

The role of education in labour earnings, poverty and inequality¹

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by

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1. Introduction

As South African poverty and inequality are strongly rooted in the labour market, the origins of labour market earnings differentials require attention. Despite the continuing relevance of race for identifying the poor and analysing labour market outcomes, labour market race discrimination has declined as cause of inequality compared to other factors also often correlated with race, such as education, location (urban/rural), family size and composition. Moreover, if cognisance is taken of large differentials in educational quality usually ignored in earnings functions, the residual earnings differentials that are usually ascribed to labour market race discrimination may well be small. This emphasises the need to concentrate on the one factor amenable to policy intervention, education.

This paper explores some of the distributional consequences of education. The paper will show that quantitative educational differentials have been substantially reduced and that the real educational challenge relates to the quality of education. The next section (Section 2) will first look at education in wider development literature, both with respect to distribution and to growth. Section 3 looks at the relation between education, inequality and poverty in the South African context. Section 4 discusses some educational policy alternatives arising from the foregoing analysis, before concluding remarks follow in Section 5.

2. Education, inequality and growth

The international development literature shows that economic growth contributes most to reducing poverty if it utilises the major asset of the poor, their labour (De Haan *et al.* 1997). This may require expanding and improving education so as to reduce earnings differentials

¹ This paper draws on some of the author's ongoing research (only some of it published), *inter alia* Van der Berg 2001a; 2001b; 2001c; van der Berg *et al.* 2002.

and thereby improve job access for the poor to available jobs. Education enhances the earnings potential of the poor, both in competing for jobs and earnings in a static labour market and as a source of growth and employment in itself. As Kanbur (1998: 20) puts it, “*The distribution of physical and human capital emerges from the theoretical and empirical literature as the key to distributional consequences of growth, and as the determinant of growth itself.*”

Experience from Latin America, a continent sharing South Africa’s middle-income status and high inequality, offers a useful perspective in considering South African inequality. While inequality in middle-income countries “*results not only from differences between owners of capital and workers, but from a divergence of incomes among workers*” (Inter-American Development Bank (hereafter IADB) 1998:1), a large part of Latin America inequality “*relates to the difference between the top 10 percent of the population and the rest*” (IADB 1998: 1). While the per capita income of the richest decile exceeds that of the second richest decile by 60% in the USA and by 160% in Latin America, it is 208% higher in South Africa². In South Africa, too, “*much of this gap between the top 10 percent and the rest reflect the ... slow and unequal progress in improving the level and quality of schooling*” (IADB 1998: 2). As in South Africa, Latin America primary education is virtually universal, while the current challenge remains “*to improve the quality of primary education and to universalize secondary education*” (IADB 1998: 5), which also has a determining influence on access to higher education. Interestingly, Lam found that educational inequality has remained far larger in Brazil than in South Africa. This finding is supported by the work of Filmer and Pritchett (1998), who find that Latin American educational inequality is still larger even than in many countries of Southern and Eastern Africa (though South Africa was excluded from their sample). Londoño (1996) confirms that Latin American educational performance, in terms of years of education completed, lags far behind most other countries at this level of economic development.

Internationally, research has shown the importance of education for labour force participation, employment, and earnings. Ferreira and Litchfield (1998: 32), for instance, report that between one-quarter and one-third of income differentials between households in Chile can be ascribed to differences in the educational attainment of the household head; in South Africa this proportion is lower (about 16% in 1995), yet still very important. Future labour market

² The South African data are based on expenditures, not income; incomes may even show greater inequality.

inequality depends on educational outcomes and the evolution of the demand for skills. International experience indicates that without an acceleration in the availability of such skills, educational premia are likely to remain high. In the USA, only an enormous expansion in secondary schooling after 1910 made possible a reduction in the returns to education until the 1950s, after which time returns again rose as skills demand outstripped their supply because of “skill-biased technological change” (Goldin & Katz 1999: 25; for more recent evidence, see also Murphy & Welch 1994).

In some Latin American countries where private education offers an important route to quality education, *“the poor receive an inferior quality of schooling”* (IADB 1998: 53), with the result that *“...individuals from the lower deciles receive a primary education whose quality (measured in terms of income generation capacity) is 35 percent lower than that of the next decile above.”* (IADB 1998: 54).

The new economic growth literature, influenced by the endogenous growth theory, places much more emphasis on the role of human capital in economic convergence than did the neo-classical growth literature. This new growth literature spawned a new array of cross sectional empirical studies attempting to isolate the crucial variables in international growth. Such attempts have been relatively unsuccessful. But despite this failure to prove the role of human capital in long term economic growth, most economists ascribe this mainly to the paucity of dependable data where the human capital variable can be specified in a form that accords with the theoretical point of departure and that measures consistently across national boundaries. Much of the research has taken school enrolment (usually gross enrolment) as proxy for human capital, which it is not; almost all have had to ignore possible differentials in the quality of education; and studies differ in whether they use data on primary, secondary or tertiary education, or combinations thereof.

3. Education, inequality and poverty in South Africa

3.1 Racial inequalities in educational attainment

Schooling inequality between races as reflected in years of education completed is still large (Table 1), but has been substantially reduced in the past decades. For instance, Lam (1999) shows the decline in inequality in years of education completed between two birth cohorts

separated by 30 years, reproduced in Table 2. Schooling variance declined even amongst blacks, while schooling inequality between the different races also greatly declined. Blacks in the cohort born in 1920 had a mean backlog of 8.0 years of education compared to whites; those born in 1950 still a 6.0 year backlog, the 1960 cohort a 4.6 year backlog, and the 1970s cohort a backlog that had been reduced to only 3.2 years.

