Fiscal expenditure incidence in South Africa, 1995 and 2000 [1]

A report for the National Treasury

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Introduction

In 1999, the National Treasury (then still known as the Department of Finance) requested a team of researchers to investigate shifts in fiscal expenditure incidence for the period 1993 to 1997. This study consisted of two parts, the one dealing with expenditure incidence and the other with tax incidence. The previous study was linked to a related study of tax incidence by Simkins, Woolard & Thompson (2000), using the same welfare measure (income per capita before social transfers). The expenditure incidence, or benefit incidence, side of this project was undertaken to systematically investigate who benefits from public expenditure (Van der Berg 2000a & b). The expenditure study focused on about 60 per cent of expenditure – education (both at school and at universities and technikons), health, social grants, water provision and housing – between 1993 and 1997. It concluded that the first years after the political transition to democracy saw a large and significant shift of social spending from the affluent to the more disadvantaged members of society. Spending had become relatively well targeted to poor people, as a result of shifts of government spending to social services, changes in composition of social spending, shifts between programmes, and better targeting. In particular, the extent of rural targeting was found to be extremely high for a developing country. The results of the study were used by the government *inter alia* in the 2000/01 Budget Review and to inform the Ten Year Review process by way of a paper to a workshop held by the Presidency (Van der Berg 2002) and were also incorporated into two journal articles (Van der Berg 2001a &b).

At the time of the original study, government made clear its intention of undertaking regular updates of this work in order to inform the policy process. Consequently, the present study was commissioned in 2004 from the same researchers. The terms of reference required determining incidence of public expenditure in 1995 and 2000 in key selected areas of particular concern to poor households.[2] The objective was to determine whether and to what extent there had been a shift in public expenditure incidence between 1995 and 2000 and who were beneficiaries of such shifts. Since the previous study, the long term impact of policies adopted earlier has increased, e.g. greater equity in teacher-pupils ratios and the move towards primary health care. Some new policies designed to improve the situation of the poor had not yet had their full impact (e.g. the introduction and rapid expansion of child support grants) or were only implemented later (e.g. subsidies for basic municipal services).

The previous incidence study largely utilised the Income and Expenditure Survey (IES) linked to the October Household Survey (OHS) of 1995, referred to hereafter as IES/OHS95. The 2000 Income and Expenditure Survey linked to the Labour Force Survey of Statistics South Africa (hereafter IES/LFS2000) provides income and expenditure data that should in principle have enabled comparative analysis to be undertaken regarding changes in expenditure incidence between 1995 and 2000. However, there are severe credibility problems regarding IES/LFS2000, *inter alia* because the results published in a Statistics SA document (South Africa, Statistics South Africa 2002) appear to show large inconsistencies with the IES/OHS95 and with national accounts trends.[3] In discussions Statistics South Africa blamed incomparability with the 1995 surveys on poor sampling and subsequent weighting in IES/OHS95, rather than in IES/LFS2000, implicitly admitting that their comparison of the results of the two surveys was not credible. However, there are many additional data problems relating to this survey:

- The magnitude and relative magnitudes of income components are incompatible with national accounts data.

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[2] *The Terms of Reference for this study set out that the fiscal expenditure incidence should be determined for school education, tertiary education, health services, social assistance, housing, free water and free electricity. It turned out that free water and free electricity were not yet funded nationally or provincially in 2000, thus the preliminary work in this regard was discontinued after discussions with National Treasury.*

[3] *For instance, the 33% reduction in per household income and 43% reduction in per household expenditure in Gauteng are highly unlikely even if massive population shifts had taken place (which was not the case), and these reductions are inconsistent with modest real growth in retail sales and a 22% real increase in Gross Geographic Product of this province in the period 1995-2000 contained in other Statistics South Africa data series.*

- Matching the IES and LFS data does not produce consistent information about the race, age or gender of many individuals. [4]
- There are large differences in the weights for the IES and the LFS.[5]

The General Household Survey (GHS) of 2002 and 2003 do not contain the systematic income and expenditure data needed both to rank households by their economic welfare into quintiles or deciles, and to determine the distribution of taxation across products and income sources. It could thus not be used as primary data source, but rather to supplement IES/LFS2000. Thus it became necessary to derive an alternative source of data for comparing the 1995 and 2000 datasets. For this purpose, additional work had to be carried out on the 2000 IES/LFS, to arrive at estimates that would be comparable.

Although this report is mainly concerned with expenditure incidence, it first sets out briefly the situation with the income distribution model, which formally resorts under the tax incidence sub-project but is also an essential input for this sub-project. The appendices provide a summary of the cost information gathered at the sectoral (programme)[6] level as inputs to the final report. Given South African history, this incidence analysis should ideally consider at least the incidence of public spending by race group, income class and urban/rural location.

The beneficiaries of certain goods provided by government can be relatively accurately determined when determining public expenditure incidence, e.g. education, health services, social transfers, social welfare spending, and housing. The incidence of other functions is far more difficult to evaluate, e.g. police or defence spending. Various conventions have been followed in the expenditure incidence literature when allocating the benefits of the latter, but the results arrived at are largely driven by the assumptions made (e.g. that such functions are

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[4] *Between the two datasets, 103 732 observations match, but there are 1 639 unique to the LFS dataset and 421 unique to the IES. Of the matched observations, there are 268 cases for which the race variable from the two datasets does not match, 839 for which gender does not match, and 1 263 for which age does not match (in only 178 of these is the age difference one year, which can probably be ignored). Altogether, for 2087 of the matched observations between the two dataset one or more of these variables (race, gender, age) do not match between the two dataset, and 8984 individuals are members of households for which one or more of these variables do not match across the two datasets, leaving only 96 808 individuals in households without some matching problems (91.5% of 105 792 observations in the two datasets, or 92.9% of the 104 153 in the IES person dataset).*

[5] *For Gauteng, the number of black household heads is 43% higher in the IES than in the LFS, and for coloureds 27%.*

[6] *The terms "programme" or "sector" will be used interchangeably, to refer to the expenditures covered. Neither term is fully accurate, as some but not all of these expenditures are indeed programmes.*

allocated in proportion to income, or in proportion to population share[7].) Generally speaking, recent attempts internationally have ignored less easily allocable functions (usually those with a greater public goods character) and concentrated on spending that can be so allocated.

Income distribution dataset

A usable income distribution dataset was a first requirement for both the expenditure and tax sides of the fiscal incidence project. The Global Insight version of the 2000 Income & Expenditure Survey (IES) was used as the starting point for this work. This version was created by a private consultancy group, Global Insight, evaluating the expenditure data item for item and line for line. Because the documentation was hard-to-follow and incomplete, several weeks were consumed in trying to fully understand what had been done to "clean" the dataset. Global Insight focused exclusively on the expenditure side of the survey, whereas this project requires both the income and expenditure components. Once the dataset was as clean as possible, the data were purged of records regarded as unusable. For this purpose, "expected" per capita income and "expected" per capita expenditure were estimated separately and the point estimates compared to these predicted values. Where the point values were more than 2 standard deviations from the expected values *and* there was an apparent mismatch between income and expenditure, the record was discarded.

Both the 1995 and 2000 IES datasets were then re-weighted, for three reasons:

- the original weights did not gross up to population totals;
- the original weights were released prior to the release of the 2001 Census, which found significantly different population totals from what had been assumed in some provinces; and
- to compensate for the records purged from the dataset.

Data for several years provided by StatsSA by age, province and gender were validated and the assumptions underlying StatsSA's demographic model assessed, before the IES datasets were re-weighted. Comparisons were then made between the 1995 & 2000 survey results and the 1996 and 2001 census results.

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[7] *See in this regard McGrath 1983*

Sectoral expenditure: Estimates of costs differentials

Four appendices set out the sectoral (programme) cost information required for the final modelling. These relate to School Education (responsible author Servaas van der Berg), Health (Ronelle Burger), Tertiary Education (Pierre de Villiers) and Housing (Andries Mouton & Janine Thorne). Given their dominance in the costs of social services, School Education and Health (mainly Hospital) Services had to receive most attention. With the assistance of National Treasury (particularly Kathy Nicholau and Mark Blecher), a large number of datasets for these two programmes were obtained. Working with the data turned out to be quite challenging, within the confines of time and budget. Many of the datasets were quite difficult to link, and much of the administrative datasets had great deficiencies. Where these were confined to some observations only (e.g. individual hospitals or schools), such observations then had to be dropped, taking care that the remaining data were not selective and therefore biased. Thus, for instance, many smaller hospitals eventually had to be dropped from the analysis in order to make sense of the remaining data.

Most international fiscal incidence studies presume that the cost of service provision does not differ between recipients of services, so they usually just require calculating average costs of service provision and then applying these to each service and aggregating over individuals or groups.[8] In South Africa, however, because of the massive differentials in subsidisation of services between race groups under apartheid, such a methodology would significantly underestimate inequalities and biases favouring the more affluent. Moreover, many shifts would not have been captured by a methodology that did not consider changing cost differentials. To give an indication of the danger in ignoring cost differentials, the Appendix on Education shows that cost differentials increased the concentration index by 0.108 in 1995, a large magnitude compared to the estimated actual reduction of 0.157 in the index between 1993 and 1997, most of which resulted from reducing inequalities in pupil-teacher ratios between race groups.

In Health, in contrast, the sectoral analysis for 1995 had indicated that there were no significant remaining cost differentials: access to public health was the important factor in determining incidence. Nevertheless, to test whether that does indeed hold, the health sector analysis concentrated on hospitals, by far the major factor in health costs. The results support

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[8] *For a fuller analysis of the methodology involved, see Demery 2000. For an application, see Castro-Leal et al. 1998.*

the earlier position: Although large cost differentials exist between hospitals and indeed provinces, these are not systematically related to either the race or the economic status of the users of these services. Thus, for instance, Mpumalanga has the highest hospital costs per bed night, although it is one of the poorest provinces and has only a small white population component. So it would seem that one can ignore health cost differentials with greater safety in the fiscal incidence analysis. However, the colossal cost differentials between hospitals and provinces point to possible efficiency differentials that should be addressed.

