that emerged from an analysis of the formal sector cross section data. This cross sectional perspective seemed to imply that the pattern of earnings dynamics was regressive in KwaZulu-Natal. The cross-sectional analysis of the informal sector gave more support to the progressivity of earnings. The use of panel data for a cross sectional analysis of the changing composition of the workforce is hampered by the fact that the panel members are not representative of the complete set of labour force participants engaged in these sectors. The 1998 sample is missing recent immigrants and others who may be engaged in the lower end of the informal sector distribution. In addition, both years also exclude the very young labour force participants who also may be filling the lower end of the informal spectrum. In this regard, the 1998 “cross-section” would be even more affected. Still, the scope of the changes are quite large and highly suggestive of changes we would expect to find in the underlying population of labour force participants.

At the end of the day, the results show that cross-sectional data cannot provide answers to the kinds of fundamentally dynamic questions that policy makers have in mind when assessing the costs and benefits of labour market changes to workers at different positions in the earnings distribution. This is particularly important because many of the key labour market questions in contemporary South Africa are dynamic rather than static. And our results establish clearly that the earnings changes were larger for workers with the lowest initial reported earnings and those who started employed informally or not employed at all. These progressive changes occur even though earnings inequality has increased if one views the panel earnings as two independent cross-sections. This earnings change result does not appear to be driven by measurement error or earnings changes due to increased experience. There are substantially fewer individuals earning extremely low levels of pay (or no pay). Keeping these issues in mind, for the rest of the paper we turn back to an exclusive focus on the longitudinal nature of the panel in order to investigate factors that appear related to earnings changes in KwaZulu-Natal.

V. Further Analysis of the Determinants of Earnings Changes

In the previous sections, we provided evidence that prime working aged Africans enjoyed large earnings gains on average and that these gains were progressive in terms of initial earnings levels and base-year sector of employment. This naturally leads one to ask, how did this happen? The rest of the study provides a first step in addressing this question. We provide an extensive description of how earnings changes relate to the most obvious sources: a change into or out of employment or across informal and formal sectors. We also assess how other important base year covariates – those based on demographics and initial employment outcomes – relate to earnings changes. We then combine employment status changes and the other base year covariates into a multivariate analysis of earnings changes. We explore both the direction of earnings change associated with these characteristics and the importance of these characteristics in the ability to account for the variation in earnings changes.

Work Status Transitions and Their Relation to Earnings Change

First, we explore the ways in which employment dynamics relate to the change in earnings that African workers experienced. Table 3 is a work status transition matrix. The first row includes only those who were formal workers in 1993. Reading across, 58 percent were again engaged in formal employment in 1998, 18 percent had moved to the informal sector and 24 percent were no longer employed. The second and third rows provide similar details for those initially in the informal sector and those initially not employed, respectively. Table 3 shows that many people have moved into and out of employment and many others have moved between formal and informal sectors of the economy.

Table 3: Work Status Transition Matrix, Number and Percent in 1998
Work Status Conditional on 1993 Work Status

| | Formal sector in 1998 | Informal sector in 1998 | Not employed in 1998 | Total (Column Percent) |
|-------------------------|-----------------------|-------------------------|----------------------|------------------------|
| Formal sector in 1993 | 191 58% | 59 18% | 77 24% | 327 36% |
| Informal sector in 1993 | 30 17% | 72 42% | 70 41% | 172 19% |
| Not employed in 1993 | 81 19% | 85 21% | 249 60% | 415 45% |
| Total | 365 33% | 237 24% | 418 43% | 915 100% |

Source: KwaZulu-Natal Income Dynamics Study (KIDS)

Given that the data set is limited to only two points in time, there is no way to identify spells of employment or unemployment that may have occurred in the intervening years. It is clear, however, that all workers are vulnerable to future spells of non-employment. For example, nearly one in four of those employed in the formal sector in 1993 were not working in 1998. For those formal workers who were in unions in 1993, 21 percent were not working in 1998 (results not shown). Even among those earning greater than twice the low earnings line in 1993, 19 percent were not working in 1998 (results not shown).