Table 1: Years of education completed of adult population (20 years or more) by race and location, 1996

| | Urban | Rural | Total |
|----------|-------|-------|-------|
| Black | 9.0 | 7.9 | 8.5 |
| Coloured | 8.9 | 6.8 | 8.6 |
| Indian | 10.4 | 9.7 | 10.4 |
| White | 11.9 | 11.7 | 11.9 |
| Total | 9.7 | 8.1 | 9.2 |

Source: Census 1996

Table 2: Educational inequality for two SA cohorts, 1995

| | Cohorts 55-59 | Cohorts 25-29 |
|--------------------------|---------------|---------------|
| Mean | 5.77 | 9.05 |
| Standard deviation | 4.51 | 3.60 |
| Coefficient of variation | 0.78 | 0.40 |
| Gini | 0.44 | 0.21 |

Source: Lam 1999: Table 2

3.2 Educational inequality and labour market earning

In South Africa, a growing literature shows educational inequality to be a determining factor in earnings distribution. In the most recent study of this nature, Bhorat and Leibbrandt (2001) show that education affects the propensity of blacks to participate in the labour force, their probability of being employed and their earnings, with returns to secondary education being particularly high. (Surprisingly, they report insignificant returns to tertiary education for blacks.) Other recent work by Moll (1998), Mwabu & Schultz (1996), Fallon & Lucas (1998) and Hofmeyr (1998) broadly confirm the importance of education for blacks, the largest but also poorest race group.

Between 1980 and 1993, South African earnings inequality decreased between race groups, whilst it increased within race groups (Moll 1998). The net result was to leave overall earnings inequality largely unchanged, as Table 3 shows. Improved black educational attainment probably played only a minor role. Moll rather ascribes the growing earnings within group

inequality to the removal of labour market discrimination, with some blacks benefiting from new opportunities for upward occupational mobility, while poorly educated whites lost the protection they had historically enjoyed, with their earnings premium declining. Thus even though education was not directly responsible for changes in earnings, its distribution determined who could benefit from the new opportunities for blacks in the labour market.

Table 3: Inequality of monthly earnings by race, 1980 & 1993

| | 1980 | 1993 |
|---------------------------------|-------------|-------------|
| Gini coefficient | 0.52 | 0.51 |
| Coefficient of variation | 1.19 | 1.12 |
| L-statistic * | 0.49 | 0.50 |
| L-statistic: Blacks | 0.14 | 0.28 |
| L-statistic: Indians | 0.21 | 0.28 |
| L-statistic: Coloureds | 0.25 | 0.35 |
| L-statistic: Whites | 0.21 | 0.28 |
| Within-group inequality | 0.17 | 0.29 |
| Between group inequality | 0.32 | 0.21 |

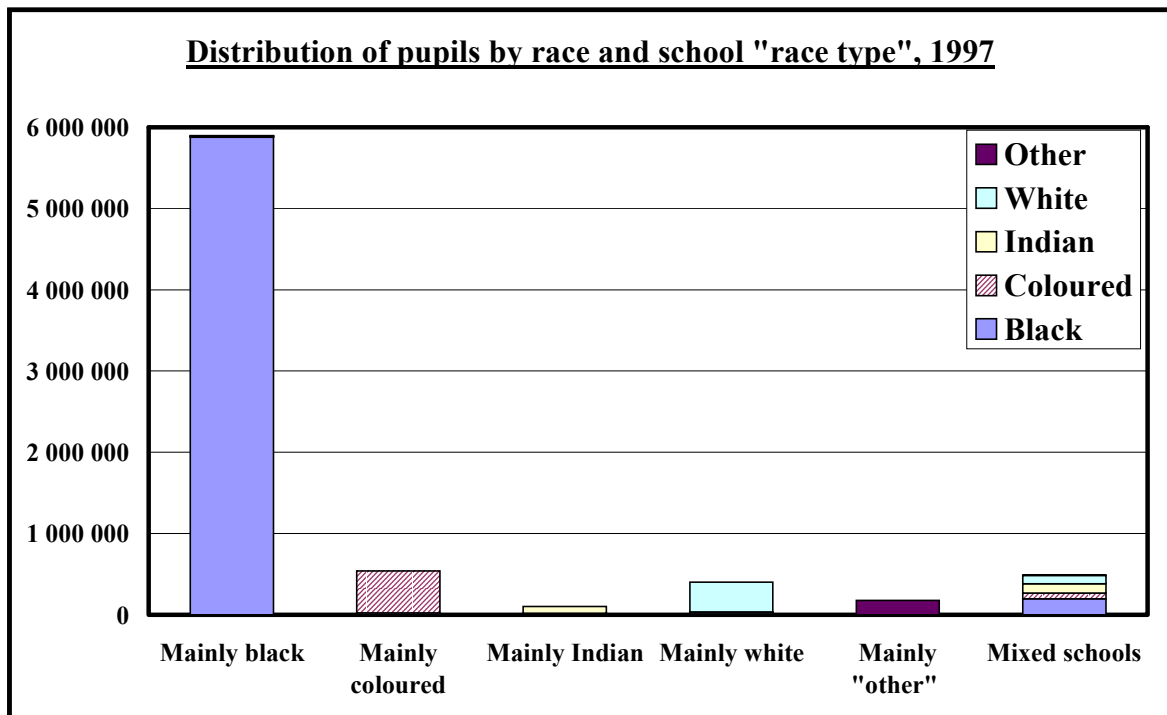
* The L-statistic (mean logarithmic deviation) is an additively decomposable measure of inequality that ranges from 0 (complete equality) to infinity. If utility has a logarithmic form, L measures the difference between maximum social welfare with a given income (the ideal state of distribution) and the actual social welfare (Moll 1998: 4). It is calculated as the mean of the natural logarithms of earnings, minus the natural logarithm of mean earnings.