The report on Tertiary Education indicates that in this field, too, cost differentials are not systematic by race or income group, although access does differ substantially. Thus here, too, the cost differentials could be ignored. Housing subsidies are uniform, so the focus in the Appendix dealing with Housing is on the distribution of subsidies between provinces and income groups. In Social Grants, the value of grants had been equalised in 1993.

Modelling

There were two potential routes for proceeding with the final analysis from the available micro-level datasets. <u>Micro-simulation</u> would mean finding ways of allocating all expenditures to survey households and only thereafter aggregating across deciles, race groups, etc. <u>Grouped data</u> means using the deciles and race groups as the units and allocating expenditures on this basis. Though the former was the preferred option, it required far better data than were available, or strong assumptions to disaggregate and allocate some of the expenditures to individuals or households. Data quality issues made micro-simulation highly sensitive to assumptions, and the lack of health utilisation data in IES/OHS2000 made micro-simulation of health expenditures highly problematic. Thus the health data from GHS2003 were linked to IES2000, which required having to use grouped data.[9]

Thus, as in the previous fiscal incidence study, the expenditure incidence work reported here used grouped data. This essentially involved spreadsheet modelling, once the utilisation data had been extracted from the IES and LFS.

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[9] *Some modelling was also attempted to link income data to assets or other indicators of economic status, so that the GHS data, which contains income data only for certain income ranges and only at the household level, could be converted to income deciles.*

It is noticeable that more sources of *potentially* good data are available than was the case for the earlier fiscal incidence work, but data quality problems are a major headache, both with respect to the StatsSA data and the administrative data obtained from departments, and linking datasets at the national level is also a major problem with school-level data, although this could be easily put right by the education authorities. Data issues clearly will need further attention in subsequent work and for improving accountability.

Expenditure incidence analysis: Concepts and interpretations

Two concepts useful for presenting expenditure incidence results by income group are concentration curves and the concentration index.[10] To draw a concentration curve, the population is usually first ordered from poorest to richest, As our interest here is in determining the effect of government spending, the population was ordered from poorest to richest based on pre-transfer income, but in this case we used grouped data, and therefore deciles of households (which are not equal sized in terms of population). A concentration curve shows the cumulative proportion of spending going to cumulative proportions of the population. It is thus similar to a Lorenz curve. However, unlike the Lorenz curve, which shows the cumulative proportion of income earned by the cumulative population, a concentration curve can lie above the diagonal: The poorest 40% of the population cannot earn more than 40% of income, but they can indeed obtain more than 40% of spending on social grants, for instance. Where a concentration curve lies above the Lorenz curve, which applies to all the results shown here, spending is at least progressive or weakly equity-enhancing (Crouch 1996); i.e. it would redistribute aggregate resources even if funded by proportional taxes, and the poor are comparatively better off when considering both their income and public spending, compared to considering only their income. Where the concentration curve also lies above the diagonal, spending is targeted at the poor, i.e. it is strongly equity-enhancing or per capita progressive, the poor benefit more than proportionately to their numbers.

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[10] *A training workshop was held on poverty analysis and fiscal incidence on 26th July 2004 at the National Treasury, attended by some 30 officials from various government department. This workshop was presented by Ingrid Woolard and Servaas van der Berg and served to inform these officials on the previous research on fiscal incidence, the present work, and how such research links to poverty and targeting and how it can inform public policy. This workshop included some exposure to the tools used in measurement of poverty (welfare indicators, poverty lines, Foster-Greer-Thorbecke poverty measures, cumulative density curves) and benefit and fiscal incidence analysis (issues and problems in incidence analysis, concentration curves), with some applications in the South African and African contexts.*

Targeting accuracy can be summarised in the concentration index and the Kakwani progressivity index. The former is similar to the Gini coefficient, where a value of zero indicates complete equality of public expenditure. However, where a concentration curve lies above the diagonal, the area under the curve and above the diagonal contributes to negative values, where

Concentration Index = 1 – 2 x (Area under concentration curve)

and

Kakwani Progressivity Index = Gini Coefficient – Concentration Index

Where the Kakwani index is negative, expenditure is at least weakly equity-enhancing, whilst where the concentration index is negative, spending is per capita progressive or targeted, i.e. strongly equity-enhancing. Table 1 shows these two indices based on the earlier expenditure incidence study.

Table 1: Estimates of concentration index and Kakwani progressivity index for South African social spending programmes

	Concentration index			**Kakwani progressivity index**
	1993	**1995**	**1997**	**1995**
School education	0.079	-0.016	-0.078	-0.697
Tertiary education	0.261	0.235	0.223	-0.445
All education: Total	**0.113**	**0.030**	**-0.023**	**-0.650**
Health	-0.038	-0.068	-0.064	-0.748
Social grants	-0.437	-0.434	-0.433	-1.114
Housing	0.417	-0.020	-0.232	-0.700
Water	0.138	-0.019	0.008	-0.699
Total	**-0.046**	**-0.097**	**-0.123**	**-0.777**

Concentration Index = 1 – 2 x Area under concentration curve
Kakwani Progressivity Index = Gini-coefficient – Concentration index
Gini coefficient for pre-transfer income was 0.680 in 1995.
Source: Own calculations, based on applying geometry (i.e. assuming straight lines between observation rather than fitting curves to the data) to the results of the previous incidence study. These calculations are based on decile data, rather than the published quintile data. The calculations were based on the distribution of individuals, not households. Deciles/quintiles are equal sized in terms of households, not individuals.

<u>School education</u>

The cost estimates for education (see Appendix 1) show a considerable shift of resources since 1995. The major contributory factor was the shift in teachers to historically

disadvantaged schools. Remaining differences in teachers costs per pupil arise from the fact that poorer schools have difficulty attracting better qualified and experienced teachers, with the result that a significant differential still remains between the average cost per white and per black child. Amongst black pupils, too, there are major differences in the cost of teachers per pupil, again as a result of the differences in the qualifications of teachers. Table 2 in Appendix 1 shows major differences in average salaries paid to teachers in more and less urbanised provinces. On average, teachers in Gauteng earn 16% more than those in Limpopo, largely because of differences in the qualification mix of teachers. Thus, to capture these differentials amongst the resources available to black students in various localities and also to allow for differences in access to more advantaged schools, we again make the assumption as in the earlier expenditure incidence study that black pupils in the top 3 deciles of households receive 20% more teacher resources per pupil than other black pupils.

Based on the above, it is possible to estimate the distribution of the total costs of teacher resources, given the actual fiscal expenditure on personnel resources in public schools. (For the moment, non-teaching personnel are excluded from the calculations; we shall return to this issue.)

Since the previous incidence study, when recurrent expenditure per child was very low and approximately equally distributed, the National Norms and Standards were introduced and prescribed that poorer schools should receive more resources from the Resource Targeting List. It appears to capture about one half of recurrent non-personnel expenditure going to schools. The prescribed ratio was that the poorest quintile of schools should receive 175% of the average amount per pupil, the next quintile 125%, the third quintile 100%, the quintile 75%, and the richest quintile of schools only 25%. This policy has not had the full intended equity effect, for a variety of reasons (see South Africa, Department of Education 2003; Simkins 2002):

- The provincial quintile distributions do not match the national quintile distribution;
- Provinces budgeted varying amounts for recurrent spending;
- Provinces could top-slice some of the recurrent expenditure before applying the Norms and Standards distribution formula, and many did so on a relatively large scale;
- The data on which provinces based their ranking were often poor – Simkins (2002) finds little correlation in some provinces between rankings based on his poverty index and those of the provinces;

- The poverty status of schools does not necessarily match those of all their pupils. The catchment areas of some schools cover a variety of economic circumstances. Thus the quintile matching and that of the household dataset may be poor. Moreover, the groupings in the dataset are by quintiles (or deciles) of <u>households</u>, which are not equal sized in terms of <u>numbers of pupils</u>.

Nevertheless, as an "ideal type" it was assumed that half the non-teaching recurrent spending was distributed in per capita terms as prescribed by the Norms and Standards, and the other half equally. This is contrasted with an alternative assumption, which assumes less targeting; this was derived by assuming that one third of these resources were distributed according to the formula, and the other equally. An analysis shows that this alternative assumption has little effect on aggregate resource allocations, although Norms and Standards recurrent spending is obviously far better targeted than teacher spending. The concentration index for this item only declines marginally from -0.214 to -0.195. As non-personnel only constitutes less than 10% of all recurrent costs in education, the effect of this assumption on the total targeting of school spending is minute. For this reason, we use this second assumption (i.e. 1/3 ideal in terms of the Norms and Standards) regarding the targeting of non-personnel recurrent spending in our further analysis.

Table 2 below shows the concentration index for school spending and related magnitudes, and Figure 1 the concentration curves. It is firstly notable that there has been virtually no change in the utilisation rate of school facilities across the income distribution, with the result that the concentration curve for the school population (i.e. the one that would have applied had spending been equal across the board) remained virtually unchanged. It weakened only marginally from -0.121 to -0.124, within the likely margin of error of the surveys. However, mainly because of the high concentration index for teacher costs in 2000 and its considerable shift between 1995 and 2000, the overall concentration index improved considerably, from -0.016 to -0.104, reflecting much improved targeting. Also noteworthy is that overall school costs are now quite similarly distributed as the school going population, as the concentration curves show, implying that the cost differentials between the more and less affluent are no longer of major consequence for aggregate fiscal incidence. This is also reflected in the small difference remaining between the concentration index for the school population (-0.121) and school costs (-0.104). The assumption often made in international studies of benefit incidence, that costs per unit are equal and that cost can thus be distributed proportionally to the utilisation of services, is now no longer as unrealistic as it would have been in 1995.

