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**Whither SA’s education investment?
A rights and skills agenda¹**

Luis Crouch
Firoz Patel²

1. Background and Introduction

This paper takes stock of the main trends in South African education investment in the past 10 years (the period since the end of *apartheid*), but within the context of the longer-term trends in investment that predated the transition of 1994. It explains how those patterns conditioned the choices available to the new democratic government in the period 1994 to 1998 or so, and how these choices set in motion certain dynamics whose consequences had to be dealt with over the period 1998 onwards. At this point in SA’s history there are key choices that are still largely defined by long-term structural problems, in spite of much innovation and effort during the past ten years. Overcoming these efforts will require more focus on a agenda that could perhaps be thought of as a “rights and skills” agenda. By “investment” in this paper we mean a broad concept, as suggested by the agency sponsoring the seminar at which the paper is being given, namely all education expenditure, not just that which pertains to infrastructure or durable goods. The paper is organized as follows. First, we note some of the background issues at the end of apartheid. We then go on to note how these issues conditioned the nature of the investment patterns and tools developed by the new government. The results are then analyzed briefly. We then take stock of the existing situation and problems, and propose areas that still need attention and renewed commitment.

To summarize the conclusions: South Africa still has, ahead of it, a “rights and skills” agenda. The “rights” agenda refers to the fact that though much has been done to improve the equity of recurrent spending, there are still conditions in South African schools that are deplorable in an upper middle-income country. It would be difficult to “prove” statistically that such conditions are related to the amount of cognitive development taking place (or, rather, not taking place) among the poor. But it should also be self-evidently unnecessary. It is just a matter of simple justice and equity. There is also a “skills” agenda. We conclude that South African (and Southern African in general—South Africa shares a problem with its neighbours) schools are not yet sufficiently efficient at turning resources into skills imparted to youth. The “rights” agenda and the “skills” agenda intersect in that if the sector is inefficient, then it is very expensive to implement either agenda. It should be noted, however, that the “rights” agenda is probably easier to deliver on via spending, whereas in implementing the “skills” agenda money is most likely less of a constraint.

2. The issues at the end of *apartheid*

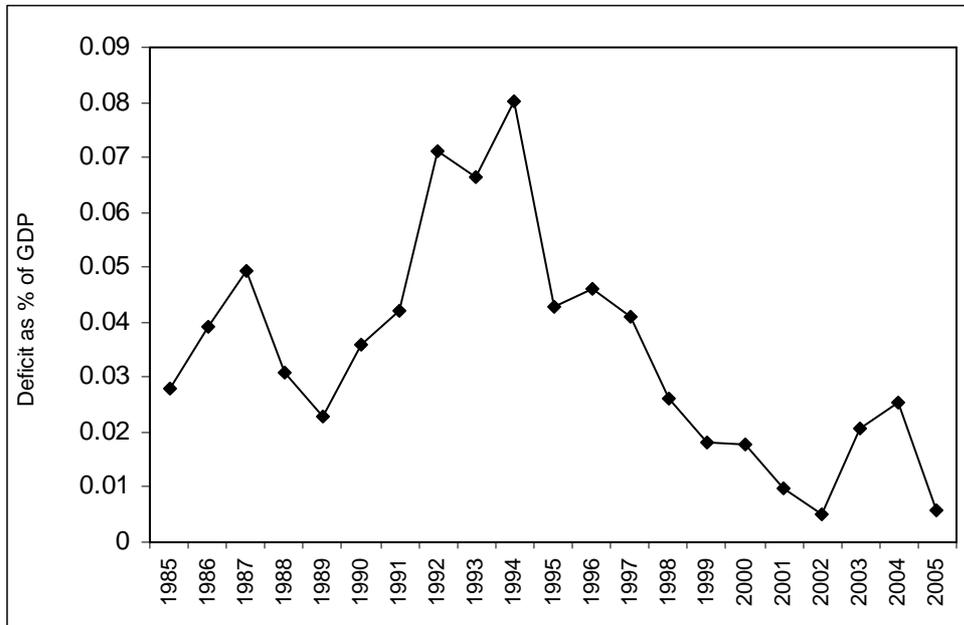
South African spending at the end of *apartheid* was characterized by a set of five important facts. First, it was high, by international standards, as is typical of many Southern African countries.

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² The authors are, respectively, Research VicePresident in the International Development Group at RTI (North Carolina, USA) and Deputy Director General, Department of Education, South Africa. The views presented here are not to be associated with those of any of the institutions the authors work with. Crouch has been an advisor to the Department of Education, South Africa, for many years. Patel has worked in the education sector of South Africa for decades. Questions can be addressed to lcrouch@rti.org or patel.f@doe.gov.za. Crouch’s participation funded by USAID/South Africa.

Second, the last *apartheid* government engaged in massive deficit spending in the last few years of its rule, resulting in inflationary pressures and serious economic distortions, which the incoming democratic government faced resolutely, despite much internal criticism. The trend in the deficit (and the success of the new government in lowering it to reasonable levels) is shown in Figure 1. At the point where the deficit reached 8% of GDP, in 1994, South Africa had the 5th highest deficit of all the countries for which we could find data (63 countries).³

Figure 1. South African fiscal deficit over time



Sources: for GDP, South African Reserve Bank, online time series; for the deficit, IMF online time series.

Third, education expenditure was extraordinarily, and purposefully, unequal between races. This is well-known. The best documentation on this was probably Buckland and Fielden (1994). The ratio between the best-provided parts of the white system and the worst African “homelands” was some 10 to 1 in total expenditure. Pupil-teacher ratios in the most favored parts of the system were ½ to 3/5 what they were in the worst-provided parts of the system. In some specific areas of expenditure the differences in physical provisioning were particularly telling. For example, in the best-provided white systems there were only three or four teachers for every non-teaching staff, and in the worst-provided “homelands” as many as fifty teachers per non-teacher.

Fourth, education expenditure tended to be inefficient at generating cognitive achievement, in the sense that South Africa tended (and still tends) to greatly under-produce learning results per unit of GDP invested. (This, as we will show, is a characteristic it tends to share with other Southern African nations.)

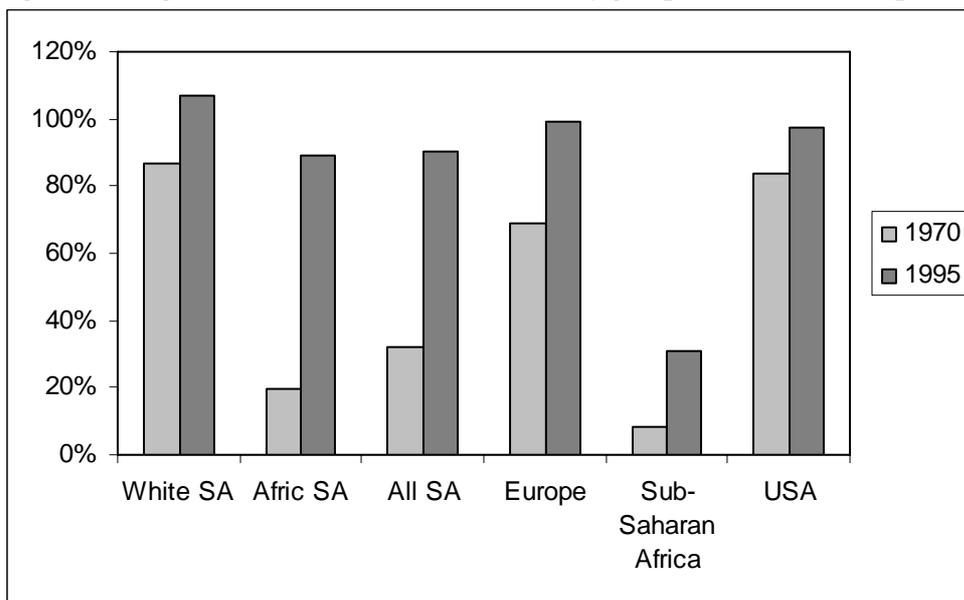
Fifth, expenditure patterns supported educational provision that was overwhelmingly public, with only one or two percent of provision being private; even the upper middle class partook of public education. This was seen as a good thing, generally.