Table 4 provides a first look at how these movements across sectors of employment and into and out of employment relate to changes in earnings. The table provides the average earnings change by particular work status transition experience. For example, the average earnings change for those who were in formal employment in 1993 and were not employed in 1998 was a loss of R818. The loss for those who moved from informal employment to non-employment was R182.

| | Formal sector in 1998 | Informal sector in 1998 | Not employed in 1998 |
|-------------------------|-----------------------|-------------------------|----------------------|
| Formal sector in 1993 | R 207 (83) | - R 145 (96) | - R 818 (111) |
| Informal sector in 1993 | R 839 (169) | R 343 (182) | - R 182 (29) |
| Not employed in 1993 | R 1,278 (137) | R 255 (29) | R 0 (-) |

These average earnings changes provide some useful insights and also some surprising information. First, as expected, the gains associated with entering the formal sector are larger than the gains associated with entering the informal sector. Likewise, the losses associated with leaving the formal sector are greater than the losses associated with leaving the informal sector. The fact that the average gains from entering are larger than the average losses from leaving is to be expected given the cross-sectional differential in average earnings for each sector. However, these declines were less than the average 1993 earnings in each sector, implying that the individuals losing their jobs were below average in earnings potential for their respective sectors.

Second, the earnings changes for those who are employed in the same sector in both periods are positive with the surprise that those who remain in the informal sector experience considerably larger earnings changes on average than those who remain in the formal sector. This average gain of R343

for ual informal workers is particularly strong given the fact that the average informal worker in 1993 earned R281. This is another sign that some informal workers are engaged in business that has moved well beyond the subsistence level that people often associate with such small businesses or casual employment. Of course, the fact that 41 percent of those initially in the informal sector end up as zero earners (see Table 3) highlights the casual and risky nature of much informal work.

Third, the earnings changes associated with movements between formal and informal sectors do not appear to be symmetric in nature. When moving from informal to formal employment earnings increase by a mammoth R839 on average, but the average decrease in earnings from moving to the informal sector from the formal sector is just R145. Table 5 further emphasises this point, presenting the percentage of individuals in a given work experience category who have positive earnings gains between 1993 and 1998. The movement from informal to formal is again a very positive experience, with fully 87 percent of such workers experiencing earnings gains. Most of those (56 percent) who move from formal to informal employment experience earnings losses. However, the fact that as many as 44 percent of such individuals experience an increase in earnings following such a transition is contrary to the popular belief that such a change implies an automatic loss in earnings. It is, however, consistent with a phenomenon discussed in the literature on the informal sector, where workers gain access to financial or human capital in the formal sector that they later use to create their own businesses [Fields (1990), Maloney (1998)].

Table 5: Percent Experiencing Positive Gains in Real Monthly Earnings by Work Status Transition Experience

| | Formal sector in 1998 | Informal sector in 1998 |
|-------------------------|-----------------------|-------------------------|
| Formal sector in 1993 | 63% | 44% |
| Informal sector in 1993 | 87% | 67% |

Fourth, while moving into the formal sector implies nearly universal gains with sizable average gains, there are other means of improving earnings. In Table 6, we divide the block of workers experiencing positive earnings changes into percentages based upon their work status transition experiences. Table 6 shows that 41 percent of the people who had positive earnings gains were working in the informal sector in 1998, including a contingent of workers who were previously working in the formal sector. An additional 31 percent of positive gainers were in the formal sector in both periods, rather than having changes associated with a transition to the sector. We have already shown that those remaining in the informal sector have large average gains (over R300), ruling out any notions that the formal sector was the only sector providing earnings changes large enough to change a household's level of well-being.

Therefore, Tables 3 to 6 provide convincing evidence against the hypothesis that the only way to improve earnings in South Africa is by acquiring a formal sector job. The distribution of earnings

Table 6: Percentage of Positive Earnings Changes by Work Status Transition Experience

| | Formal sector in 1998 | Informal sector in 1998 |
|-------------------------|-----------------------|-------------------------|
| Formal sector in 1993 | 31.4% | 6.7% |
| Informal sector in 1993 | 7.3% | 13.5% |
| Not employed in 1993 | 19.9% | 21.1% |
| Total | 58.7% | 41.3% |

gains breaks down this way: 41 percent of individuals who experienced income gains had no involvement with the formal sector in 1998, 31 percent of the gainers were formally employed in both periods, and 27 percent gained by becoming formally employed. Thus, although formal employment is an important means of upward mobility, upward mobility within the informal sector is also of considerable importance in KwaZulu-Natal.