Table 2: Concentration indices for school population and school spending

|	1995	2000
School population	-0.124	-0.121
School costs (total)	-0.016	-0.104
Teachers costs	-0.011	-0.097
Recurrent:	-0.124	
Assuming 1/2 ideal		-0.214
Assuming 1/3 ideal (used in further calculations)		-0.195

Figure 1: Concentration curves for school population, teachers costs and recurrent school costs
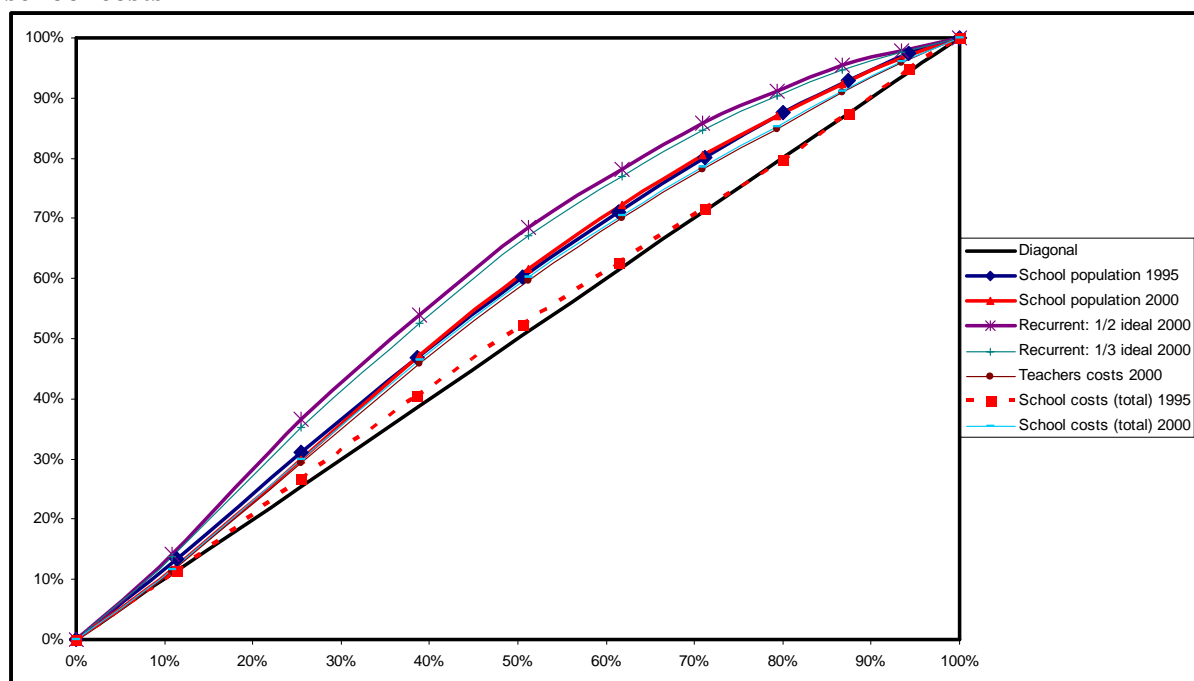
Thus full equity in spending per child has almost been reached, and what differences remain are the result of the better qualified teachers in more affluent schools, particularly formerly white schools and urban schools. In some respects, spending may even go beyond this level to favour poor children disproportionately, once the new post provisioning norms are fully applied. However, the issue increasingly becomes an allocative rather than a distributive one: How can access of the poor to the limited real resources (qualified and quality teachers) be increased? Complementary resources (teaching materials, etc.) are easier to supplement for the poor, but there are limitations on the flexibility and choice of input mix.

The major factor behind the noticeable shift in targeting in school education was the equalisation of teacher-pupil ratios across schools. Some of the remaining differentials also arise from differences in the mix between primary and secondary pupils. This can be

illustrated by Figure 2, which shows concentration curves for the distribution of the primary and secondary school population. The concentration indices are -0.155 for primary and -0.068 for secondary school attendance respectively. This quite large difference reflects the higher propensity of the poor to attend primary rather than secondary school. Drop-outs as well as the younger age structure of the black population are contributory factors, and as these change, targeting accuracy will automatically improve.

Figure 2: Concentration curves for school population and costs and between primary and secondary schools
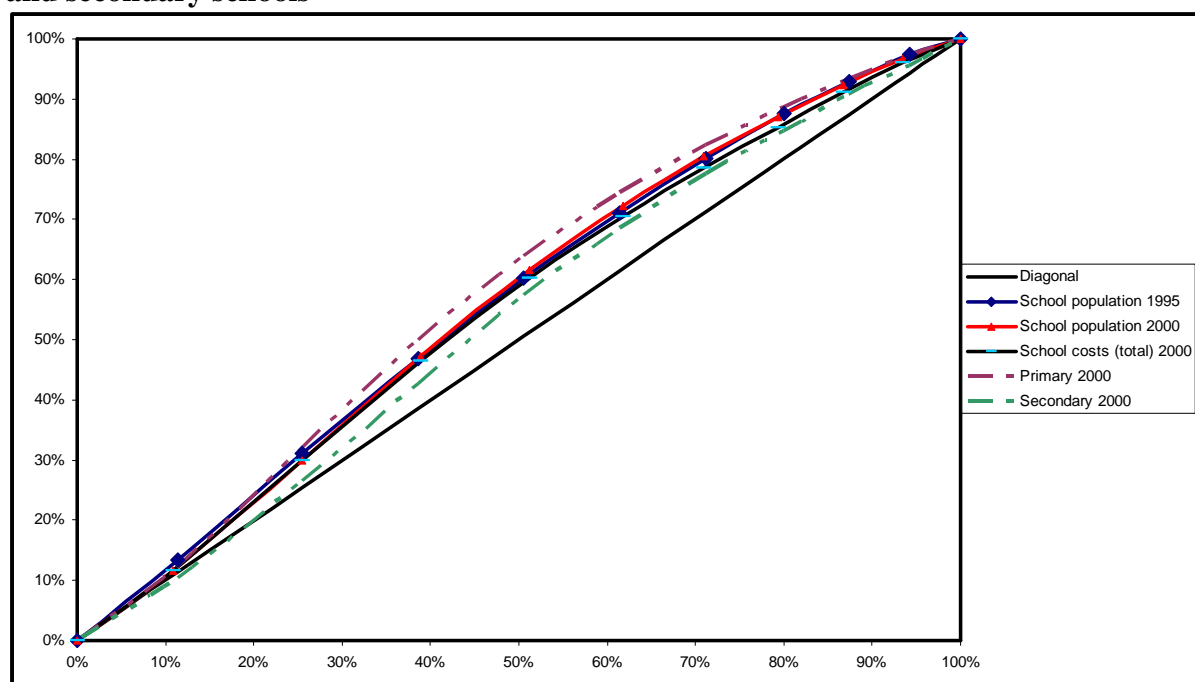
Health

The earlier fiscal incidence study found no evidence of systematic fiscal cost differentials in the provision of clinic or hospital services by groups of users, thus the assumption was made that public funds were distributed proportionally to health service utilisation. Some provision was thereafter made for different levels of subsidisation through the imposition of user fees, although these were small compared to the cost of the provision of hospitals or clinics.

For 2000, hospital cost estimates were derived as set out in Appendix 2, using hospital datasets and expressing costs per inpatient day. The large differences in costs per inpatient day that were found in hospitals, even after leaving out tertiary hospitals, seem to indicate that efficiency levels differ greatly between hospitals, but this may rather result from inpatient days being a poor measure of the heterogeneous output of hospitals. Nevertheless, such large

differentials as do exist provide evidence that hospital efficiency levels may merit serious investigation, so as to reduce inefficiencies in many hospitals.

But although hospitals costs per inpatient day do vary, there is apparently no <u>systematic</u> variation between different catchment areas or provinces by the level of affluence or the race group of beneficiaries. So, as for 1995, we can again assume that costs per inpatient day are equitably distributed across all the groups of interest[11]. For clinic visits, too, we assume, as in most international studies of this nature, that costs do not vary systematically across the groups we are considering.

Utilisation data are, unfortunately, very weak. Health use data are difficult to compare over time, due to differences in survey accuracy itself and survey questions:

- Thus, the 1993 SALDRU survey did not distinguish between private and public facilities, which is problematic particularly in the case of hospitals and affected the accuracy of the results of Castro-Leal et al (1998).

- The IES/OHS1995 question referred to use in the past month. The previous incidence study used this data for 1995.

- However, our primary data source for utilisation data in 2000, the IES/LFS of that year, as adjusted by Simkins & Woolard, did not contain any questions about utilisation of health facilities, but did include questions on whether a household spent money on public or on private hospitals, and whether the household had medical aid coverage.

- GHS2002 and GHS2003 had no accurate income figures to arrange the population into deciles, so we had to accept the broad household expenditure categories unadjusted for household size as the welfare measure for grouping purposes.

The concentration curves for medical aid coverage for 1995 and 2000 shown in Figure 3 below are similar enough not to be too concerned about possible dissimilarities between the surveys. However, a closer analysis of the 2000 figures do show a surprisingly much lower white medical aid membership than in 1995, as well as much lower membership in decile 8 and 9, but then again much increased membership in decile 10 (see Figure 4). However, surprisingly, the GHS2003, although not exactly comparable as grouping of households is based on household expenditure categories, appears to show much less inequity in medical

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[11]*Though the same cannot be said for costs per <u>potential</u> beneficiary, due to the large variations in utilisation rates for public hospitals.*

aid membership than was the case for either of the two previous years (see Figure 3). However, its membership rates for whites and for blacks appear to lie somewhere between the 2000 and the 1995 magnitude.

Because of this incomparability, numbers using the service cannot be compared, but the cumulative distribution of usage across welfare groupings (deciles) should not necessarily be affected by the different periods used, etc. However, one problem in this regard is that changes in distribution patterns then cannot be clearly identified as the result of <u>greater usage amongst the poor</u> or <u>reduced usage of facilities by the rich</u>, as these have a similar influence on the concentration curve.