Educationally, South Africa had, even by 1994, already massively expanded educational access. Gross enrolment ratios were high. In fact, at the primary level they were way too high, signifying

³ It has become fashionable to question whether deficits are problematic, and certainly the new government was criticized for its austere fiscal stance. But common sense suggests that one cannot live by borrowing for a very long time, and there is certainly evidence to support the argument that large deficits, over long periods, are not a good idea.

considerable waste and repetition. Enrolment in Grade 1, for example was 66% higher than the population of school-entry age, and this did not represent a catch-up to previously unattended populations (see Crouch and Mabogoane 1997). At the secondary level, South Africa’s African population group had seen an increase in access to schools, between 1970 and 1995, that was, as far as we can tell, unequalled in the world. As documented via careful analysis by Louw, van der Berg, and Yu (2006) and as Figure 2 and Figure 3 show, access to secondary education for whites became “massified” in the middle third of the previous century; and the same thing happened, and at the same speed, for the African segment of the population, in the last third of the century; essentially one generation later. The gross enrolment ratio at the secondary level, for the whole population had increased by some 60 points in just 25 years, to the 80% range.⁴ How much the enrollees were actually learning was another matter, though.

Figure 2. Long-term trends in educational access, by group, international comparisons

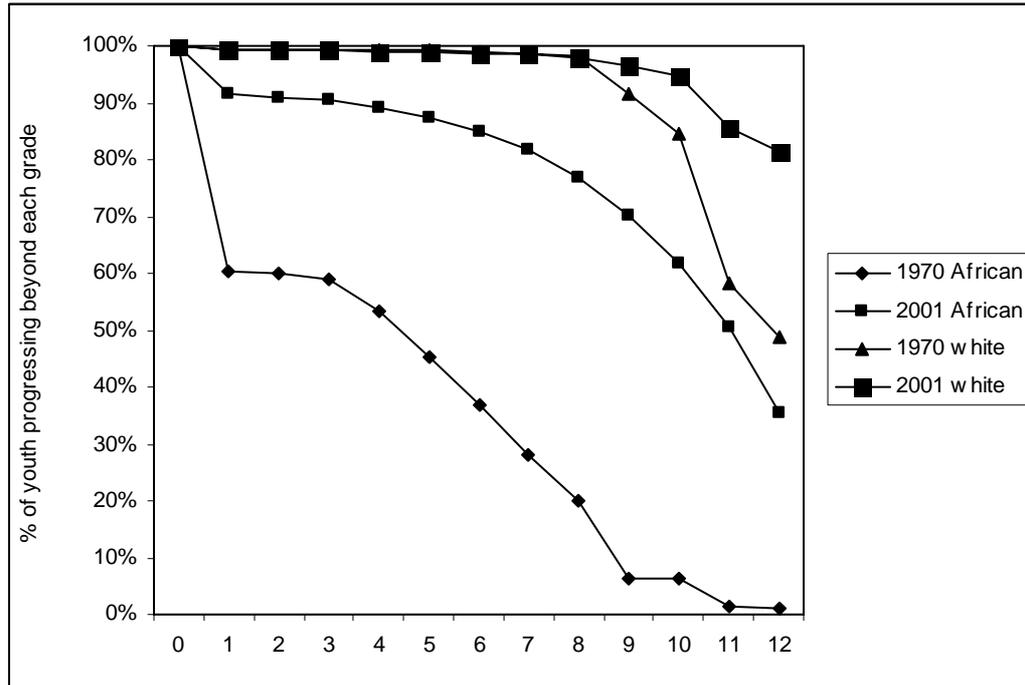


Sources: For 1970 SA, Malherbe (1977), backed out from data in p. 720. For 1995 SA, based on enrolment data from the SANEX database and population data of appropriate age back-cast from extrapolations of the 1996 and 2001 population censuses. For 1970 and 1995 for other regions, UNESCO online database.⁵

⁴ Using the UNESCO database, we calculate that no country in the world, of those for which we could find data for both periods (a total of 113 countries) expanded its secondary education access faster than SA’s African population, in the period 1970 to 1995. (The average across all countries for which we could find data both for 1970 and 1995 was an expansion of 27 percentage points in the gross enrollment ratio at the secondary level—South Africa’s African population’s increase was 69 percentage points.)

⁵ As available at <http://www.uis.unesco.org/en/stats/centre.htm>, accessed on 27 August 2006.

Figure 3. Percentage grade-wise progression by group, for given years



Sources: Census data used by Louw, van der Berg and Yu (2006) kindly provided via personal communication by Derek Yu on 25 August 2006.

3. Features of the proposed solutions

The nature of the existing problems hemmed the new government in and determined, in almost algebraic fashion, the nature of the solutions that were devised, almost as if the new government had to solve for n unknowns in n equations, with no degrees of freedom whatsoever to spare.⁶ The logic developed approximately as follows. The fact that spending was extremely unequal but the new government was democratic and represented the majority, naturally meant that equality had to be increased. But since spending was already high, and since the government wanted to set right the macroeconomic disorder created by the last apartheid government, spending per pupil could not be equalized up; it could only be equalized to the average. Furthermore, attempts to work via a logic of bottom-up budgeting based on perceived priorities would tend to over-burden the fiscus, as actors in the system would naturally try to level up. The pre-existing inequality would have created a political-economic logic and pressure to level up to a massive extent. This would have not only made it impossible to seek macroeconomic equilibrium; it would literally have pitched every sector into fiscal battle with every other sector, as actors within each sector tried to level up to the levels which the most privileged previously had. Thus, the fiscal distribution system that was devised was one of “equitable shares” where the emphasis is on the equal (or progressive) distribution of a given fiscal “pie” rather than on its costing and its size.

To complicate matters, the new republic was decentralist in expenditure assignment but not in revenue collection, and this was a result of both constitutional design and practical reality.⁷ The new

⁶ In truth, in at least a few cases, the government faced more equations than unknowns, literally. This created an over-determined system, with consequently difficult fiscal implications, as will be discussed later.