The Relative Importance of Different Variables in Accounting for Earnings Changes

In order to better understand the role that work status transitions and other covariates play in earnings changes, we move to a multivariate framework. In this way we can see the influence of employment transitions in predicting earnings change when controlling for other observable characteristics that are related to such changes. Basic demographic characteristics, such as age and education, could clearly affect one's change in earnings if the returns to experience or to education were changing in the immediate post-apartheid era. Additionally, one's gender and the characteristics of one's initial employment could be linked systematically to earnings changes.

One reason to suspect the change in earnings to differ by education level, in particular, is that multiple studies have noted an increased demand for skilled labour, while often lamenting the lack of skills in the workforce [see Borat (2000a, 2000b)]. There are other reasons to suspect that those with different education levels will have different earnings change experiences. For example, steeper age-earnings profiles are commonly associated with the better educated [Ehrenberg & Smith (2000)]. Additionally, Schultz suggests that in periods of disequilibrium, the higher educated should adjust more quickly [Schultz (1975)]. Although residential restrictions had been removed years earlier, the immediate post-apartheid era could certainly be considered a time of disequilibrium as the nation and economy adjusted to the new social order.

Table 7 presents a univariate look at the influence these characteristics have on earnings change. These univariate results are discussed in detail in Cichello et al. (2001a) and we will only summarise them here. Differences amongst demographic characteristics are fewer than expected. Differences across gender are slight and not statistically significant. Differences across education levels are not as large as expected and likewise are not statistically significant.

| Table 7: Average Change in Earnings Among Selected Groups of African Dynamic Labour Force Participants in KwaZulu-Natal, 1993-1998 | | | | |
|--|--------------------------|---------------------------------------|-------------------------|--------|
| | | Percent of Dynamic Labour Force | Average Earnings Change | |
| | | | coef. | s.e. |
| | | | * | |
| | TOTAL | 100% | 135.9 | 35.6 |
| <u>A. 1993 Demographic Characteristics</u> | | | | |
| <u>Urban-rural</u> | | | | |
| | Rural | 70% | 102.0 | 40.8 |
| | Urban | 30% | 214.0 | 65.6 |
| <u>KwaZulu-Natal</u> | | | | |
| | KwaZulu | 85% | 138.3 | 40.8 |
| | Natal | 15% | 122.5 | 56.5 |
| <u>Gender</u> | | | | |
| | Female | 59% | 128.7 | 35.8 |
| | Male | 41% | 146.0 | 56.5 |
| <u>Age</u> | | | | |
| | | | * | |
| | 25 to 34 years old | 46% | 238.9 | 48.7 |
| | 35 to 44 years old | 35% | 53.0 | 42.8 |
| | 45 to 54 years old | 20% | 44.2 | 85.9 |
| <u>Education level</u> | | | | |
| | None | 14% | 75.7 | 39.1 |
| | Some/completed primary | 41% | 129.2 | 51.0 |
| | Some/completed secondary | 42% | 183.9 | 62.2 |
| | Postsecondary | 3% | -153.7 | 162.7 |
| <u>Household head</u> | | | | |
| | No | 72% | 155.8 | 39.5 |
| | Yes | 28% | 84.8 | 61.8 |
| <u>Stockvel member in household</u> | | | | |
| | | | * | |
| | No | 94% | 120.3 | 35.68 |
| | Yes | 6% | 384.69 | 118.58 |
| <u>Other formal sector worker in household</u> | | | | |
| | No | 59% | 118.0 | 34.3 |
| | Yes | 41% | 161.7 | 67.3 |

Table 7 (Continued)

B. 1993 Labour Market OutcomesWork Status

| | | | * | |
|---------------------|-----|--|--------|------|
| Non-available | 16% | | 235.9 | 51.7 |
| Discouraged | 24% | | 289.4 | 52.2 |
| Searching | 6% | | 371.8 | 95.2 |
| Informal employment | 20% | | 215.9 | 82.6 |
| Formal employment | 35% | | -103.7 | 50.0 |