Source: Mol 1998: Tables 1 & 2

3.3 Quality differentials in education

One should not forget, though, that the quality of South African education still varies considerably. The old dividing lines of race have blurred, with many black pupils now attending formerly white schools³, and there is great quality diversity in mainly black schools. (See Figure 1). But most formerly black schools still perform much more poorly than white schools, as reflected in matric pass rates. Judging by the high matriculation failure rates, promotion to higher standards may still exaggerate black cognitive levels mastered at levels below matric.

³ Data for 1997 for 7 provinces (all but Mpumalanga and Eastern Cape) showed that about 22 000, or 5.4%, of the 400 000 pupils in mainly white schools (defined as those with more than 70% white pupils) were blacks, whilst in "mixed" schools (where no race group constituted more than 70% of pupils), 197 000 out of 488 000 (40.3%) were black, and 104 000 (21.3%) white. Indian schools had the greatest penetration by blacks: 15 000 or 15.2% were black pupils. Nevertheless, most black pupils (95.8%) were still in schools which were predominantly black. (Own calculations from Department of Education data).

Fig. 1:

Source: Van der Berg 2001b

Quality differentials are also reflected in the quality of the matriculation itself, in terms of the standard at which matric is passed as well as the subject choice. Few mainly black schools provide an adequate background in Mathematics or Science. Only 45% of all matriculation candidates wrote Mathematics in 1997 (with a marked male bias); only 21% passed it, and most only attempted Standard Grade Mathematics, a standard far below what is conventional in developed countries. The percentages who wrote and passed Science were even lower at 25% and 16% respectively. Only 50% and 42% of teachers teaching Mathematics and Science have studied these subjects beyond secondary school level (Edusource 1999: 5). Even in the Western Cape, the province with the best matriculation results, only 24% of matriculation candidates attempted Mathematics at the Higher Grade, and only 20% passed it.

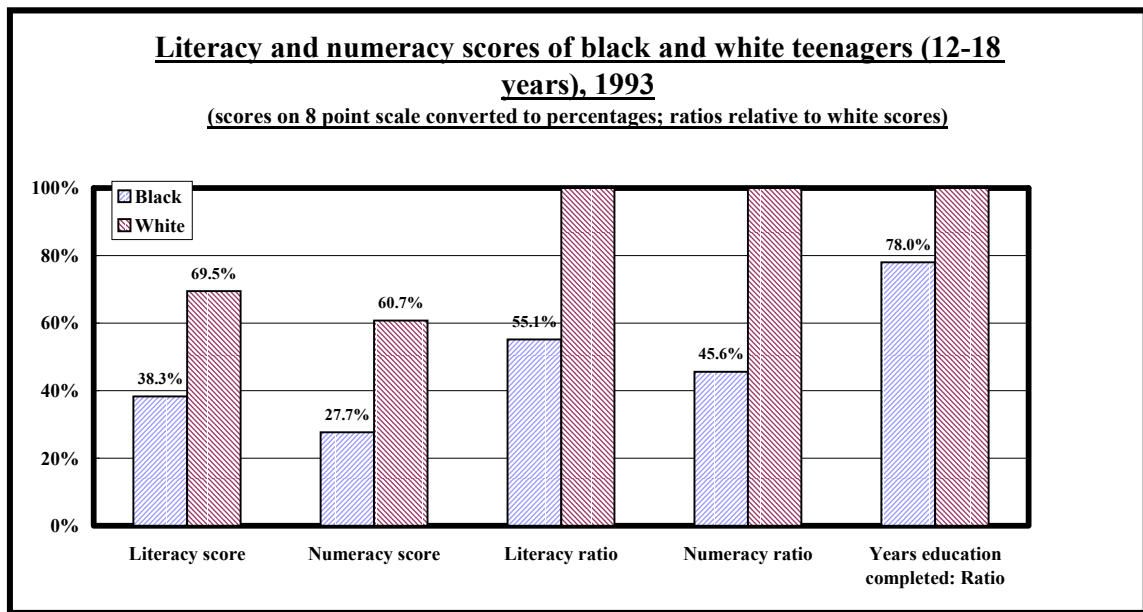
Another indication of inequality in educational output at higher standards can be gleaned from data for the Western Cape. As Western Cape pass rates are almost uniformly high (almost 80% of all candidates pass matric), differences in pass rates between schools are relatively low, as Table 4 shows. However, if more onerous levels of school performance are evaluated (university exemptions or percentage A-aggregates achieved), inequality increases considerably, with a Gini coefficient of 0.56 and 0.80 respectively.