⁷ In fact our careful analysis of the Constitution and various Acts passed in the early days of the new republic suggest that the decentralism typical of the new situation, e.g., in expenditure assignment, is more a matter determined by the various Acts than by the Constitution, since it is the Acts that carry out the specific function (and hence expenditure) assignment and also decrease the relative budgeting power of the national line ministries in favor of the national Treasury. But the spirit of the Constitution is certainly decentralist in expenditure assignment. It also has a strong orientation towards equality in the enjoyment of rights.

provinces had much of the right and also the obligation to provide key services. In this context, an approach based on perceived costs and bottom-up budgeting would have created enormous levelling-up tensions between the new provinces, not just within sectors. The use of a shares-based formula that was quite top-down allowed the central government to decentralize budgeting to the new provinces in a relatively fiscally-neutral fashion. As is well-known, many countries that decentralized in the 1980s and 1990s faced serious fiscal problems, and fiscally-neutral decentralization is a very difficult art. The South African solution provided for some control in the way funding was transferred from the national government to the provincial governments, by focusing attention on the fairness of the shares, rather than the total amounts.

The same pattern was followed in the design of the fiscal formulae for transferring funding (or physical provisioning of teachers) to schools, except that in this case there was a more explicit focus on attempting to create pro-poor discrimination in the funding. Provinces were mandated by national government to assign poverty ranks to schools, and to spend more on the schools in catchment areas with larger proportions of poor pupils. The judgment was made that most of the inequality was within provinces, not between provinces. Furthermore, as noted, there was a decentralist ethos in the Constitution. Thus, provinces were mandated to prefer their own, within-province poor; there was not, at the time, a focus on a national-level ranking of poverty. Furthermore, provinces were allowed to use their own criteria as poverty indicators, under the assumption that nationally-mandated indicators would not have sufficient discriminatory power if applied provincially.⁸ This funding schema was first applied to non-personnel, non-capital expenditure, and then some measure of pro-poor targeting was added to teaching personnel expenditure. (Currently the poverty framework, or the ranking of schools in terms of poverty, is national in terms of the amendment to the South African Schools Act, as of January 2006)

4. Some results of the new investment approaches

By “results” of the new investment approaches we mean both the intended consequences of policies that received much attention, the possible unintended consequences of those policies, as well as, importantly, the general result of the system’s inertia in areas that perhaps did not receive as much policy attention. All are interesting, though the latter two aspects require more concerted future action.

4.1. Issues in co-ordination

On the way to equity improvement there were, as usual, some surprises or problems in inter-governmental fiscal relations. A fairly typical one was a disconnect between educational policies and mandates from the national level, fiscal mandates from the national level, and provincial fiscal priorities. This took place with regards to teacher allocations. The national level mandated certain norms with regards to pupil-teacher ratios, as a way to drive equity, as pupil-teacher ratios in under-privileged areas had been very high during *apartheid*. But this was done centrally, and from the *sectoral* Department (Education). At the same time, provincial governments allocated funding to the provincial education sector based on nationally-driven funding coming from the Treasury, but according to their own point of view. As a result, some provinces began to seriously over-spend on teacher personnel. In a sense, the system was attempting to solve for n variables with $n+1$ constraints or equations—naturally an impossible task. The way this was resolved was by essentially de-mandating the pupil-teacher ratios, and having the national level state that, effectively, provinces had to allow their pupil-teacher ratios adjust to budgetary availability, but then divide up the teacher pool

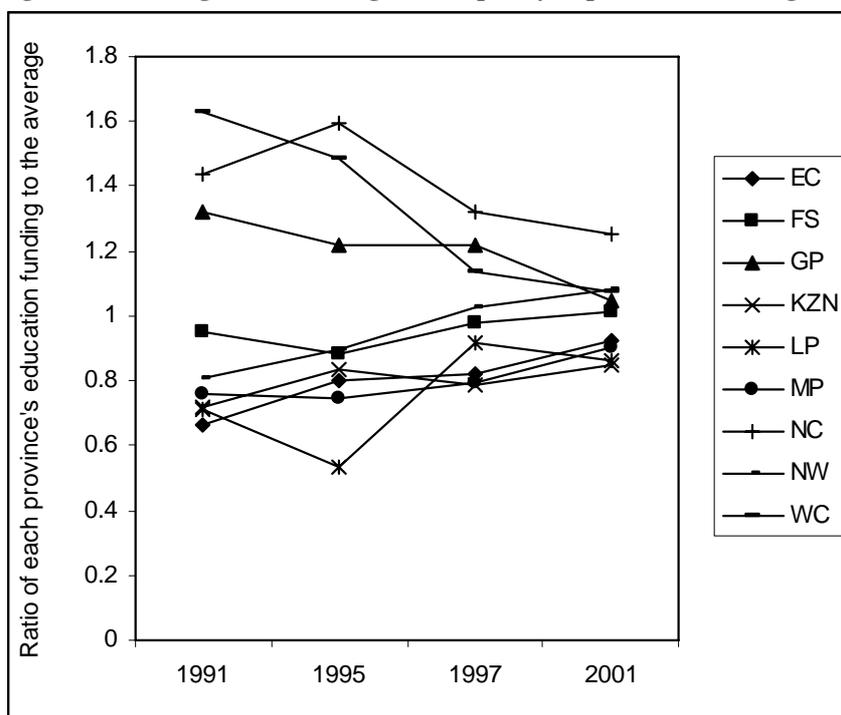
⁸ In some provinces, for example, almost all schools had water and electricity, and thus using water and electricity supplies as indicators of poverty would not have had discriminatory power within the province. Those provinces would have had to use, say, the presence of school libraries as a discriminatory variable. But then in other provinces such a small proportion of schools had libraries that this variable would in turn not have had much discriminatory power within those other provinces. In short, it was concluded that richer provinces had to use different variables to identify their poor than the poorer provinces.

equitably, according to a teacher allocation formula. This reduced by 1 the number of equations or constraints faced by the system, allowing a just-determined solution once again. Again, an “equitable shares” sort of solution was the practical reaction to an over-determined fiscal situation.⁹

4.2. Results in equity of inputs

The policy of focusing on an “equitable shares,” combined with unification of teacher salaries which had been occurring even before the transition to democracy, led to improvements in equity between provinces, and did so with remarkable speed. Figure 4 shows how funding converged towards the national average. (In each time period, the national average is an index value of 1.0, the number shown for each province is the ratio of that province’s per student spending to the national average.) The figure shows how just within 6 years or so, the inequality that existed in 1991 was greatly reduced—by some 60%.

Figure 4. Convergence towards greater equality in provincial funding



Source: Crouch (2005)

This refers to inter-provincial equity. Gustafsson and Patel (2006) provide a careful analysis of the patterns in improvement in inter-personal or at least inter-school equity, as does van der Berg (2005). Gustafsson and Patel’s paper (using a different methodology from van der Berg, by focusing on pupils actually at school) shows that in spending areas where it has been possible to focus on poverty, allocations are now pro-poor. Thus, for example, the non-personnel, non-capital funding, which is governed by an explicitly pro-poor policy, has a concentration index of -0.23. For historical reasons teacher expenditure is still positively correlated with income. Even though a timid start has been made in allocating numbers of teachers with a pro-poor bias, the most expensive teachers are still in

⁹ As will be seen below, however, this solution does not lead to a pro-poor, or even neutral solution, in terms of equity for at least three reasons. First, what is allocated in a formula-driven manner is teacher numbers, not teacher cost. Since the most expensive teachers are still in the better-off schools and since the state’s power to move teachers is somewhat reduced for various reasons, teacher cost is still positively correlated with wealth of learners. Second, even for teacher numbers the allocations were equal but not pro-poor. And, third, the teacher allocation formula has tended to favor certain subjects that are more likely to be offered in better-off schools.

the schools frequented by the better-off learners. Therefore, because of the balance between certain pro-poor and pro-rich elements, *total* public expenditure is not pro-poor, but essentially neutral (concentration index 0.03). Nonetheless, this represents a remarkable advancement since the days of *apartheid*. The aspects of spending that are not pro-poor have to do with policies intending to favour the better off with more resources, but have to do with the fact that when salary scales were unified, historical qualifications were entrenched into pay, and the more highly-qualified and older teachers tend to be in the more prosperous areas. They are also difficult to move, for reasons having to do with both labour relations and the conception of school-level authority that tends to pervade South African education. Over time, this historical legacy will work itself out of the system.