Fees paid for public health services are minute (less than 2% of public health spending), and the simple assumption was made that these are distributed proportionally to medical aid membership. An alternative could have been to use the 2000 expenditure data, which does cover spending on hospital services, but this is clearly a deficient source, showing expenditure to be approximately proportional to the distribution of households, and capturing aggregate spending on hospitals of only R85 million, compared to the R352 million actually collected from fees in 2000.

Figure 3: Concentration curves for medical aid coverage, 1995, 2000 and 2003
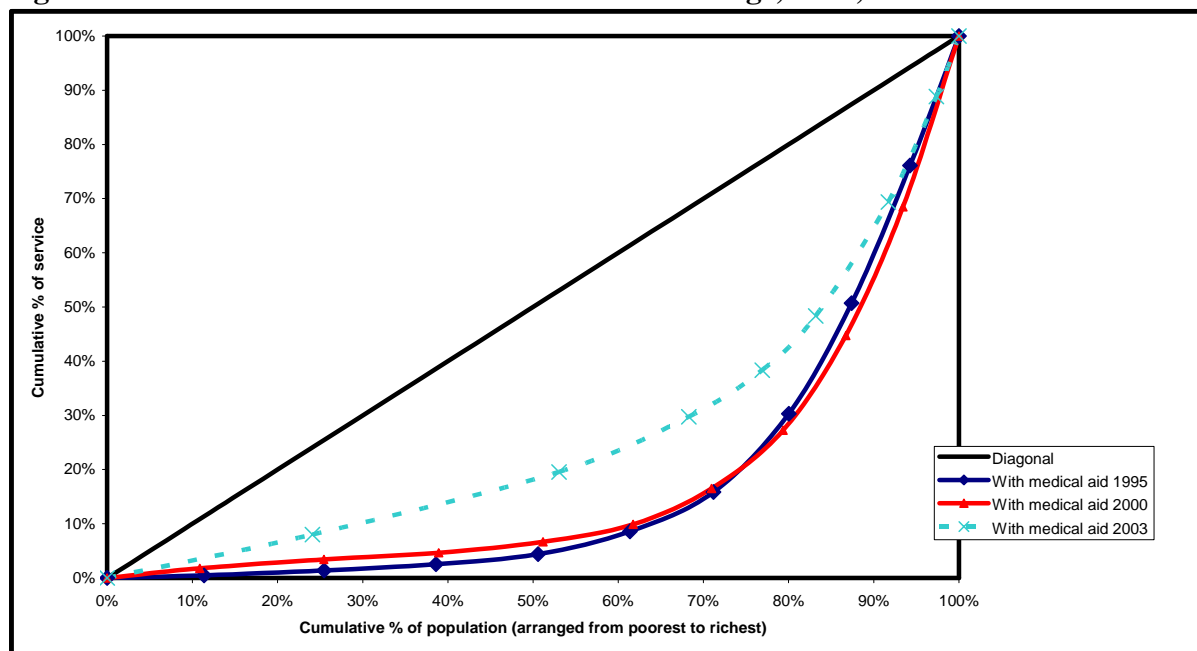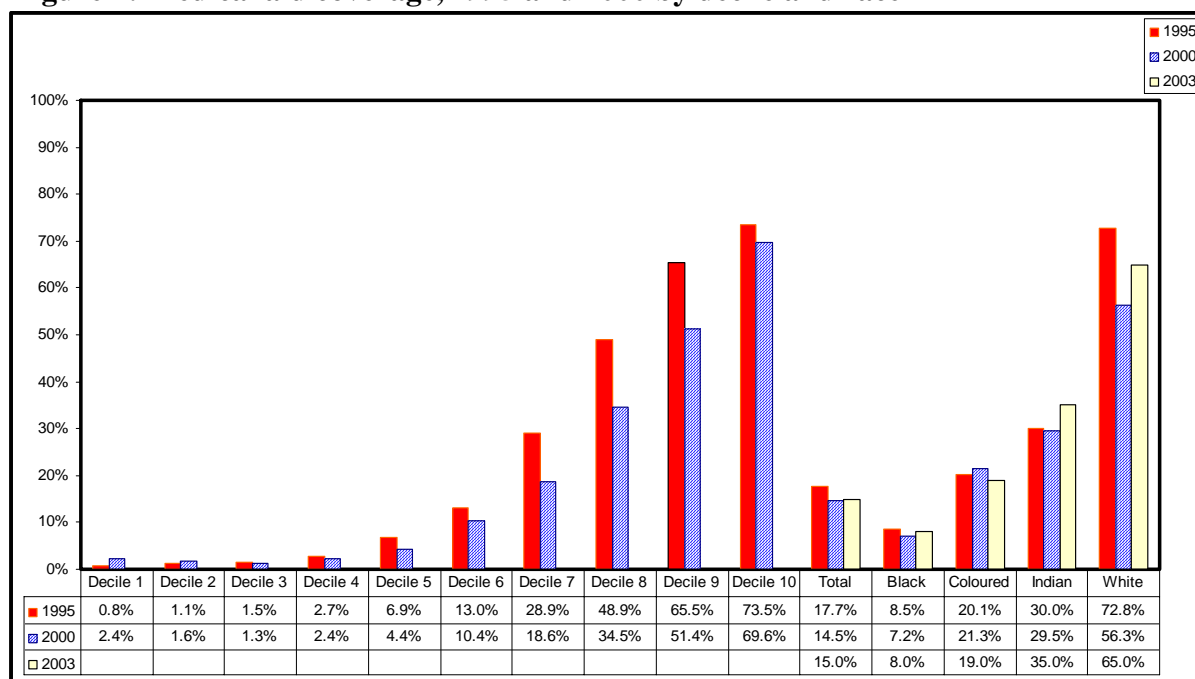
Figure 4: Medical aid coverage, 1995 and 2000 by decile and race

|	Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10	Total	Black	Coloured	Indian	White
1995	0.8%	1.1%	1.5%	2.7%	6.9%	13.0%	28.9%	48.9%	65.5%	73.5%	17.7%	8.5%	20.1%	30.0%	72.8%
2000	2.4%	1.6%	1.3%	2.4%	4.4%	10.4%	18.6%	34.5%	51.4%	69.6%	14.5%	7.2%	21.3%	29.5%	56.3%
2003											15.0%	8.0%	19.0%	35.0%	65.0%

The distribution of health visit as deduced from the question whether households spent money on public hospitals in the past year in 2000, as against the 1995 question whether an individual visited a public hospital in the previous month, gives concentration curves that differ markedly. The 2000 data indicate far greater targeting of health service utilisation than the 1995 data. There may indeed be grounds for believing that targeting has improved, perhaps through greater accessibility of hospitals to the poor than in the past, but also because fewer of the affluent may be using public hospitals than in the past. However, the magnitude of the shift shown in Figure 5 is a little suspect, and further investigation is required.

Hospital utilisation in 2003, as derived from the General Household Survey, appears to be more similar to the 1995 than to the 2000 curves. This suggests that the shift in the curves between 1995 and 2000 may exaggerate shifts in utilisation and targeting. To overcome this incomparability between the 1995 and 2000 datasets, an estimate for 2000 is obtained by fitting a simple linear regression model (probit regressions gave similar results) to GHS2003 to explain hospital visits amongst those who reported having been ill[12], using as explanatory variables province, race, medical aid membership and age, and then applying these regression coefficients to the 2000 dataset. Household income and household size were found not to be statistically significant and thus not retained in the final equation. The expected probabilities

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[12] *As they were approximately proportionately distributed across the population, and data on illness were not available for 2000, no provision was made for estimating sample selection bias that may arise from fitting the regression on the ill only.*

were then summed across deciles and population groups to obtain the estimated distribution of hospital usage in 2000 based on 2003 usage patterns. Assuming little change between 2000 and 2003, this pattern seems to be similar enough to 1995 to reflect possible 2000 hospital usage. This estimate will be accepted for the further calculations.

**Figure 5: Concentration curves for hospital visits, 1995, 2000 and 2003**
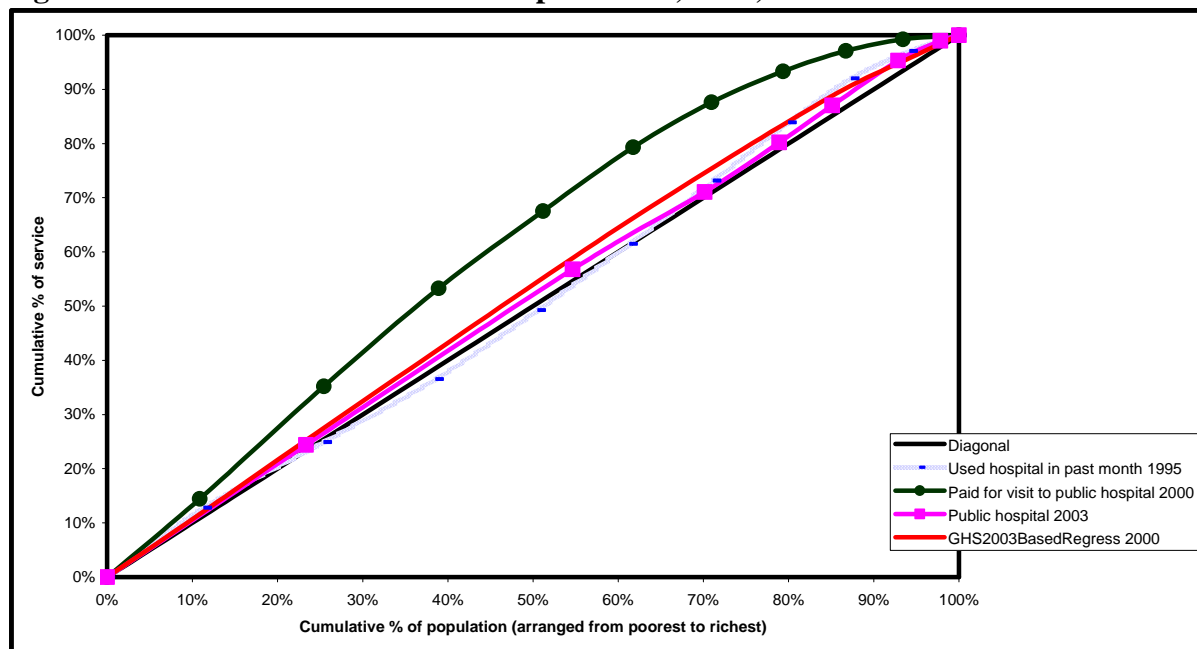
Clinics:

Fortunately, the situation with regard to utilisation of clinics is somewhat clearer. Figure 6 below depicts concentration curves for utilisation of clinics for 1993, 1995 and 2003. The IES/LFS2000 did not ask any questions on clinic use, so that it cannot be used for this purpose. The 1993 data are also not strictly comparable, as it also included private clinics. It is apparent, though, that even with the inclusion of private clinics in 1993, the 1993 and 1995 data seem to provide a very similar utilisation patterns, whilst in 2003 such utilisation was more targeted at the poor. However, greater use of public clinics by the poor since the introduction of free clinic services was to be expected, along with some reduction in use by the rich because of an increasing shift to private clinic services. But once again, it appeared to be better to apply the 2003 pattern to the 2000 dataset, using a similar regression model as for hospital use. From this, a concentration curve was derived that appeared similar as that for 2003, but was less dependent on the poor grouping of households by welfare level that derives from the household income categories.

If one accepts the 2003 clinic use patterns as comparable with those used for 1995, the question is how the pattern of usage changed over time in order to arrive at an estimate for 2000. If there was a gradual change over time, interpolation would allow us to derive a presumed 2000 curve that lies above the 1995 curve by five-eights of the differences between the 1995 and 2003 curves. However, it is quite possible that the shift was not so gradual, but that a sharp change in utilisation occurred initially with the introduction of free clinic services, and that there was thereafter little further change. So as to err on the side of caution in estimating improvement in targeting between 1995 and 2000, we use the simple interpolation method.

Figure 6: Concentration curves for clinic visits, 1995, 2000 and 2003
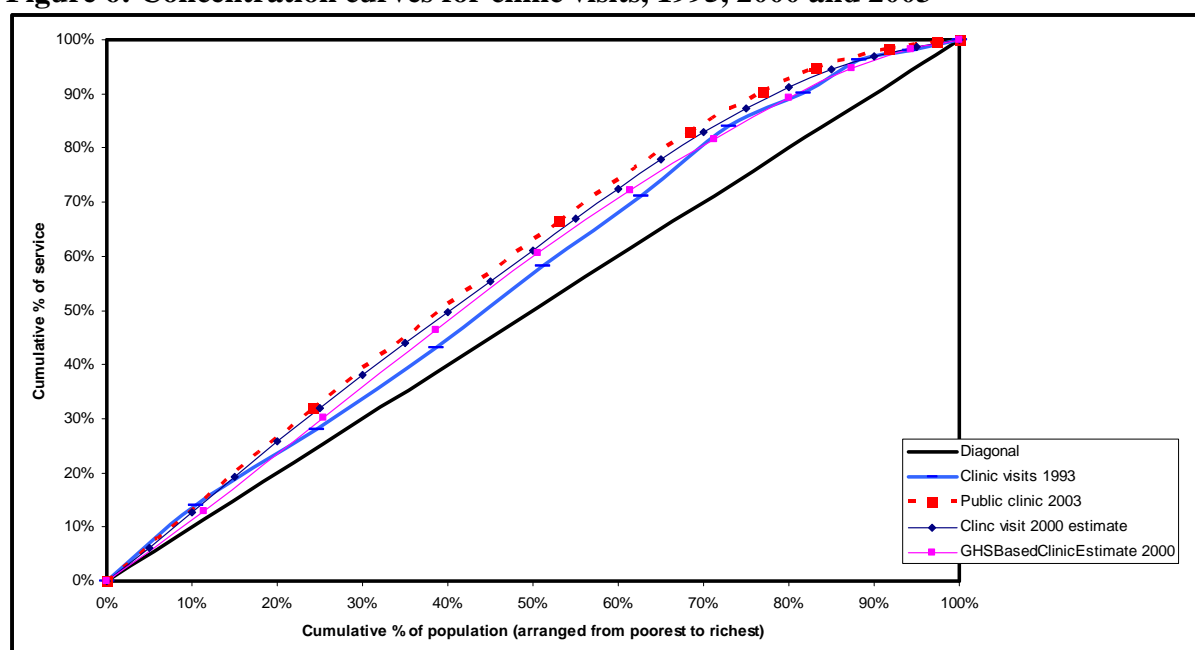
Social grants

In 1995, expenditure on social grant was by far the best targeted of all public spending. The reasons are clear:

- In the first place, when the population is ranked from poorest to richest, grant income is not considered, in order to assess the impact of government spending, thus the lowest income groups are often those whose incomes come exclusively from grants.

- Secondly, the means test operates to target grants only to poorer segments of the population, although social old-age pensions do cover a very large proportion of the elderly population.

- Thirdly, unlike in some other countries (e.g. Britain) where the stigma of being in welfare appears to lead to reduced take-up of grants amongst some of the poor, there

is little stigma attached to grant receipts in South Africa, particularly for social old age pensions.

- Finally, social grants affect household formation or dissolution: In poor communities, the unemployed and children often remain in pensioner households, thus increasing household size and reducing the per capita income of such households, with the consequence that the grant reaches households which are poorer than the data may otherwise have shown.

In 1995, reported income from grants in IES/OHS95 was used to allocate grants distribution across groups. This procedure is also followed for the re-estimated IES/LFS2000. The resultant concentration curve is very similar to the 1995 one, inducing some confidence in the comparisons. However, the share of grants received by whites increases from 7.3% to 17.0%, an unlikely outcome. As there is some difference between reported grant income and the actual fiscal expenditure on grants, the issue arises whether such under- or over-reporting introduces systematic bias in the estimates. To test whether this is the case, actual estimated grant income for each of the three major grant types (old age and war pensions; disability grants; and child support grants and their predecessors, family and child maintenance grants) was used to re-weight actual grant income. Adjusting for over reporting of 38.7% of the first category, underreporting of 21.5% of disability grants, and over reporting of 53.6% of CSG and maintenance grants, a weighted estimate of grant income was obtained. As can be seen in Figure 7 below, however, it does not fundamentally affect the results obtained in terms of its distribution, although it shows slightly less shift in the targeting of social transfers.

Further investigation revealed that a large proportion of reported grant income in the IES2000 went to households where no person reported receiving public grants. It seems, thus, that either respondents or field workers in many cases reported public grant income, whereas this was probably from private pensions or maintenance payments. Ignoring such income reduces the white share of public grant income to 10.3% in 2000, still high compared to 1995's 7.3%, particularly in the light of the introduction of the CSG in this period. However, this estimate was the best available and was thus used, even though it may slightly over-estimate grant income amongst the more affluent. However, this supports our policy of consistently erring on the side of underestimating rather than overestimating targeting in 2000.

Figure 7: Concentration curves for social grant spending
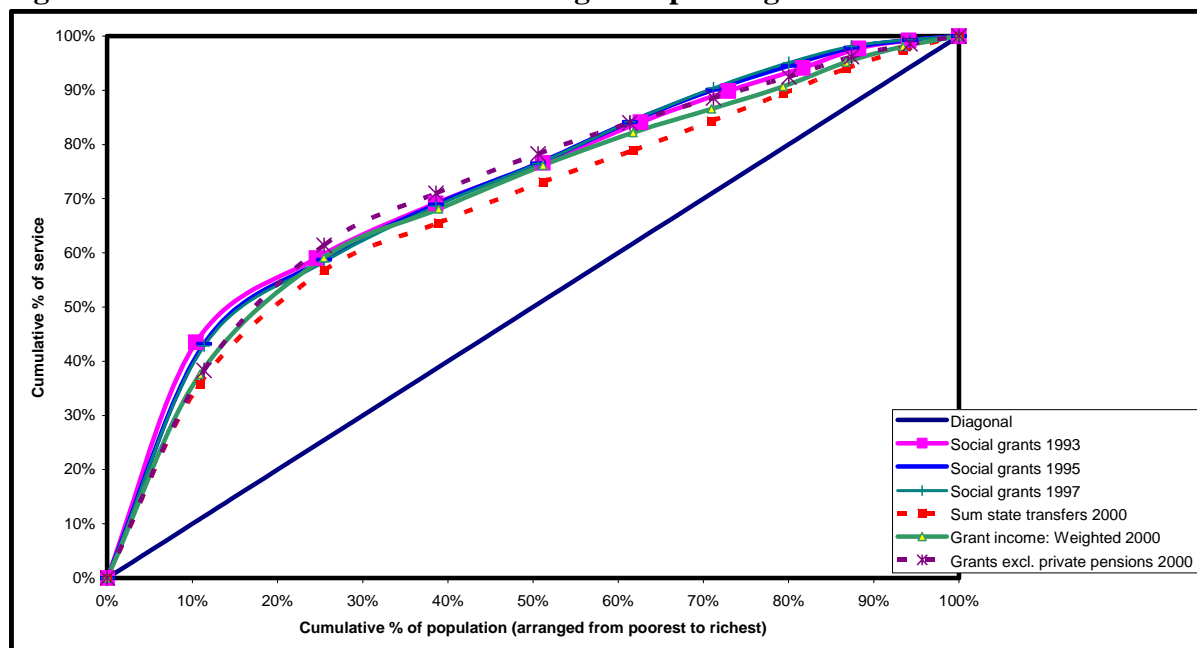
The question arises why grant expenditure is, according to these results, somewhat less well targeted than in 1995 to the very poorest, although targeting is still extremely good. One possibility is that the introduction of child support grants (CSGs), at least initially, led to a weakening of targeting:

- Many recipients of CSGs live in households with some other income, whereas pensioners are more often to be found in households with no other income source.