Table 4: Inequality of educational outcomes between schools in the Western Cape, 1997

| | Passes | University Exemptions | A-aggregate |
|--------------------------|---------------|------------------------------|--------------------|
| Mean | 80.6% | 23.0% | 2.6% |
| Standard deviation | 22.5% | 22.0% | 5.0% |
| Coefficient of variation | 0.28 | 0.96 | 1.94 |
| Gini coefficient | 0.15 | 0.56 | 0.80 |

Source: Own calculations from Western Cape Education Department data

Fig. 2 shows literacy and numeracy test scores for 1993 for blacks and whites aged 13 to 18, where questions have been set at approximately Grade 7 (age 12) level (see also Fuller *et al.* 1995). Not even the performance of whites is very encouraging, but what is particularly alarming is that blacks perform far worse on both tests – despite the fact that educational levels attained by blacks and whites differ relatively little at this age. The poor black attainment at higher levels, and particularly in matric, are partly the delayed effect of lower cognitive achievement levels before the age of 13. Although blacks aged 13 to 18 in 1995 had attained on average 78% of white years of education, in 1993 their literacy scores were 55% of white levels, and their numeracy scores lagged even further at 46% of white levels. South African test score differentials by race are so large that a large part of it must be due to school and teacher quality (school productivity).

Fig. 2:

The same 1993 data from the Living Standards and Development Survey were used to try to explain combined numeracy and literacy test scores of teenagers. The regressions (shown in Appendix A) show that educational attainment does matter for numeracy and literacy performance, but some other factors also have an influence, including race (Indians considerably outperform the rest, blacks do about 10% worse than whites and coloureds of similar education and socio-economic background), parent education, and economic status (as measured by per capita household expenditure). The regressions explain 39% of the variation in test scores, whereas educational attainment alone can only account for 21%. Clearly, pupil home background has an important influence not only on how well students progress through the school system, and also on how well they learn, as measured by these test scores. This also influences how well they later earn in the labour market. The regressions imply that black teenagers of similar educational levels have a backlog in test scores compared to whites and coloureds equivalent to almost three years less of education, and of six years compared to Indians (even when standardising also for whether the home language was English, the language of part of the test).⁴ This illustrates the inability of the former black school system to provide the educational quality required to integrate most school leavers into a modern

⁴ Using the same data, Case and Deaton's regressions of test scores suggest a far bigger backlog of black teenagers, equivalent to almost 10 years of education completed (Case & Deaton 1999, Table 8). ("(F)our additional years generate one additional correct answer on the tests" (Case & Deaton, 1999: 26).

economy - the yardstick by which, from an economic viewpoint, the educational system must be measured.

Considering these quality differentials, racial wage differentials for persons with similar education and experience may result less from labour market discrimination, as is usually presumed in earnings functions, than from pre-labour market discrimination in school quality. The pattern of wage discrimination had changed from the 1970s. Within a given job grade and standardising for gender differentials, racial wage differentials declined considerably from at least the mid-seventies, as shown in Table 5, i.e. the "rate for the job" increasingly applied (though this says nothing about differential access to particular jobs). As early as 1989, black wages were barely 15% lower than those of whites in a similar job grade and of the same gender, a substantial reduction in discrimination from the 43% differential of 1976. Using other data sources, Moll (1998:1 & Table 10) came to a similar conclusion: total discrimination fell from 20% of the Black wage in 1980 to 12% in 1993. Work by Chamberlain (2001) indicates that at least a substantial proportion of the unexplained residual in earnings between race groups may result from quality differentials in education rather than from conventionally measured labour market discrimination.

Table 5: Relative wage levels by race for similar gender and job grade (% of white levels)

| | White | Coloured | Indian | Black |
|------|--------------|-----------------|---------------|--------------|
| 1976 | 100% | 62.2% | 67.0% | 57.1% |
| 1985 | 100% | 78.8% | 87.3% | 78.2% |
| 1989 | 100% | 79.9% | 89.4% | 84.7% |

Source: McGrath 1990:97

3.4 Educational inequalities amongst blacks

Amongst blacks, too, growing inequality of educational attainment largely follows the lines of income: more affluent families are better able to support their children through school, implying increasing stratification within black society. Children from the top two black deciles progress considerably better through the school system than their poorer counterparts and only at age 15 start falling behind whites. Case & Deaton (1999: 21) conclude that private resources (expenditures) were a major factor determining differential black educational outcomes under apartheid. *“Pupils in better-off Black households do better in their education, and we find no parallel for Whites. That the education of Blacks but not Whites is constrained*

by financial resources is further supported by the fact that many Blacks who are not in school (but not Whites) – report lack of resources as the reason.” (Case & Deaton 1999: 28). Furthermore, greater recent access to formerly white schools for more affluent blacks may have accentuated qualitative educational differentials amongst blacks.

Data from the 1996 census show mean earnings of full-time employed black workers where the educational level of a parent is known (i.e. children of the head of household still resident in the household) to be substantially higher where the household head has at least matriculated. But is this perhaps solely due to more educated parents having more educated children? Table 6 shows mean income of such children who have completed at least matric. Differentials remain substantial: In some way the better education of the parent (household head) translates into higher earnings for their children workers even compared to other young workers who also have matric only, but where the parent had less education, although such premia decline to about 9% in cases where the children have graduated. Whether this measures the quality of education, or some other non-observed aspect of human capital transmitted from parents to children, is not clear, though.

Table 6: Mean monthly earnings of full-time employed black children of head of household by education and whether head of household has matriculated, 1996

| | Mean monthly income by education | | | |
|-------------------------------------|----------------------------------|---------------------------------|---------------------------|--------|
| | Matric | Matric + diploma or certificate | Matric + other non-degree | Degree |
| Head of household matriculated | R1 731 | R2 658 | R2 849 | R3 388 |
| Head of household not matriculated | R1 380 | R2 285 | R2 164 | R3 104 |
| Premium for head being matriculated | 25.4% | 16.3% | 31.6% | 9.1% |

Note: Cases where the worker reported being in full-time employment but reporting no income were excluded. This had only a very minor effect on the premia.