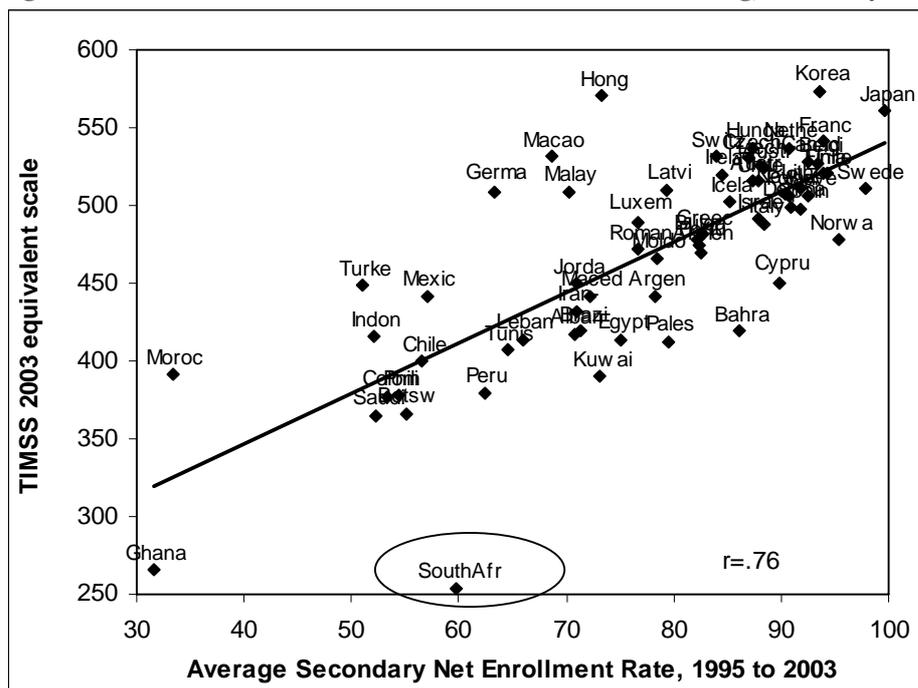
4.3. Equity of results, implications for efficiency

Gustafsson and Patel (2006) make other important points regarding equity, which need to be taken into account. They calculate the concentration indices not just for inputs, as is frequently done, but, more innovatively, for the outputs of the system, as well as for income. This analysis shows that:

- 1) All schooling inputs and results are much more evenly distributed than societal income, which possibly bodes well for a more equal future. Societal income has a concentration index of around 0.55 to 0.60, depending on how one measures, whereas cognitive educational outputs have a concentration index around 0.15 to 0.20, and educational inputs have a concentration index of between 0.10 and -0.30.
- 2) Some educational inputs are distributed in a much more pro-poor fashion, namely non-personnel, non-capital. It has been difficult, for human and political reasons, to effect a pro-poor shift in personnel as strong as the pro-poor shift in non-personnel resources. Thus, the latter have concentration indexes of around -0.20 to -0.30, whereas total resources are only approximately neutral.
- 3) Educational results, such as those measured either by SACMEQ or TIMSS, are distributed much more unequally than inputs (though much more equally than income).

The latter point is disturbing. While input equalization is increasingly taking place, and while it is true that equality of results is much greater than equality of income (and, thus, education is already contributing to a more equal future) equalization of results is seriously lagging the equalization of inputs, and thus education is not contributing as much as it could be towards a more equal future. After all, it is the distribution of cognitive results today, not the distribution of inputs today, that will contribute to the distribution of incomes tomorrow. This is all particularly worrisome if one notes that South Africa is a fairly serious under-performer when it comes to the delivery of cognitive output relative to access to schooling as shown in Figure 5, or relative to spending as shown in Figure 6. (This figures shows that in general there is really no correlation between levels of spending and levels of cognitive development. South Africa is an outlier on cognitive achievement, but more or less in the middle in terms of spending.)

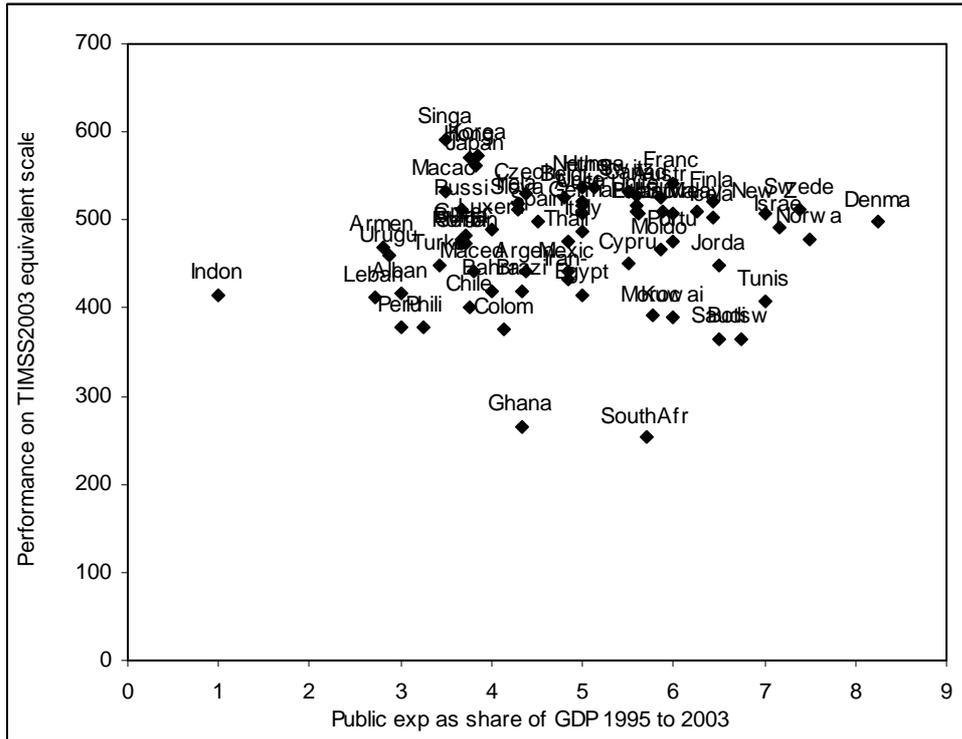
Figure 5. Cross-sectional correlation between access and learning, secondary level



Source: calculated by the authors from TIMSS 1995, 1999, 2003 and PISA 2000 and 2003 data for cognitive achievement and World Bank Edstats data for the net enrollment rate.¹⁰ Note that the vertical axis is truncated. This exaggerates the vertical distance between points and the trend line. However, the vertical scale does not have a clear zero point in any case, due to the scoring methodology used in these international assessments.