- Moreover, the means test for CSG is difficult to implement, as it has to be very finely grained to separate the lowest 40% of the child population from the rest of the population.

- In addition, the introduction of the CSG was initially very uneven, and more urban areas often had earlier access than rural areas, thus initially excluding many of the poorest from coverage by the CSG. This has probably improved greatly since, with the expansion of coverage, but in 2000 the CSG was far less accurately targeted than other grants, as Figure 8 indeed shows. Indeed, the shape of the 2000 concentration curve for the old-age pension, which had dominated total grant spending for very long but now has a declining share of overall grant expenditure, is fairly similar to that of aggregate grant spending in 1995.

Figure 8: Concentration curves for income from various social grants, 2000 compared to aggregate social grants in 1995
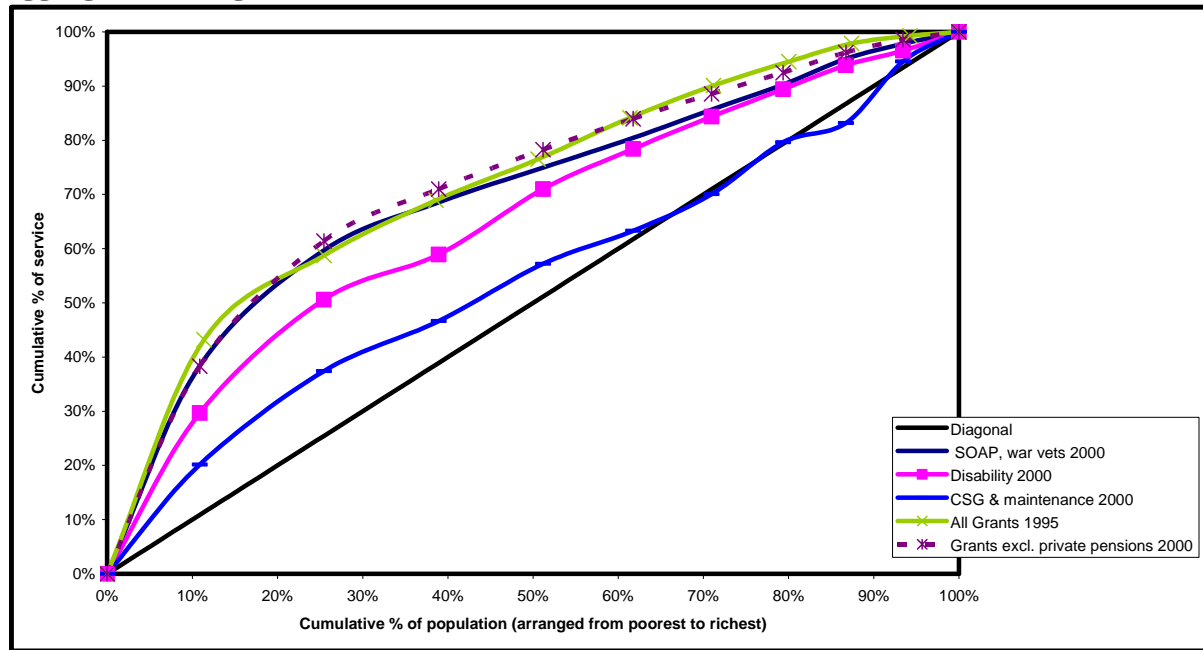
Housing

Spending on housing subsidies for people without formal housing now dominates housing spending. In 1995, spending on subsidies for first time homeowners (including many from formal housing) and building of housing by the state were still significant, although they were being phased out.

For 2000/01, 163 114 housing subsidies were given to beneficiaries with family (household) income of less than R18 000 per year, 6 746 to people with income between R18 000 and R30 000, 3 999 to people in the income range R30 000 to R42 000, and 5 to people in higher income brackets. In order to allocate these subsidies across beneficiaries in the IES/LFS2000 survey, we assume that every household living in non-formal housing in urban areas within each of these income bands had an equal chance of obtaining the subsidy. Applying this to households and then adding up probabilities gives the distribution as shown in Figure 9 below.

A substantial proportion of housing subsidies were in 1995 still going to first-time homeowners who were not strictly means tested. Moreover, the 2000 data may overestimate targeting to the poor, as it assume perfect targeting. Allowing for leakage of one-quarter of all housing subsidies (i.e. that 75% of housing subsidies go to beneficiaries in the proportions estimated, and 25% are randomly distributed across all potential beneficiaries irrespective of

income) gives an estimate that is less likely to seriously overestimate targeting of the poor in 2000 and may again err somewhat on the side of underestimating targeting in 2000.

The slightly weaker targeting that this estimate produces, if indeed an accurate reflection of reality, may perhaps better reflect the relaxation of the housing means test. Fortunately for our overall estimate, in aggregate this is a small programme and minor errors in estimation here will not have a large effect on overall measured targeting.

Figure 9: Concentration curves for housing subsidies
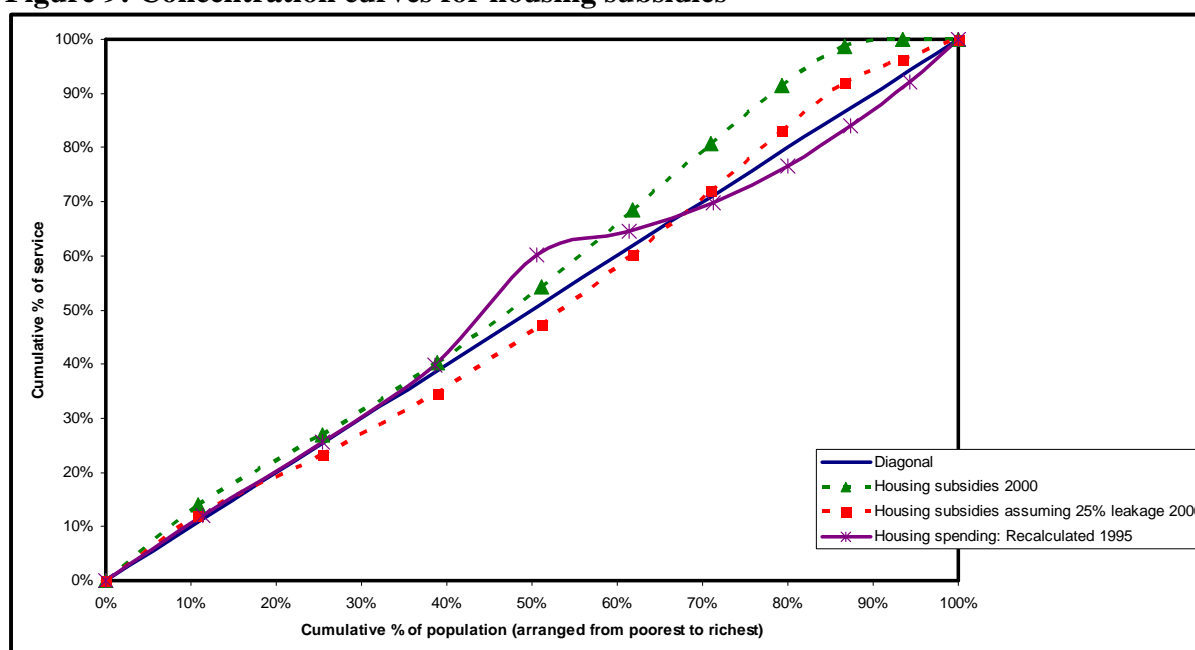
University and technikon (tertiary) education:13

A first attempt at reconciling the 1995 and 2000 data access to tertiary education seemed to give far from credible results. Investigation showed that the reason for this lay in the fact that the IES/OHS1995 did not ask respondents at what institution they studied. Thus the earlier incidence report had to assume that tertiary education was distributed in proportion to the numbers who have completed 12 or more years of education and said that they were still studying full time. In the 2000 survey, which did ask at what institutions students were studying, almost a quarter of a million people who <u>were still studying at schools</u> had said that they had <u>completed</u> matric. A similar inaccurate response, where people still <u>enrolled</u> in matric (some perhaps being repeaters)[14] claimed that they had <u>completed</u> matric, was earlier

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[13] *This study only includes university and technikon education, thus excluding technical and teacher training colleges. The term tertiary will be used in this confined sense.*

[14] *A very small proportion of these students may have been enrolled in post-matric programmes at schools.*

also observed by Simkins and others on census data. An analysis of the 2000 data showed that the proportion of poor respondents who made this error was thus quite a lot larger, with the consequence that the concentration curves in Figure 10 differ dramatically between university and technikon students versus all full time students who claimed to have completed matric.