Source: Own calculations from Census 1996 10% Sample.

3.5 Earnings and the demand for skills

Educational differentials determine returns to education, but only in association with the demand for labour. Little is known about the evolution over time of South African returns to education, not even to speak about what these would have been in the absence of apartheid-based labour market interventions. Predicting future labour market inequality, which depends on future educational outcomes and patterns of economic growth and development, is

extremely difficult. Borat & Hodge (1998) have shown that South African labour demand patterns reflect a growing demand for higher skilled labour and declining demand for low-skilled workers. Thus reducing labour market inequality would require substantial improvement in the supply of skills through more and better quality education.

4. Implications for education policy

Four broad economic policy issues arise in the field of education, viz. the aggregate fiscal costs of education; resource allocation within education; productivity of educational resource use; and the economy's need for skills.

4.1 Fiscal resources for education

South Africa allocates, by international standards, a large share of its national resources to public education; its public education spending ratio of about 7 per cent of GDP is amongst the highest in the world (without even including the skills training levy). Moreover, education spending has already increased rapidly. Shifting substantially more fiscal resources to education does not appear to be a viable proposition. Moreover, larger financial flows to education in the past five years did not in fact increase real resources for education commensurately, as fiscal resource shifts were overshadowed by wage increases for teachers; the pupil/teacher ratio declined by only 1 from 33.7 to 32.7 from 1996 to the year 2000 (South Africa 2001: 35). Cutbacks in educational personnel in some of the richer provinces were barely matched by increases in personnel in educationally more poorly endowed provinces, despite much larger fiscal shifts. As Donaldson perceptively remarked some years ago,

"...the constraint at work ... is not (only) finance, but the limited real resources available to the economy. Competent teachers, nurses, doctors and community workers are scarce, as is the capacity to produce books, medical supplies, and building materials. So the growth and improved distribution of social services must be viewed as the growth and improved distribution of the inputs required for delivering these services." (Donaldson 1993: 147)

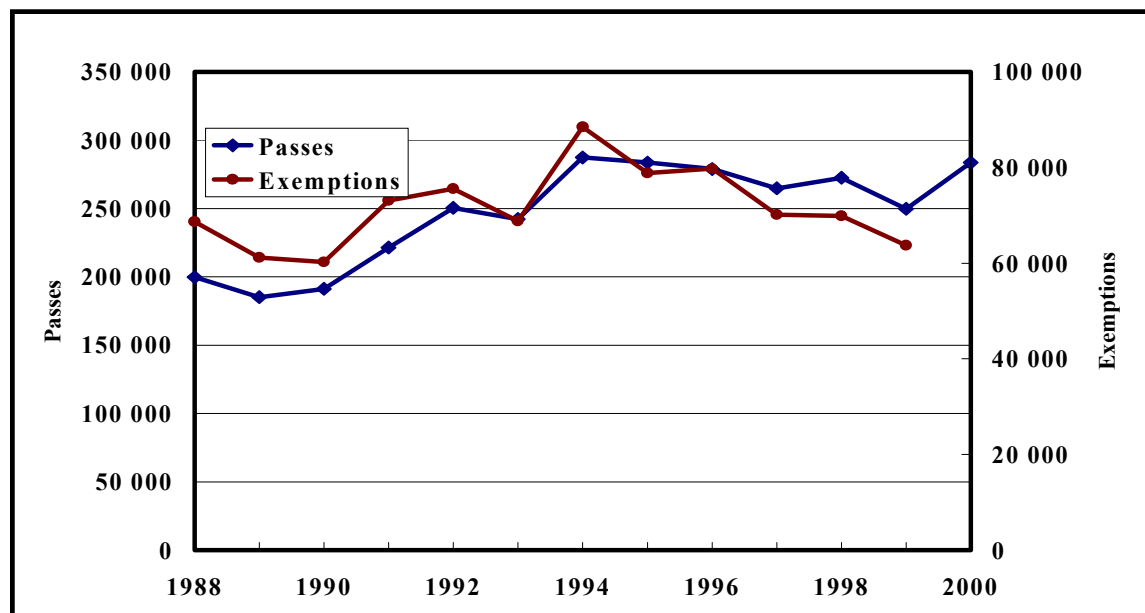
In contrast to the international experience, teacher salaries outpaced the growth of national resources in South Africa.

"The ratios of estimated real salaries of primary school teachers to per capita GDP have typically declined over time; from 1965 to 1990, the value dropped from 2.5 to 2.2 in the OECD, from 4.9 to 3.6 in the overall group of developing countries, and from 7.4 to 1.7 in the CPEs (centrally planned economies)." (Lee & Barro 1997: 17/18)

One reason why the real burden of teacher salaries (relative to GDP) rose in South Africa was the strong bargaining power of teacher unions that allowed them to raise their real salaries substantially. Black teachers fell behind compared to their public sector contemporaries in the wave of black advancement following democratisation, as there were few opportunities for

promotion within teaching to benefit from⁵, thus their frustrations were often vented in wage bargaining. Thus after democratisation, when there was a dire need for resource shifts across the formerly racially-based departments, fiscal resources increasingly had to be directed to personnel spending, leaving a growing dearth of non-personnel spending: from 1995/6 to 1997/8, real personnel expenditure increased by 20% while non-personnel expenditure declined by 17% (South Africa 1998a: 27). Yet despite the increases in personnel, both the number of matriculants remained stagnant or even declined, whilst the school-age population was growing (Figure 3).