¹⁰ While these various assessments purport to measure different concepts of cognitive development, in reality the cross-country correlation between these instruments is extremely high (many countries have participated in more than one assessment, which makes it possible to establish the correlation between them), suggesting that cognitive development is all more or less “all of a piece” at least as measured by these sorts of assessments. The regression line between all of the instruments and TIMSS2003 is used to create a “TIMSS2003-equivalent.” For PISA, all three (reading, mathematics, and science) are averaged. For TIMSS, the science and mathematics scales in grade 8 are averaged. For more details on how these calculations are made, write lcrouch@rti.org.

Figure 6. Spending and cognitive development



Source: for performance, see Figure 5; for expenditure World Bank Edstats online data series.¹¹

South Africa has had a fairly cavalier attitude towards the monitoring or enforcement of quality. This is partly because of the current decentralised nature of the system, and also because systemic information is not used at the micro level to feedback, support, and hold teachers accountable. It is also partly a matter of historical attitude. It is, perhaps, the other side of South Africa’s avocation for raw access (and makes it somewhat similar to the US, in that respect—the US being a country that achieved mass access to secondary education very early, but at the cost of a rather forgiving attitude towards standards). As against the opinions of recent critics of the new government, this is hardly a new phenomenon. In a valuable contribution, Fedderke, de Kadt, and Luiz (2000) demonstrate how for the entire 20th Century the increase in the “matric” pass rate (the only, and final, testing point in education, essentially a grade 12 leaving exam) for whites was improved in great measure by reducing the percentage of white students who took mathematics. Malherbe (1977), in a detailed historical analysis, documents this further, providing a vast wealth of examples from the entire 20th Century, many of them somewhat tragic-comic, given the long-term impact.

Study after study, in the last 10 years, document that the relationship between the provision of inputs and the academic results of South African children is fairly feeble, if one controls for socioeconomic and managerial conditions. One or two studies tend to show otherwise and claim some impact for, say, the pupil-teacher ratio (Case and Deaton 1999), but most more recent studies using much more detailed data do not confirm these results (van der Berg and Louw 2006, Borat and Oosthuizen 2006, Gustafsson 2005b, Gustafsson 2006). Moreover some these studies (e.g., Gustafsson 2005a) conclude that even the privileged sectors of South African society under-perform, with which Fedderke, de Kadt, and Luiz (2000) concur. Other recent studies (Fedderke and Luiz 2002) find some balance between the two points of view. Perhaps the bottom line is this: “What this study has shown is that circumstances can be improved through a judicious use of inputs in education, but equally that inputs into education will be used effectively only where the institutional dispensations governing the

¹¹ <http://devdata.worldbank.org/edstats/cd5.asp>, accessed on 27 August 2006.

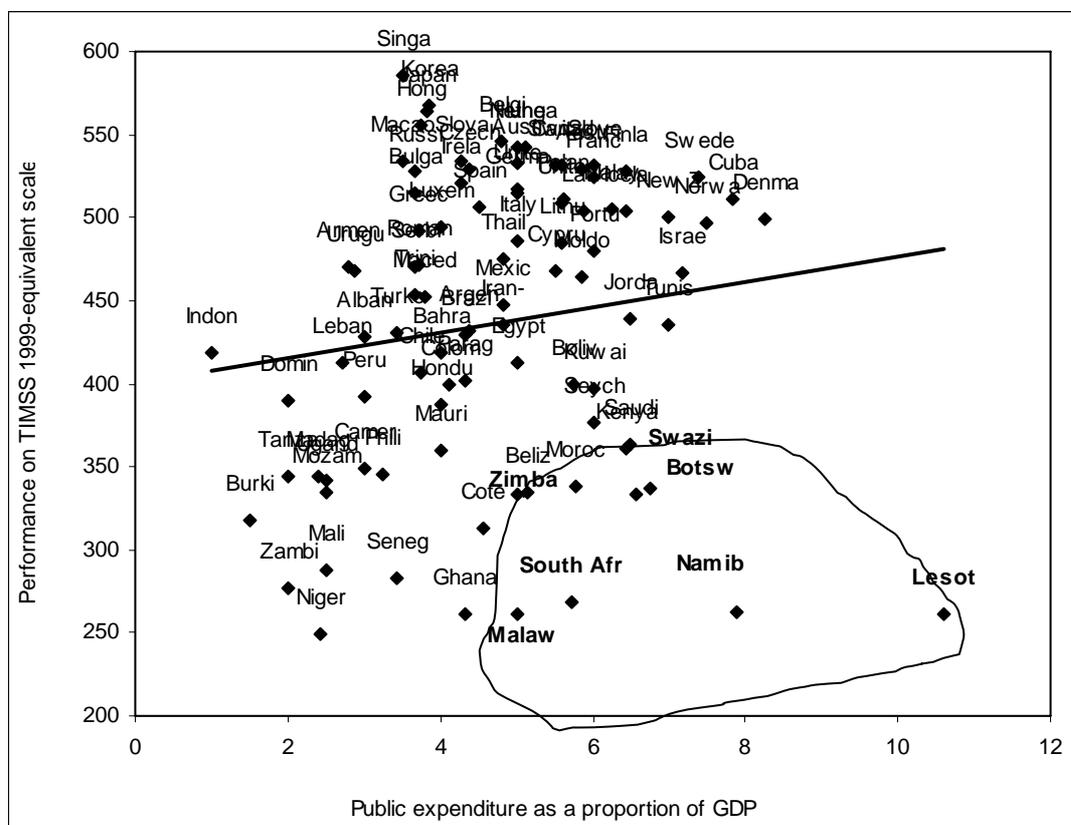
decisions on resource use are such as to allow parents to force decision makers to be effective. Money alone is not the answer” (Fedderke and Luiz 2002: 184).

All of this suggests that the issue of value-for-money in South African schooling, which is key to the equalization not just of inputs but of learning achievement, remains largely un-tackled. This is perhaps the most important agenda for the future. How investment can play a role in taking on this issue is discussed in section 5.

4.4. A Southern African pattern?

Given that this paper is being presented at a seminar with a continental focus, it may be worthwhile to digress for a bit to explore an interesting pattern that emerges from the international comparisons of learning achievement and expenditure. Using a methodology similar (but more complicated) to that used for Figure 5, we brought in data from SACMEQ and other regional assessments as well.

Figure 7. Cross country comparisons of learning achievement and spending



Source: author-constructed TIMSS1999-equivalent scale, World Bank EdStats for expenditure

The trend that emerges is not significant. The trend line is shown for reference purposes only. The interesting point is that achievement in Southern Africa is about the same as in West Africa, but spending is generally much higher. It would seem important for the region to try to understand this phenomenon. If one graphs (not done for lack of space) achievement against enrolment, one also observes the same phenomenon: an over-emphasis on enrolment relative to achievement in Southern Africa as compared to the rest of Africa or, indeed, the rest of the world.