B1. Characteristics of Those Employed in 1993Occupational Skill Level

| | | | + | |
|-----------------------------|-----|--|--------|-------|
| Unskilled | 35% | | -12.6 | 86.3 |
| SemiSkilled | 35% | | -112.1 | 63.1 |
| Skilled | 9% | | -43.6 | 146.5 |
| Selfemployed, skill unknown | 22% | | 258.3 | 124.8 |

Industry of Employment

| | | | | |
|----------|-----|--|--------|-------|
| Agri | 13% | | -39.8 | 37.4 |
| Commerce | 16% | | 202.5 | 175.8 |
| Services | 40% | | -4.9 | 67.2 |
| Manu | 25% | | -57.7 | 122.6 |
| Other | 7% | | -145.5 | 114.3 |

B2. Characteristics of 1993 Formal Employees Only

| | | | | |
|----------------------------|-----|--|--------|-------|
| Non-union | 66% | | -160.8 | 50.2 |
| Union | 34% | | 8.2 | 127.3 |
| Private employee | 76% | | -107.8 | 63.1 |
| Public/parastatal employee | 24% | | -90.8 | 105.4 |

Source KwaZuluNatal Income Dynamics Study (KIDS)

Point estimates and standard errors derived using 1993 sample weights (adjusted for January 2003 re-release) and observations from those resident in both 1993 and 1998.

* denotes statistical significance at the 5% level using an F-test on category variables

+ denotes statistical significance at the 10% level using an F-test on category variables

In general the progressivity of earnings appears to be coming to a large degree within these key demographic groups rather than between them. Although the changes analysed have been relatively similar in terms of Rand increases, the change in terms of percentage gains clearly favour the initially low earning group. Other changes, while not particularly reinforcing the notion of progressive changes in earnings, certainly do not contradict this notion.

Turning now to multivariate analysis, Table 8 presents results from a regression of reported earnings change on work status transition experiences, reported initial earnings category, and base year demographic and labour market covariates.

| Table 8: Multivariate Regressions of Earnings Change on Selected Variables | | | |
|--|--|--------|------|
| Number of Observations | | 883 | |
| Adjusted Rsquared | | 0.344 | |
| | | coef | s.e. |
| | Constant | 466 | 541 |
| <u>A. 1993 to 1998 Employment Dynamics</u> | | | |
| | <u>Work status transition experience</u> | * | |
| | Formal to formal (omit) | | |
| | Formal to informal | -420 | 160 |
| | Formal to not employed | -1,082 | 158 |
| | Informal to formal | 197 | 160 |
| | Informal to informal | -309 | 216 |
| | Informal to not employed | -885 | 137 |
| | Not employed to formal | -119 | 264 |
| | Not employed to informal | -1,064 | 263 |
| | Not employed to not employed | -1,362 | 266 |
| <u>B. Initial (1993) Earnings Level</u> | | | |
| | 0 earners | 1,487 | 313 |
| | < 1/2 LE line (R1 to R280) | 1,044 | 243 |
| | 1/2-1 LE line (R280 - R560) | 950 | 241 |
| | 1-2 LE line (R560 - R1119) | 562 | 206 |
| | > 2 LE line (> R1119) (omit) | | |
| <u>C. 1993 Labor Market Outcomes</u> | | | |
| <u>C-1. Characteristics of 1993 Employees</u> | | | |
| <u>Occupational Skill Level</u> | | | |
| | Unskilled (omit) | | |
| | Semi-Skilled | -64 | 146 |
| | Skilled | 148 | 238 |
| | Self-employed, skill unknown | 202 | 126 |
| <u>Industry of Employment</u> | | | |
| | Manufacturing (omit) | | |
| | Agriculture | -300 | 121 |
| | Commerce | 54 | 149 |
| | Services | -148 | 113 |
| | Other | -220 | 124 |
| <u>C-2. Characteristics of 1993 Formal Employees Only</u> | | | |
| | | * | |
| | <u>Union Member</u> | 233 | 122 |