Figure 3: Matriculation passes and exemptions, South Africa 1988-2000



As the growth in pupil numbers still exceeds the growth rate of the economy, the government team investigating the medium term expenditure framework (South Africa 1998a) concluded that there will be a major funding problem in education in coming years, unless

- more funds are allocated to education, which they regard as fiscally infeasible, and which internationally has been shown not always to improve educational outcomes (Gupta *et al.* 1999: 4);
- pupil-teacher ratios rise even further, which is unacceptable to government, teacher unions and parents alike;
- teacher salaries decline in real terms, which is strongly opposed by the teacher unions;

⁵ De Villiers (1996: 288-9) reports that more than 90 per cent of teachers will not receive more than one

- some combination of the above occurs.

4.2 Reallocating resources within education

Considered from an economic efficiency point of view, the malaise of the South African educational system lies less in terms of allocative inefficiency than in x-inefficiency. Reallocating resources from one level of education to another would bring little gain, and it is not even clear which level of education most requires additional resources, as will presently be discussed. There is perhaps a stronger case for shifting more financial resources to non-personnel teaching resources; personnel spending is so dominant that even a small relative shift could greatly increase the availability of classroom resources.

4.3 Efficiency in educational resource use

However, the clearest need is to utilise existing resources better, even in their present application. The major inefficiencies are in what used to be the black school system, by far the largest part of the system, where the quality of learning in schools is often abysmal. The COLTS campaign (Culture of Learning, Teaching, and Service) launched in 1996 “was the first more or less official recognition of the fact that efficiency and work effort problems, rather than funding by itself, were at the heart of the problems in the education sector” (South Africa 1998a: 35). Political leaders (the President, his predecessor and the Minister of Education) have in recent years publicly put the blame for poor education results on poor discipline within schools, particularly amongst teachers.

Such inefficiencies result from a typical principal-agent problem. Educational outputs are notoriously difficult to monitor, as is teacher effort (input), thus low teacher productivity is difficult to overcome through incentive schemes. The educational authorities have responded by attempting to shift the monitoring to the parent community as the final “principal”. Unfortunately, however, this policy is less likely to succeed in schools where parents themselves have had little formal education and therefore are hesitant to confront teachers or ignorant about what can be expected of teachers – precisely those schools where failure rates are greatest. Moreover, lines of authority are also not always clear and school principals often find it difficult to act against undisciplined teachers or pupils.

Thus there is still a large effort required to restore the “culture of learning” to South African schools. As always where there is a principal-agent problem, one avenue for improvement is through providing more information. There is a paucity of information for the education authorities to analyse the educational situation and their policy options. Presently, the only measure of educational output available to them is matriculation results, but these still do not identify the roots of the problem (nor are they properly analysed at the school level). It has been shown above that literacy and numeracy levels amongst many blacks are already far below par as early as age 13. Allocating resources based on matriculation results cannot adequately address a problem which requires much earlier intervention. Where to direct resources cannot be decided without information on the qualitative performance of different parts of the school system. This requires large scale and continued efforts at measuring cognitive achievement at different levels, in order to better understand the relationship between home background of pupils, educational inputs, and enhanced cognitive achievement. Moreover, identifying schools performing badly in order to take remedial action requires a better understanding of how schools perform and the causes thereof.

Table 7 shows that pass rates in South African schools still differ substantially between race groups and school “race types”; It also shows, moreover, that the performance in the poorer schools is not only generally poor, but also that there is far more variation in this performance in poor than in rich schools. For this purposes we distinguish schools by “race type” and school fees (Table 10)⁶. The pass rate increases strongly with school fees, rising from 43.7% in the poorest to 96.3% in the richest group of schools. Noticeable is that the standard deviation is much lower in the two highest school fee groups – variation in pass rates is considerably less for the more affluent schools.

Table 7: Number of schools, unweighted mean and standard deviation of average matriculation pass rates in sample by school fee group, “race type” and province

| | Number of schools | Mean | Standard deviation |
|--------------------------|-------------------|--------|--------------------|
| Total sample: | 2 770 | 53.90% | 26.41% |
| School fee group: | | | |
| <R20 | 651 | 43.69% | 22.81% |
| R20-R49 | 1 177 | 47.09% | 21.75% |
| R50-R99 | 496 | 53.32% | 22.01% |
| R100-R199 | 82 | 65.29% | 24.15% |
| R200-R999 | 245 | 90.02% | 17.65% |

⁶ Schools with more than 70% of a specific race group are identified as of that “race type”.

| | | | |
|----------------------------|-------|--------|--------|
| R1000+ | 119 | 96.30% | 9.75% |
| School "race type": | | | |
| Black | 2 106 | 44.47% | 20.99% |
| Coloured | 138 | 72.94% | 15.05% |
| Other | 97 | 89.59% | 16.48% |
| Indian | 42 | 80.61% | 12.45% |
| White | 181 | 96.06% | 7.91% |
| Mixed | 206 | 77.77% | 22.58% |
| Province: | | | |
| Free State | 289 | 52.38% | 30.38% |
| Gauteng | 369 | 61.21% | 28.87% |
| Kwazulu-Natal | 784 | 52.41% | 24.79% |
| Northern Cape | 87 | 70.29% | 26.72% |
| Northern Province | 1 002 | 44.88% | 20.59% |
| Western Cape | 239 | 81.22% | 19.04% |