4.5. Investment patterns by sub-sector

Interest has been expressed as to whether South Africa's sub-sectoral investment patterns are more or less "in line" with international benchmarks. To assess this, we gathered data on some 20 comparator countries from the World Bank's online education data source EdStats. The comparators were mostly chosen for being close to South Africa in terms of income per capita. In addition, a few high-growth comparators were chosen. The data chosen was, for each country, the most recent estimate (MRE); thus the data are not all for one period. (However, in no case was it necessary to recur to a year prior to 2000.) Because the data for the comparator countries exhibit considerable variance and have some extreme values, it seemed better to use the median rather than the mean, and because the list was ample, the median is robust. The detailed data are presented in an annex table.

Table 1. Comparisons between South Africa's and other countries' sub-sectoral priorities

Category	South Africa	Median of comparator countries	Mean for fast-growth comparators	Percent difference between SA and comparators
Gross Enrollment Ratio Primary	106	108	104	-2%
Gross Enrollment Ratio Secondary	89	78	75	13%
Gross Enrollment Ratio Tertiary	15	28	27	-46%
Primary Expenditure per Pupil as Percentage of GDP per Capita	14	11	11	29%
Secondary Expenditure per Pupil as Percentage of GDP per Capita	18	13	13	35%
Tertiary Expenditure per Pupil as Percentage of GDP per Capita	53	33	36	61%
Share of Primary in Total Education Expenditure	44	34	40	30%
Share of Secondary in Total Education Expenditure	31	34	31	-7%
Share of Tertiary in Total Education Expenditure	15	19	19	-21%

Source: calculated from World Bank's EdStats online database.

Some important patterns do seem to emerge. South Africa's secondary enrolment is a little higher than that for comparators, but the tertiary enrolment is much lower: by 46%. At all levels, expenditure per student as a proportion of GDP per capita is higher than for the comparator countries. It is particularly higher at the tertiary level. Thus, it seems that cost is a constraining factor in expanding tertiary enrolment. Finally, internal allocation is also probably constraining tertiary enrolment. South Africa over-spends on primary education, relative to comparator countries, and under-spends on tertiary.¹² In addition to all this, the Department of Education (2005) notes that South Africa tends to under-invest in post-secondary but non-tertiary vocational and technical education and training (FET in South African parlance).

4.6. The problem of physical infrastructure

Thus far we have noted that significant improvement has been made on equalization, or the "rights" agenda, in terms of recurrent resources. And we have noted the "skills" agenda, which requires an improvement in the efficiency of the sector, are tasks still ahead. This section turns to examine the other important unfinished agenda, namely the problem of physical infrastructure.

¹² These patterns appear interesting, but if their statistical significance was low, there is not much to say about the apparent substantive import. However, all the differences between SA and its comparators were judged to be statistically significant, using an approximate test, except the primary gross enrolment ratio and the share of education expenditure going to secondary education. The approximate test used was whether South Africa was more than two standard errors from the median of the comparator countries.

The problem in this area is that the starting conditions of inequality for physical infrastructure were much worse than for any other input, and they have been fairly resistant to change. The conditions have historical roots. In order to ascertain this, we used the School Register of Needs (SRN) from 2000, the last year for which there were relatively serious data on physical infrastructure conditions.¹³

The inequality indices used below refer to 0-order entropy coefficients, not Gini coefficients. This was done so as to allow the disaggregation of the inequality into within-province and between-province components. Since most readers will tend to be accustomed to Gini coefficients, it may seem as if some comparison or benchmark between Gini coefficients and these others is needed. But it is probably better just to compare and benchmark “internally” to the table. By looking at the second set of columns in the table below, for example, we can see that the “within” Department inequality was only 0.01 for the old white department (HoA) and as high as 0.4 for the most unequal African department (Transkei), though this is an aberration, other very unequal departments having indices of 0.05 or 0.06—nonetheless 5 times more unequal than the old white department. It is known that the old white departments did a reasonable job assuring internal equality. Thus a benchmark of 0.01 could be judged ideal. Turning to the first set of columns we can note that the degree of inequality in the total system as of 2000 was 8 times higher than the “reasonable” benchmark provided by the old white department (that is, 0.08 over 0.01). But these figures refer to inequality only. Just as important is the “absolute” depth of deprivation. The best-off new provinces had, as of 2000, a depth of deprivation of around 0.1% to 0.3% or so, whereas the worst-off have levels of deprivation that are many times worse. The comparison between the old departments and the new ones is instructive also in signalling that the current problems have their roots clearly in the past. Not all the apartheid African departments were equally under-provided and equally internally unequal. Transkei, Lebowa, and KwaZulu, for example, appear to have been internally much more unequal than, say, Boputhatswana, and had as much as 10 times more deprivation. This is why today the Eastern Cape, say, is one of the worst-off provinces.

¹³ One could quibble with the use of the 2000 SRN. There was an SRN in 1996. The 2000 SRN was based on self-assessment, by principals, of school’s infrastructure stock. This is subject to rater error, naturally, and these errors are probably not random. But it was felt that it was better to use something relatively more recent.

New provinces			Old administrations or departments		
Province	Inequality	Depth of poverty	Department	Inequality	Depth of poverty
EC	0.26	9.2%	DET	0.04	0.5%
FS	0.01	0.1%	HOR	0.02	0.1%
GP	0.01	0.1%	Ciskei	0.04	0.6%
KN	0.08	1.9%	Transkei	0.40	35.8%
MP	0.03	0.3%	HoA	0.01	0.1%
NC	0.01	0.0%	HoD	0.01	0.0%
LM	0.05	0.9%	Kangwane	0.03	0.3%
NW	0.03	0.2%	Boputhatswana	0.03	0.3%
WC	0.01	0.0%	Qwaqwa	0.01	0.0%
			Lebowa	0.05	1.6%
Within-province inequality		0.070	KwaZulu	0.06	2.4%
Between-province inequality		0.015	KwaNdebele	0.02	0.0%
Total inequality		0.085	Gazankulu	0.03	0.2%
			Venda	0.03	0.2%
			Within-department inequality		0.054
			Between-department inequality		0.031
			Total inequality		0.085

Source: Crouch (2003)

The government has attempted to address these issues but the problems of “schools under trees” have persisted. What are some of the possible reasons? The following have been suggested by the experts.

In general, a lack of capacity seems to be a bigger constraint than a lack of funding *per se*. The areas of lack of capacity seem to include the following. First, there is a lack of capacity for higher-order and strategic planning, in terms of being able to allocate to areas where there is still demographic growth, tying infrastructural investment to that demographic growth, networking with housing agencies and community development agencies, networking with local governments, etc. Second, most of the lack of capacity is at the district and more local levels. Thirdly, the lack of clear guidelines and standards of functionality, that are not too expensive but can deliver, from the national level, also tends to hamper. One sign of the fact that there is a capacity problem is the fact that budgets are often under-executed. This is attributed to the lack of planning, e.g., the failure to have in stock a set of projects that can be executed as funding comes in. There is lack of a process of monitoring and planning, and constant adjustment of plans, but with a plan that is always more ambitious than the budget, as a way of ensuring that the budgets are not under-spent. The existence of a stock of plans can also help when one project gets paralysed. In that case, other projects can quickly be brought on stream. But, again, this capacity does not exist.