Table 8 (Continued)

| | | | |
|--|--------------------------|-------|------|
| <u>Public or parastatal employee</u> | | 40 | 126 |
| <u>D. 1993 Demographic Characteristics</u> | | | |
| <u>Urban</u> | | 122 | 87 |
| | | * | |
| <u>Resident of Natal</u> | | -171 | 74 |
| | | * | |
| <u>Male</u> | | 145 | 63 |
| <u>Age</u> | | * | |
| | Age | -52.5 | 23.8 |
| | Age squared | 0.62 | 0.33 |
| <u>Education level</u> | | | |
| | None (omit) | | |
| | Some/completed primary | 112 | 80 |
| | Some secondary or beyond | 140 | 74 |
| <u>Household head</u> | | 40 | 75 |
| <u>Stockvel member in household</u> | | 129 | 109 |
| <u>Other formal sector worker in household</u> | | 56 | 72 |

Source: KwaZulu-Natal Income Dynamics Study (KIDS)

* denotes statistical significance at the 5% level using an F-test on category variables

When interpreting the results, one must take care that the ceteris paribus implications of interpretation are appropriate. The base case is a formal sector employee earning more than twice the low earnings line in 1993 who is again employed in the formal sector in 1998. Thus, when comparing the predicted change to the predicted change of an individual who is not employed in both periods, "all else equal", one must recognise that this implies a change to zero earner status in the 1993 earnings category. Therefore, the earnings changes for those who start non-employed are greater than the base case and, excluding the dual non-employed, they are substantially greater.

Work status transitions and initial earnings are clearly important variables in predicting income change. Wald tests strongly reject the null hypothesis that work status transitions and initial income are unrelated to income change, ceteris paribus. Additionally, the coefficients for different initial earnings experiences and work status transitions are extremely large in magnitude. For example, a person who moved from the formal to informal sector would have a predicted income change R420 less than an otherwise identical person who was again in the formal sector in 1998. Likewise, someone who started just above the low earnings line would have a predicted change R562 higher than an otherwise identical person who earned more than twice the low earnings line in 1993.

Those who had higher initial earnings in 1993, controlling for other base year characteristics, had substantially lower predicted earnings in 1998. As mentioned previously, satisfactory instruments for initial earnings are not available. Therefore, it is not possible to implement a reasonable instrumental variables approach to determine if this result would hold for measures of earnings free of measurement error.

The importance of work status transitions in accounting for change in earnings can be shown by comparing its explanatory power to that of all other covariates. Regressing earnings change on base year covariates including initial income quintile and initial sector of employment (but excluding work status transitions) reduces the adjusted R-squared from .344 to .127 (not shown). On the other hand, running earnings change solely on work status transition dummies gives an adjusted R-squared of .270 (not shown).

Another way to demonstrate the importance of work status is to decompose the sources of inequality in the earnings change distribution. We can answer the question, how much of the inequality in the change in earnings is attributable to factors such as initial work status, education, age, etc.? We answer it using the following decomposition [Fields (forthcoming), Fields and Yoo (2000)]. Let Y_i denote the i 'th workers change in earnings. The equation determining Y (the regression corresponding to Table 8) can be written as follows:

$$Y_i = \sum_j a_j p_{ij} = 'P_i, \quad (1)$$

where

$$a = [\alpha \ \beta_1 \ \beta_2 \ \dots \ \beta_j \ 1]$$

And

$$P = [1 \ p_1 \ p_2 \ \dots \ p_j \ \varepsilon].$$

Given the earnings mobility function (1), let an inequality index $I(Y)$ be defined on the vector of Y_i 's: $Y = (Y_1, \dots, Y_N)$. Let $s_j(Y)$ denote the share of the inequality of Y that is attributable to the j 'th explanatory factor and let $R^2(Y)$ be the fraction of inequality that is explained by all of the P 's taken together. Then, the inequality of Y can be decomposed as

$$s_j(Y) = \frac{\text{cov}[a_j P_j, Y]}{\sigma^2(Y)} = \frac{a_j * \text{cov}[P_j, Y]}{\sigma^2(Y)}, \quad (2)$$

where

$$\sum_{j=1}^{J+2} s_j(Y) = 100\%, \quad (3)$$

$$\sum_{j=1}^{J+1} s_j(Y) = R^2(Y). \quad (4)$$

The s_j 's, the so-called 'factor inequality weights,' hold for any inequality index $I(Y_1, \dots, Y_N)$ which is continuous and symmetric and for which $I(m, m, \dots, m) = 0$. Virtually all inequality indices, such as the Gini coefficient and the Theil index, satisfy these properties.