Figure 10: Concentration curves for various educational institutions, 2000
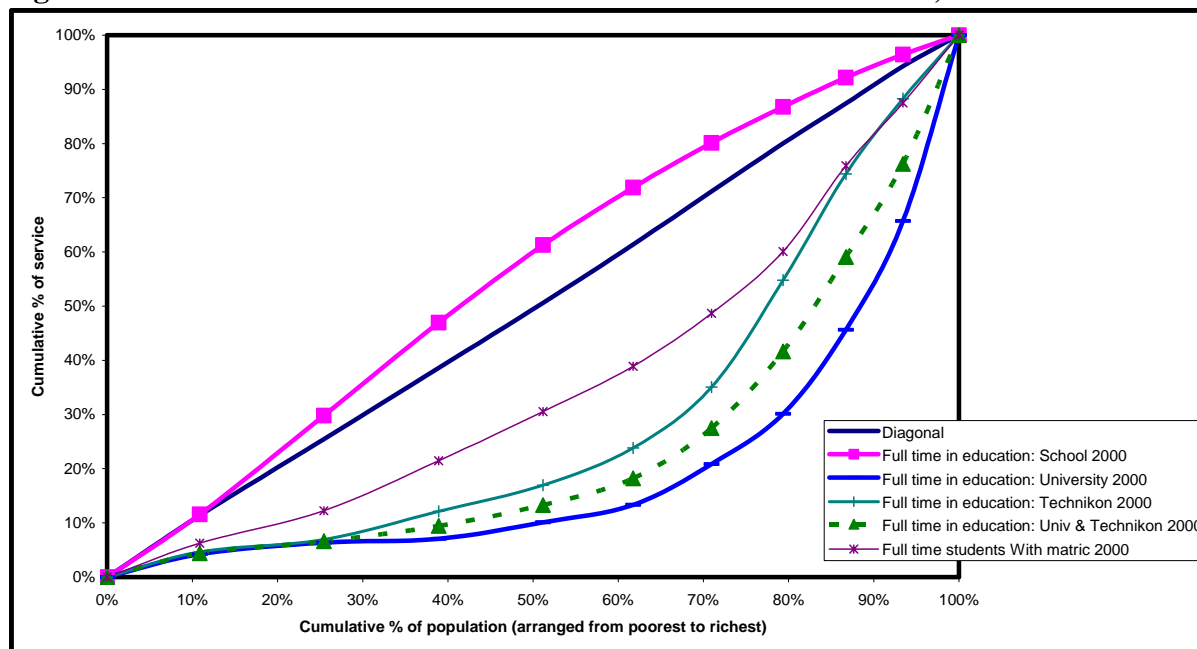
The deficiency of the 1995 dataset provided limited possibilities for improving accuracy by focusing only on university and technikon education. As the concentration curves for full time students with matric in 1995 and 2000 show (i.e. using the same definitions as was available in 1995), there has not been much change in the patterns. However, some of that may be driven by the changes in the usage patterns and accuracy of the matric completion response, so it was thought best to re-model the 1995 data for university and technikon attendance based on what was known about the relationship between the numbers with matric still in full time education in 2000, and their distribution across deciles. The result is this time slightly less well targeted than in 1995, indicating that this may be the consequence of poorer attendance amongst the poor. One possible source of error in this type of data may be the fact that students sometimes leave their parental homes and may be counted as separate households, thus perhaps ending in higher deciles than their families of origin. However, using the 200 dataset, we found no evidence that single-member households at tertiary institutions have a different concentration curve for tertiary attendance.

In 2000, only 41% of full-time students with a matric or higher qualification were enrolled at universities or technikons, versus 37% who were actually still at school, the rest being mainly at colleges of one sort or another. However, these ratios varied across race groups, and within the black population also by income groups. The following ratios derived from the 2000 data were applied to the 1995 data to obtain a new 1995 estimate of university and technikon students (Figure 11):

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Blacks	37.1%	29.6%	60.3%	74.9%	85.2%
Other groups	69.5%	78.8%	59.7%	70.2%	79.7%

Figure 11: Concentration curves for tertiary education, 1995 and 2000
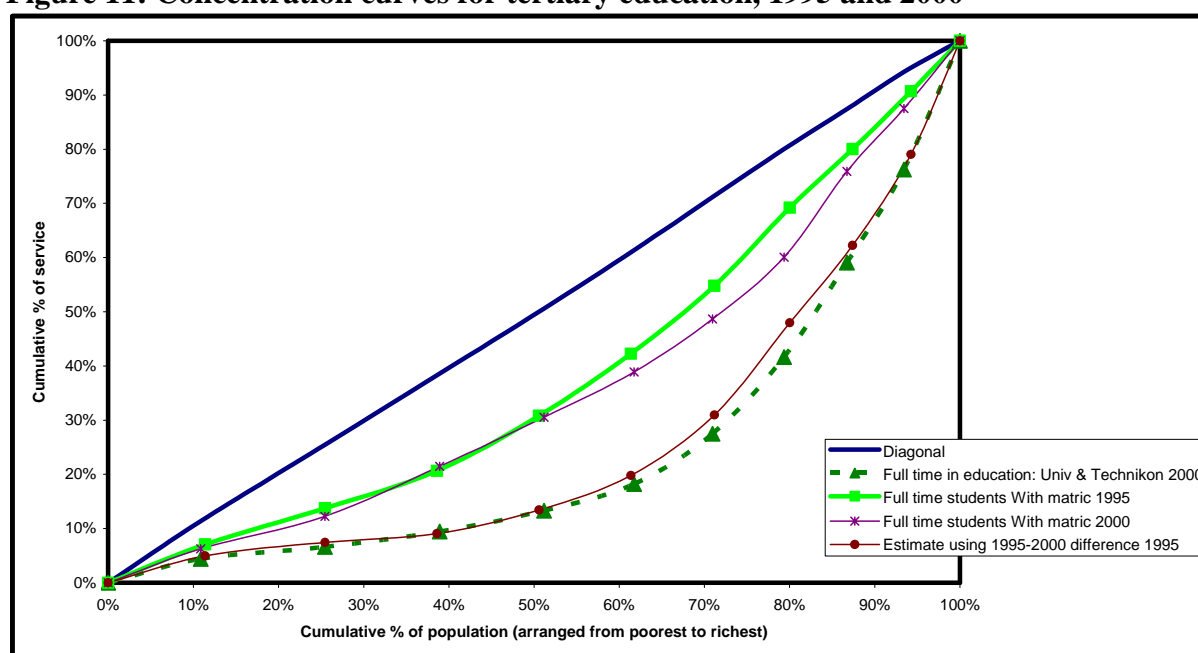
However, the data from the survey still poorly fitted the actual race profile of enrolled university and technikon students, and did not reflect the fact that the proportion of black students had grown from 51% in 1995 to 61% in 2000. To adjust for this, the racial distributions across deciles were applied to the enrolment data contained in Appendix 4 to arrive at new, weighted estimates for enrolment across the deciles for both 1995 and 2000. These are shown in Figure 12 and show a slight improvement in targeting from 1995 to 2000, but perhaps more importantly, it shows a relatively stable pattern of access to universities and technikons.

Figure 12: Concentration curves for tertiary education, 1995 and 2000 final estimates
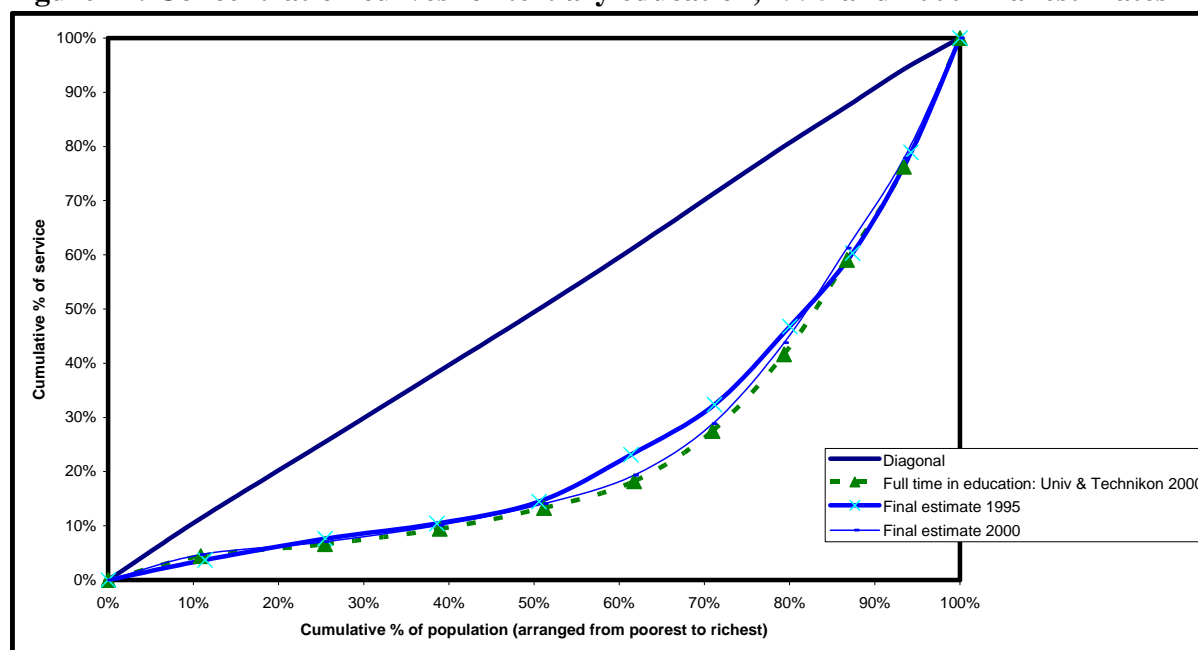
Shifts in aggregate fiscal allocations to sectors

The amounts allocated to the various sectors or sub-sectors act as a type of weight for determining the aggregate incidence of social expenditure. These amounts were largely obtained from the National Treasury or from various Intergovernmental Fiscal Reviews, and the 1995 values were converted into 2000 Rand values by applying the Consumer Price Index.

The only exception to the above were the amounts for clinic services and hospital services, which were not presented in the budget in that format. It is particularly difficult to obtain cost data for the two main types of health services, viz. clinic services and hospital services, as there is such a great deal of heterogeneity within each of these types of services, and it not clear what incidence biases this heterogeneity may hide (e.g. is there differential use of different types of hospital services by income level?) To allocate the benefits of visits to clinics or hospitals, decisions had to be taken of what to include in these amounts and values obtained for 1995 and 2000. The assumption was that respondents in surveys probably included all Primary Health Care services when asked whether they had visited clinics, thus the magnitude for clinics include all such costs (including Clinics, Community Health Centres, Community Based Services, Other Community Services and even District Management) as presented for the first time in this format in the 2003 Intergovernmental

Fiscal Review, also for 2000.[15] All Hospital Services were also included from the same source. However, no data earlier than 2000 were available from this source, so the 1995 estimate was calculated on the assumption that all Hospital Services (including District Hospital Services) had grown at the same rate as Provincial and Academic hospital services as shown in earlier Intergovernmental Reviews (1999 and 2001), and that Primary Health Services had grown at the rate of the residual District Health Services, excluding District Hospital Services.[16]

The aggregate fiscal magnitudes in 2000 Rand values, and their growth over the period, are summarised in Table 3 below. Overall, real social spending covered by this analysis increased by R15.1 billion over the period, or by 20.5%, implying an increase of 14% in per capita social spending.