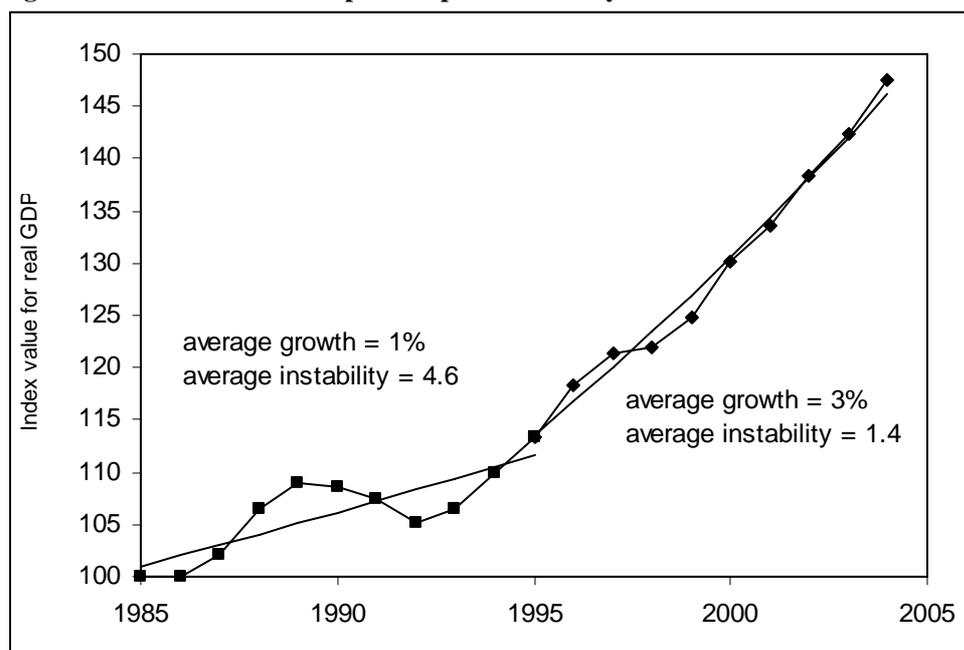
One of the key problems, apparently, has been that the whole issue of infrastructure tends to be confronted on an emergency and fragmented basis, in repeated waves of concern, rather than on the basis of a carefully wrought-out policy.

It is also possible that there is a credibility problem in the development of capacity to implement. Since funding for infrastructure seems to respond to special projects, donations from foreign governments, special grants, and so on, it may be that provincial education departments do not invest in permanent capacity development, since they tend to see the addressing of “backlogs” as a temporary problem, financed by special projects and funds. This prevents the development, for example, of a stock of projects and a process of constant planning and re-planning that might exist if there was a long-term credible policy and plan to address the problem.

5. Investment priorities for the future

The policies of the democratic government have paid off, from most appearances. The payoff is not spectacular, at least not yet. But it is solid. That is, the growth rate has averaged 2 points higher in the 10 years since democratization (1995 to 2004) since democratization than in the 10 years before it (1985-2005) and moreover this growth tends to be more predictable, as evidenced by our measure of growth stability (the average percentage squared deviation of the real GDP index from its trend). The lines in the figure below show the (logarithmic) trend; the deviations from trend are evident.

Figure 8. Growth rate trends pre and post democracy



Source: World Bank online data, trend estimates by the authors

All this suggests that there will be more leeway to invest. This section outlines some possible investment priorities. Investment priorities could be oriented at the two separate issues: “rights” and “skills.”

5.1. The “rights” agenda

On the “rights” side a key priority is to improve the delivery of physical infrastructure and durable goods to schools. While requiring funding and monetary investment, much of the investment that is needed is in the systems themselves. Suggested steps might include:

1. A more credible commitment to long-term physical infrastructure and backlog elimination, to create incentives for actors to build up their capacity. This may require institutional or budgeting innovations.
2. A clearer national policy on the issue, including norms and standards.
3. A simple, clear, and full specification of the capabilities that are needed within provincial departments to take on the task. This specification of capacities should be part of the national policies. The capabilities specification should include both the numbers of persons needed per province, in order to handle the problem, and the level of skills the staff should have. Given the difficulty of pre-defining skills levels, one should consider whether the national Department of Education should have a certifying function.

4. Provision of training that meets the pre-specified standards or the national Department's certification. If staff do not meet the national certification, they would need re-training until they get it right.
5. It should be considered that the morass of dysfunctionality is such that a special fund or agency could be created. However, this runs into the danger of creating parallel structures. Furthermore, if the problem is a fundamental lack of capacity, it is unclear how creating new institutions will solve the problem. If the problem is a lack of institutional capacity in management and coordination, a new agency might be of help. South Africa has tended to steer clear of such agencies, but the international experience in some cases has been positive and may pay study.

5.2. The "skills" agenda

On the skills issue the key investment areas relate to improving the skills of teachers, while holding them accountable for using such skills in ways that demonstrably lead to improved results amongst the learners. There have been enough donor-based experiments, as well as special projects, in South Africa already, that the basic needed steps seem fairly clear (see Schollar 2006, Taylor 2006, Taylor forthcoming).

1. Continued improved specification of learning results, and clearer communication of such results to teachers, via continued in-service training.
2. Large-scale investment in improved testing and assessment of children, in a detailed manner than can underpin a specification of the sequential gaps being left by the teachers. Testing for diagnostic and detailed assessment of sequential gaps could be done on a sample basis. But testing to drive accountability most likely needs to take place on a census basis.
3. Highly specific in-service training around both the specified learning goals and the learning gaps identified. The training needs to move away from generic approaches and needs to focus on how to impart certain skills.
4. Development of much more tightly programmed, year-long learning programmes. It may be argued that these will undermine teacher professionalism and will intrude on classroom processes. One solution is to hold teachers accountable for results. Those that are getting results can use whatever methods are providing results. Those that are not getting results have to follow much tighter scripts and year-long programmes than has been the case up to now, even if they impinge on classroom autonomy.
5. In addition, teachers getting results, or those following a clear instructional programme, should be freed of bureaucratic and paperwork requirements that are not proven to lead to child-level cognitive results. Paperwork and bureaucratic monitoring should be reduced, as much as possible, only to that which is proven to lead to results in children's skills.
6. In addition, continued and massive provision of learning materials needs to be ensured, including standardized basic packages of inexpensive materials, including school libraries for pleasurable reading.

It may seem as if there is not much of an investment strategy here, as if the recommendations above require mostly policy changes, or investment in systems development. This would require some political will, technical skill, and some limited monetary investment. But there is also a need to invest in skills and capacities of massive numbers of very poorly-skilled teachers. The investment required, thus, is in improving teacher capacity. This, in turn, will require monetary incentives for the teachers, as well as for the trainers of such teachers. Monetary incentives for either could be short-run, rather than permanently built into pay systems. That is, the incentives should be for providing the once-off boost in teacher skills that is most needed. It may be that in addition permanent incentives are needed to encourage teachers to stay in, or be attracted to the profession. But the evidence that this is needed is relatively weak. While it is true that there may be shortages of absolute numbers in the future, it is not clear that this is related to lack of incentives. Furthermore, it is also clear that the worst problem, at least from the quality point of view, is the historically-driven lack of practical and serious pedagogical and cognitive skills in the majority of the teachers. Whether this will respond to

monetary incentives and accountability pressure is uncertain, but it seems important to at least to support more serious experimentation.