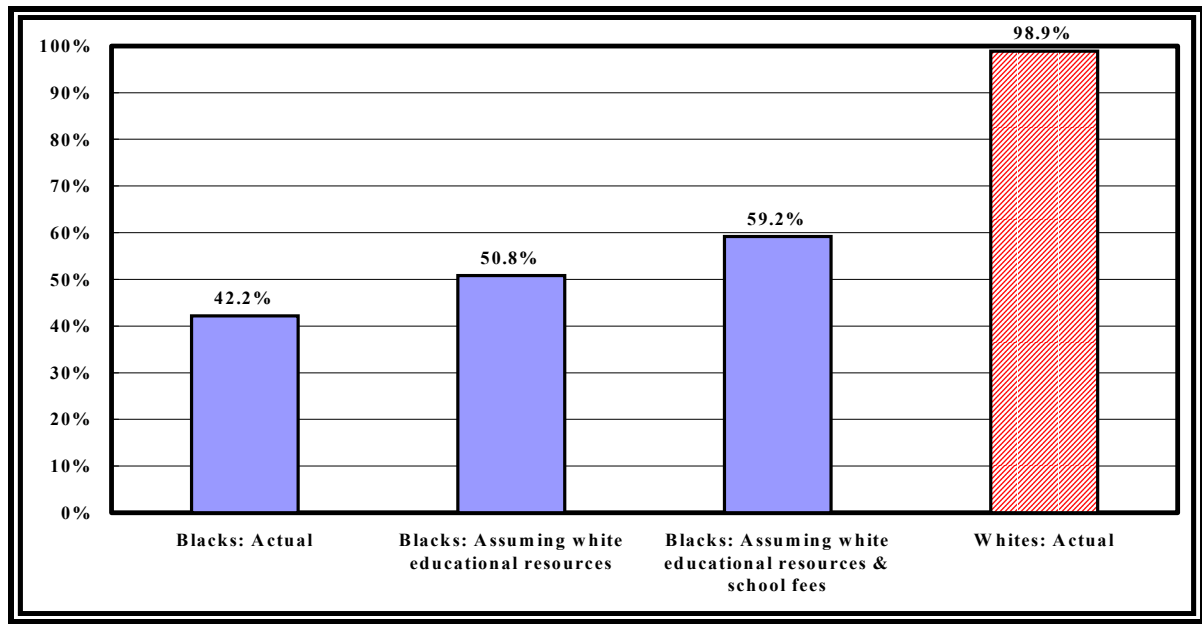
Source: Van der Berg 2001c

Not only are black schools worse off in terms of mean matriculation passes (44.5%), but their pass rates vary considerably. The highest standard deviations occur in mainly black schools and in schools not dominated by a single race group – such schools have a quite varied experience, whilst that in mainly white schools is much lower.

At provincial level, the large differences in pass rates between the best performing province (the Western Cape with an unweighted mean pass rate of 81%) and the worst in the sample (the Northern Province, with a 45% pass rate) are well known. It is informative, however, that the standard deviations of these pass rates are lowest in these provinces at different ends of the spectrum: within both the Western Cape and the Northern Province, there is a consistently bad performance as measured by pass rates amongst schools.

Figure 4, based on regression analysis reported elsewhere (Van der Berg 2001c), shows that only a small part of the large differential in pass rates between whites and blacks results from differences in educational resources or socio-economic status as reflected in school fees. If mean levels of public resources available to whites (pupil/teacher ratio and salary level of teacher) are substituted in the equation, the pass rate for blacks would have increased from about 42% to 51%. Even if the mean level of white school fees had applied, the black pass rate would have increased to only 59% – still 40 percentage points below the white level.

Figure 4: Expected pass rates based on regression and on assumptions regarding black school fees and teaching resources, 1999/2000