Table 9 decomposes the sources of inequality in the earnings change distribution using this methodology. In this case, we let initial earnings enter directly in a linear fashion. Work status transitions account for more than any other category of variables, single-handedly accounting for 51 percent of the predicted portion of earnings change.

Table 9 highlights, once again, the surprisingly limited importance of demographic characteristics in explaining changes in individual earnings. Some of these variables had been statistically significant in the multiple regression in Table 8. Interestingly, these demographic variables, after conditioning on the work status transition one experiences and the earnings that one had in 1993, appear to work in favour of those typically associated with initial advantages; urban residents and male workers. Thus, when such initially-advantaged workers do become employed, they appear to break in at higher earnings levels within a sector than rural residents, and females. In comparison to employment changes or unexplained components, however, these changes play a very small role in accounting for earnings changes on the whole.

| Category | s_j |
|--|--------|
| Initial earnings | 12.6% |
| Demographic characteristics | 1.4% |
| Urban | 0.3% |
| Natal | 0.0% |
| Gender | 0.1% |
| Age | 0.6% |
| Education | 0.2% |
| Household head | -0.1% |
| Stockvel | 0.2% |
| Other formal sector worker in household | 0.1% |
| 1993 Labour Market Outcome | 3.0% |
| Work status (omitted- part of transitions) | |
| Skill | 2.2% |
| Industry | 1.3% |
| Union | -0.4% |
| Public/Parastatal | -0.1% |
| Work status transition experience | 17.4% |
| Total explained | 34.4% |
| Unexplained | 65.6% |
| Total | 100.0% |

Source: KwaZulu -Natal Income Dynamics Study (KIDS)

VI. Conclusions

This paper asked three broad questions and reached the following general answers. First, did African workers get ahead or fall behind in KwaZulu-Natal? Our answers are, first, that average earnings grew substantially. Looking behind the average, more people got ahead than fell behind but many people's earnings did not change at all. Looking specifically at a low earnings line, our analysis shows that large numbers of workers escaped poverty but large numbers also fell into poverty.

Our second question was whether the patterns of earnings changes in KZN were progressive or regressive. Using panel data methods, we found that those who started with the lowest earnings and in the poorer employment sectors gained the most. Obviously, workers who started unemployed can only go up, but our results showed that those who started employed in the informal sector enjoyed large earnings gains while those who started formally employed suffered significant earnings losses. We also showed that these sector results would not have been found if cross-sectional methods had been used in place of panel methods. This finding highlights the importance of panel data for answering dynamic labour market questions.

Our third question was, relatively how important are initial earnings, sector change, demographic factors, and other variables in explaining earnings changes? We found that sector change is the most important variable and initial earnings is a close second. Together, these two variables account for nearly all of the explained variation in earnings changes. The remaining variables most importantly, the worker's education and gender but other demographic and industry variables explain virtually nothing about earnings change.

Several policy conclusions are suggested by these results. The first is an endorsement of economic growth. Significant numbers of African non-earners and low earners derived notable earnings gains over a period of moderate growth in KwaZulu-Natal. There were also losers in this process but the net earnings effect was clearly positive.

The second is the need for policies to increase the derived demand for labour in the formal sector. Formal sector employment could be stimulated through two mechanisms:

- Shifting the demand for labour by promoting growth through increased investment and export expansion. Reliance on maintaining macroeconomic fundamentals has not appeared to be a sufficient condition to induce such investment. The authors believe this to be a necessary condition, but encourage seeking increased input from business executives themselves on how to encourage such investment as well as how to maximise the numbers of jobs per increment of investment.
- Improving labour market functioning by reducing information and transactions costs associated with the use of labour. These costs include anything from the cost incurred by an unemployed labourer trying to bus into the city to find work to the cost incurred by an employer who is trying to dismiss a completely non-productive worker. Such costs inhibit the formation of potentially vibrant job matches and earnings growth.

The third is the need for a more positive and proactive policy towards the informal sector. The informal sector is not simply a repository of survivalist activities. Rather, it is dynamic and the source of employment and earnings growth for large numbers of KZN workers. Additionally, evidence is suggestive of continued barriers to entry in this sector. These barriers need to be uncovered and assessed.

Looking to the future, the most important task that lies ahead is to understand better the workings of various segments of the South African labour market and the interactions between them. The crucial elements that need to be analysed are earnings levels and changes and employment structures and transitions.