References

- van der Berg, S. 2005. "Fiscal expenditure incidence in South Africa, 1995 and 2000: A report for the National Treasury." Stellenbosch, South Africa. University of Stellenbosch.
- van der Berg, S. and M. Louw. 2006. "Unravelling The Mystery: Understanding South African Schooling Outcomes In Regional Context." Paper to the conference of the Centre for the Study of African Economies, Oxford University, 21st March.
- Bhorat, H. and M. Oosthuizen. 2006. "Determinants of Grade 12 Pass Rates in the post-Apartheid South African Schooling System." University of Cape Town.
- Buckland, P. and J. Fielden. 1994. "Public expenditure on education in South Africa: 1987/8 to 1991/2." Washington: The World Bank.
- Case, A. and A. Deaton. 1999. "School Inputs and Educational Outcomes in South Africa," **Quarterly Journal of Economics**. Vol. 114, No. 3.
- Crouch, L. 2003. "Inequality and Poverty in South African Education: Some Facts and Some Policy Implications." RTI. Unpublished wordprocessed document prepared for the Department of Education.
- Crouch, L. 2005. South Africa equity and quality reforms. **Journal of Education for International Development**, Vol. 1, No. 1. Retrieved 27 August 2006 from <http://www.equip123.net/JEID/articles/1/1-2.pdf>.
- Crouch, L., and T. Mabogoane. 1997. "Aspects of Internal Efficiency Indicators in South African Schools: An Analysis of Current and Historical Data." **Data News**. Vol. 19. December. Johannesburg: EduSource.
- Department of Education. 2005. **South Africa's education investment. Key trends and policy implications**. Directorate: Economic Analysis. Department of Education. Internal draft only, not available for distribution.
- Fedderke, J.W., and Luiz, J., 2002. "Production of Educational Output: time series evidence from socio-economically heterogenous populations - the case of South Africa 1927-93." **Economic Development and Cultural Change**. Vol. 51, No. 1.
- Fedderke, J.W., De Kadt, R.H.J., and Luiz, J. 2000. "Uneducating South Africa: the failure to address the need for human capital - a 1910-93 legacy." **International Review of Education**. Vol. 46, Nos. 3 and 4.
- Fischer, S. 1993. "The Role of Macroeconomic Factors in Growth." NBER Working Paper No. 4565.
- Gustafsson, M. 2005a. "Mathematics performance and value for money in education: Not just a problem in historically disadvantaged schools." Unpublished draft.
- Gustafsson, M. 2005b. The relationships between schooling inputs and outputs in South Africa: Methodologies and policy recommendations based on the 2000 SACMEQ dataset. Paper presented to the SACMEQ conference, Paris, September.

Gustafsson, M. 2006. School production modelling to strengthen government monitoring programmes in developing countries. Master's thesis in Economics. Stellenbosch: University of Stellenbosch.

Gustafsson, M. and F. Patel. 2006. "Undoing the apartheid legacy: Pro-poor spending shifts in the South African public schooling system." **Perspectives in Education**. Vol. 24, No. 2.

Louw, M. S. van der Berg, and D. Yu. 2006. "Educational attainment and intergenerational social mobility in South Africa." Department of Economics. University of Stellenbosch.

Malherbe, Ernest. 1977. **Education in South Africa. Volume II: 1923-75**. Cape Town: Juta Publishers.

Schollar, E. 2006. "Analysis of the Impact on Pupil Performance of the District Development Support Programme (DDSP)." Prepared for RTI and USAID under the Integrated Education Programme.

Taylor, N. 2006. "South Africa: Fixing Schools Will Take Huge Effort." Business Day. Opinion piece. 18 August 2006. Located at <http://allafrica.com/stories/200608180286.html> and accessed on 27 August 2006.

Taylor, N. Forthcoming. "Equity, Efficiency and the Development of South African Schools1." In Townsend, T. (Editor), **International Handbook of School Effectiveness and Improvement**. Dordrecht: Springer.

Annex Table. South African Data Benchmarked Against Comparator Countries Chosen by Current Income Levels

Category		Gross Enrollment Ratio Primary	Gross Enrollment Ratio Secondary	Gross Enrollment Ratio Tertiary	Primary Exp per Pupil as Percentage of GDP per Capita	Secondary Exp per Pupil as Percentage of GDP per Capita	Tertiary Exp per Pupil as Percentage of GDP per Capita	Share of Primary in Total Education Expenditure	Share of Secondary in Total Education Expenditure	Share of Tertiary in Total Education Expenditure
Median of comparator countries		108	78	28	11	13	33	34	34	19
Mean for fast-growth comparators		104	75	27 ¹⁴	11	13	36	40	31	19 ¹⁵
Percent difference between SA and comparators		-2%	13%	-46%	29%	35%	61%	30%	-7%	-21%
South Africa	Upper Middle	106	89	15	14	18	53	44	31	15
Comparator countries "today" (Most Recent Estimate)										
Iran, Islamic Rep.	Lower Middle	92	78	21	12	12	33	24	36	17
Algeria	Lower Middle	109	80	21	11	17				
Ecuador	Lower Middle	117	59		3	6		35	36	5
Tunisia	Lower Middle	111	78	27	16	24	54	33	44	23
Brazil	Lower Middle	147	110	21	11	11	51	30	40	22
Turkey	Upper Middle	91	79	28	14	9	44	46	21	34
Dominican Republic	Lower Middle	124	59	34	9	4	2	63	12	3
Panama	Upper Middle	112	71	43	10	16	33	32	29	28
Malaysia	Upper Middle	93	70	29	20	28	102	31	34	33
Peru	Lower Middle	118	90	32	6	9	14	34	28	15
Uruguay	Upper Middle	109	106	37	8	9	19	33	34	21
Jamaica	Lower Middle	100	84	17	14	23	42	36	41	15
Argentina	Upper Middle	119	100	60	11	15	13	35	39	17
Chile*** ¹⁶	Upper Middle	98	91	45	15	16	15	40	38	13
Botswana***	Upper Middle	103	73	5	6	6	90	53	24	19
El Salvador***	Lower Middle	113	59	17	10	9	11	54	24	7
Thailand***	Lower Middle	97	77	39	15	14	25	32	24	19
Costa Rica***	Upper Middle	108	66	19	16	23	51	42	32	19
Mauritius***	Upper Middle	104	81	15	9	14	49	31	38	16
Lebanon***	Upper Middle	103	79	44	5	6	8	29	33	28
Korea early 1980s	High	103	85	24	14	10	13	37	30	14
China 1990 or closest	Lower Middle	125	49	3	5	13	100	28	29	16
India 1990 or closest	Low	99	44	6	20	14	88	33	27	14

¹⁴ Botswana judged an outlier and not used in the mean.

¹⁵ El Salvador judged to be an outlier and not used in the mean.

¹⁶ Countries denoted with three asterisks have had growth rates higher than 5% over the period 1980 to 2004.