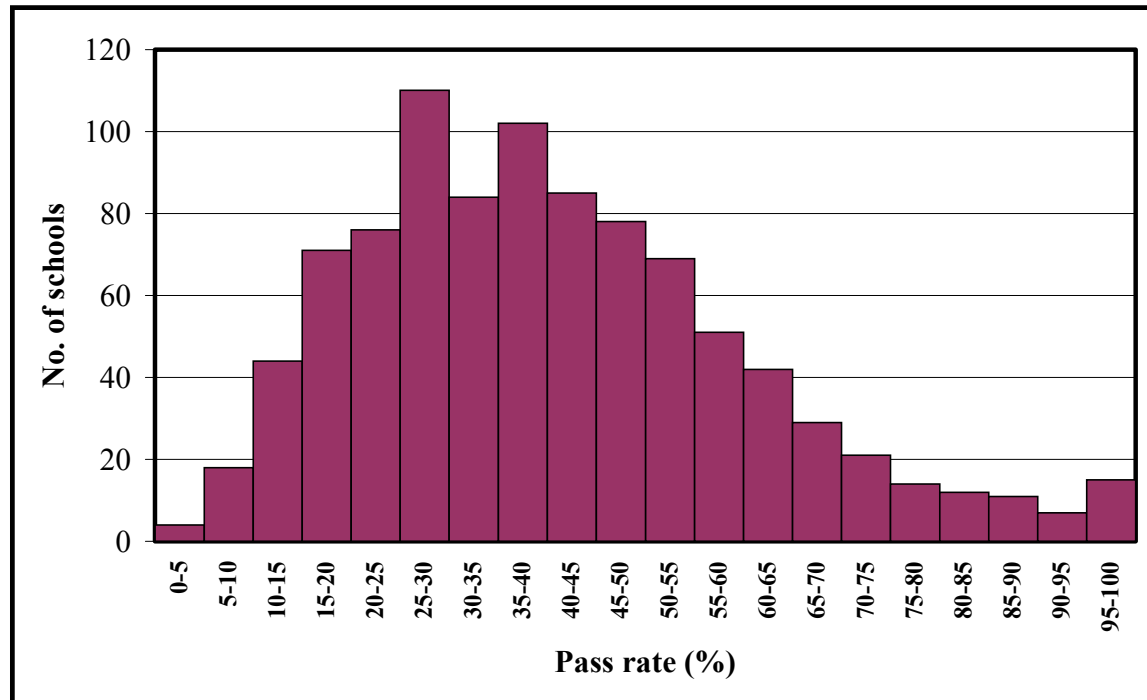


These figures show that race (or what lies behind this variable) is still the dominant factor determining differential matriculation pass rates, followed by economic status (school fees). Even massive shifts in school level resources still leave black pupils and mainly black schools performing much worse than white schools, and the regressions indicate that further shifts of educational resources would have a very limited effect. Black schools fare systematically worse in terms of pass rates, and this cannot be accounted for by resources or the socio-economic status of pupils. More educational resources for black pupils can make only a small contribution to improving educational outcomes – and therefore their long term position in the labour market. The pupils who have furthest to catch up are those in rural areas, where socio-economic status, including education of parents, is weakest, and where good teachers are hard to come by. Although resources matter, greater resource inputs alone cannot improve this situation much, without a fundamental reorganisation in how schools function.

Thus this analysis strengthens our earlier conclusion that school management rather than school resources require most attention if the legacies of past inequalities in education are to be overcome. Figure 5 provides supporting evidence: It shows the 1999 and 2000 distribution of pass rates amongst poor black schools (with annual school fee per pupil less than R30). It is clear that many schools perform quite badly, and indeed this is where a large part of the poor examination performance can be identified. But the data also shows that there are a substantial

number of schools in this group (more than one in five) performing well above the national average pass rate of slightly more than half. Again, there appear to be factors associated with the functioning of the school as a productive unit rather than the availability of resources which are crucial to proper performance, particularly in poor communities.

Figure 5: Frequency distribution of pass rates amongst black schools with fees of R30 or less, 1999-2000



5. Conclusion

The conclusions from this paper can best be summarised in a few related points:

- Educational access is no longer a major problem; which shows that more than 90% of children of all race groups remain at school until attaining matric or reaching age 16.
- There is limited remaining scope for additional resource outlays to redress the deficient functioning of large parts of the educational system.
- But more resources is not the solution to poor education. Some of the worst performing schools are well-resourced; many schools perform excellently with limited resources.
- The quality of educational output varies considerably amongst schools and over time, so that the educational returns literature is always suspect.
- The needs of the economy in terms of the type rather than the level of educational output should also be considered, and may be an unobserved variable that affects the returns to education (e.g. the importance of Mathematics for further training);

- Returns to education result from the interaction between the supply and demand for human capital, and the latter is related to the economic growth path, which is itself changing. Moreover, insofar as education itself may determine growth, there is an endogeneity problem that cannot be resolved.

Sustained long run economic growth is the best alleviator of poverty, especially if such growth creates employment. South African racial inequalities are being reduced in the new political dispensation. If economic growth is added to the mix, both poverty and racial inequality may be strongly reduced, and the trend towards increased inequality within racial groups may be arrested. But from the perspective not only of growth, but also of distribution, an improvement in the quality of education amongst South Africa's poor is likely to be very rewarding. This requires urgent attention at the highest levels to the functioning of our poorest schools. Without such attention, the upward mobility of the largest part of our workforce will remain constrained even in a growing labour market.

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Appendix A: Regressions of test scores of South African teenagers 13-18 on literacy and numeracy tests, 1993

Regression 1: Test score of teenagers (out of 14) regressed on years of education completed, a metropolitan dummy, two race dummies (one for black, one for Indian), parent education, and the natural log of per capita household expenditure

Regression 2: Test score of teenagers (out of 14) regressed on years of education completed, a metropolitan dummy, two race dummies (one for black, one for Indian), parent education, the natural log of per capita household expenditure, and whether the home language was English (some test questions were in English)

| | Regression 1: | Regression 2 |
|------------------------------|----------------------|---------------------|
| Years of education completed | .3957*** | .3968*** |
| | <i>9.52</i> | <i>9.65</i> |
| Metro | .54677** | .5502** |
| | <i>2.32</i> | <i>2.36</i> |
| Black | -1.5015*** | -1.1641*** |
| | <i>-5.28</i> | <i>-3.99</i> |
| Indian | 2.5689*** | 1.4319** |
| | <i>3.90</i> | <i>2.04</i> |
| Parent Education | .0994*** | .09769*** |
| | <i>3.35</i> | <i>3.33</i> |
| LnExp | .5600*** | .4834*** |
| | <i>3.61</i> | <i>3.13</i> |
| English home language | - | 1.6814*** |
| | - | <i>4.29</i> |
| Constant | .0311 | .0565 |
| | <i>0.04</i> | <i>0.06</i> |
| n | 819 | 819 |
| R ² | .382 | .396 |
| R ² -adjusted | .377 | .390 |
| Standard error | 2.69 | 2.6662 |

* indicates .10 level of significance

** indicates .05 level of significance

*** indicates .01 level of significance