Additionally, the sources of dynamism in the informal sector are not well understood. In order to implement policies to raise productivity and earnings *within* informal wage employment and self employment, a better understanding of the institutions at work in the informal market is needed.

Much can be learned from analysis of panel data that cannot be learned otherwise. There is a panel component to the twice-yearly Labour Force Surveys that Statistics South Africa has been conducting since 2000. There have been a few delays in the release of this panel in usable form. It is important that analysis begins as soon as possible. This will allow for a national picture to be drawn. In addition another potentially important task is to update the KZN panel that served as the basis for this paper. The current panel is becoming dated, and a third round would be useful for both analytical and policy purposes. As noted earlier, the first wave was undertaken as part of a national living standards survey. The sample was not drawn explicitly to serve as the basis for an ongoing panel. The 2001 revised release and the further revised release in 2003 both reflected the loss of some clusters in the panel due to the unreliability of data. Clearly support for a third wave is conditional on a positive outcome of an assessment of whether the sampling frame can bare the weight of a third round.

END NOTES

¹ Carter et al. (2003) provides more details on this re-release. In short, it was discovered that some household information in the original release was fabricated by survey personnel. After an extensive verification process (which included visits to over half of the clusters in the survey), six clusters were removed from the original KIDS release.

² This analysis uses a de facto definition for resident household members. To qualify, a person must have resided in the household for at least 15 days in the month before the household was surveyed.

³ There is a literature detailing the difficulty that many new entrants into the labour market have had in gaining employment in South Africa (see, for example, Borat and Leibbrandt in Borat et al, 2001). Thus, there is a possibility that the inclusion of those younger than 25 in 1993 would have swelled the ranks of those who were not employed in either of 1993 and 1998.

⁴ This definition of formal and informal employment differs from the definition in the October Household Survey and some literature in South Africa where formality is defined based on the VAT status of the employer.

⁵ The 1998 earnings data were deflated by 1.410. This was based on the national CPI index for September 1993 and March 1998. These two months contained the interview date of the median household. There was relatively little inflation in the period of interviewing in both years.

⁶ Self-employment profits were computed on a per business basis and were given to those working in the business in a somewhat arbitrary manner. If two persons worked in the business, the profits were split 2:1 in favour of the one listed as most active in the business. Similarly if three persons were in the business, profits were split 4:2:1, with the owner (listed in 1998 only) getting the largest portion regardless of time spent.

⁷ This fact, unusual for Africa, is well documented. See, for example, Carter and May (1998).

⁸ A more technical discussion can be found in Fields et al. (2002).

⁹ This analysis was completed on data from the original release of the KIDS data.

¹⁰ Source: STATSSA; Average quarterly GDP (annualized) 1993:4-1998:2.
(<http://www.statssa.gov.za>.)

¹¹ Zero earnings (i.e. zero profits) were reported from about a dozen informal workers in each year.

¹² Borat and Leibbrandt in Borat et al (2001) calculate that for 1995, given average rates of employment and unemployment within households and given the value of the household poverty line for a household of average size and composition, each employed member is required to earn R650 per month to bring that households income to the poverty line. We followed this precedent and defined the 1993 equivalent, R560, as our low earnings line.

¹³ The sector of employment is strongly correlated to initial earnings but does not include the measurement error term associated with the reported initial earnings. Therefore, the relationship between earnings change and sector of employment does not include the negative spurious correlation induced by measurement error when comparing reported earnings change to reported

initial earnings.

¹⁴ The earnings at percentiles as low as the 10th percentile and 15th percentile of earnings, are higher in 1998 as compared to 1993. As we are dealing with many small businesses, where failure rates are high, this disparity in earnings across years is gone in the lowest percentiles (by the 5th percentile of earnings). Barring a tremendous increase in the probability of businesses failing, the increased earnings at any percentile above the tenth percentile suggests that real expected profits for potential businesses are above the minimum level that people required to enter the informal sector in 1993. There appear to be profitable opportunities that are unexploited..

¹⁵ However, work presented in Cichello (2002) has shown that these relatively small differentials by education levels could be a by-product of sample attrition. This fact, unusual for Africa, is well documented. See, for example, Carter and May (1998).

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