Looking at the composition of spending, the major shift was a reduction in the share of spending on public ordinary school education, the largest spending item, which declined by 6.6 percentage points and also declined slightly (by 1.4% over the period) in per capita terms. In contrast, spending on Social Grants increased significantly, by R6.3 billion, thereby increasing its share by more than 4 percentage points, whilst Housing, the smallest sector, grew by R2.1 billion and increased its share in spending by than 2 percentage points. The share of net Health spending increased only marginally, but R60 of the per capita increase of R75 in spending in this sector was made up by the very rapid growth of the smaller but rapidly growing clinic services, and another R6 was accounted for by reduced health fees.

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[15] *Retaining District Management as part of the costs is inconsistent with other sectors outside Health, but as hospital administration could not be separated from other hospital costs, this item was included for consistency within the Health sector.*

[16] *It is not known to what extent these magnitudes include capital spending, which strictly speaking should not be included.*

Table 3: Fiscal magnitudes and shifts, 1995 to 2000 (in constant 2000 Rand)

	Total spending 1995 (R'm)	Total spending 2000 (R'm)	Increase (R'm)	Growth (5)	Per capita spending 1995	Per capita spending 2000	Per capita increase	Per capita growth (%)
School education	35 571	37 410	1 839	5.2%	R863	R851	-R12	-1.4%
Tertiary education	5 633	6 541	907	16.1%	R137	R149	R12	8.8%
Health	17 685	22 147	4 462	25.2%	R429	R504	R75	17.4%
Health: Hospitals	17 002	18 487	1 485	8.7%	R413	R421	R8	1.9%
Health: Clinics	1 279	4 012	2 733	213.7%	R31	R91	R60	194.1%
Minus Health: Fees	596	352	-244	-41.0%	R14	R8	-R6	-44.6%
Social grants	12 674	19 001	6 326	49.9%	R308	R432	R125	40.5%
Housing	931	3 040	2 109	226.5%	R23	R69	R47	206.1%
Total	72 495	88 138	15 643	21.6%	R1 760	R2 006	R246	14.0%

It is significant for aggregate incidence of social spending that the largest increases in spending were for Housing, Clinics and Social Grants, three relatively well targeted spending items.

Analysis of aggregate incidence results

The aggregate incidence results are presented in Figures 13 to 20 and in Tables 4 to 7. Table 4 shows that the overall concentration index has declined markedly, from an already negative value of -0.057 in 1995 to -0.120 in 2000. This is a remarkable degree of targeting for a middle income country, which can probably be ascribed largely to a combination of broad access to social services, particularly school education, amongst the poor, and the magnitude of the highly targeted social grants system, which is unique in its size and reach in developing countries. In terms of the individual programmes/sectors, the highest degree of targeting is achieved by social grants, with a concentration index of -0.431, whilst tertiary education is very poorly targeted, as the index of 0.497 shows. The high concentration index for hospital fees should be seen in the correct context: This was derived from the distribution of medical aid membership, and the <u>less</u> targeted this is at the poor, the <u>greater</u> its contribution to equity.

In terms of the shifts within individual programmes, school education stands out as the area in which the largest pro-poor shift has taken place. This is not surprising, given the large degree of inequality in pupil-teacher ratios that still existed within school education in 1995, as one of the legacies of apartheid. In net terms, health also showed a considerable improvement in equity, driven by both improved targeting within health programmes and by the relative shift towards clinic (primary) services, which are better targeted at the poor than hospital services.

Table 4: Concentration indexes by program, 1995 and 2000

	1995	2000	Change 1995-2000
School education	-0.016	-0.104	-0.088
Tertiary education	0.484	0.497	0.013
Health (net)	-0.045	-0.082	-0.037
Hospitals	-0.014	-0.057	-0.043
Clinics	-0.103	-0.132	-0.029
Fees	0.656	0.647	-0.009
Social grants	-0.434	-0.431	0.003
Housing	-0.018	0.007	0.025
Total	-0.057	-0.120	-0.063

Figure 13: Concentration curves for all social spending, 1995 and 2000
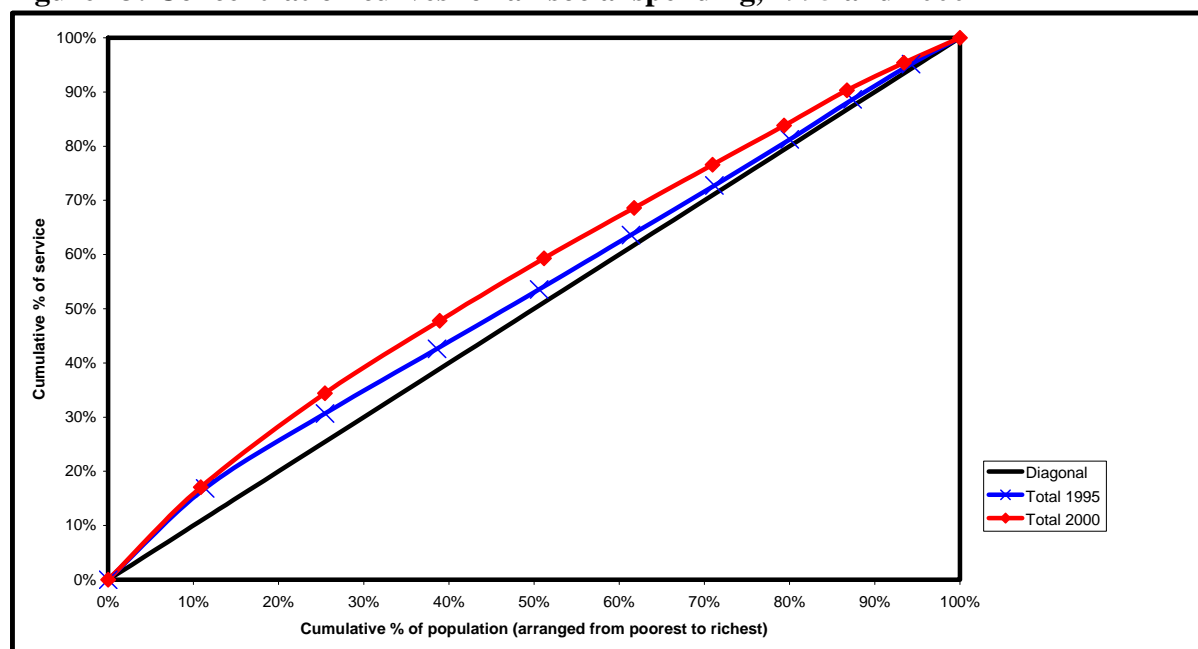
Figure 14: Concentration curves for public ordinary school education, 1995 and 2000
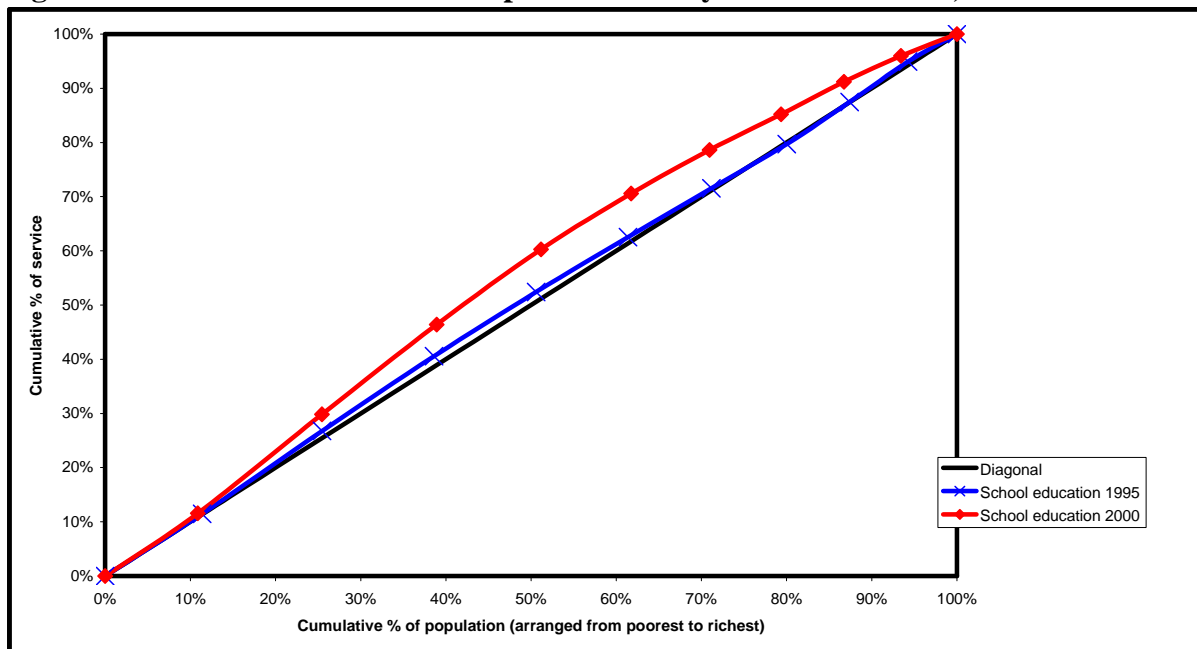
Figure 15: Concentration curves for health, 1995 and 2000
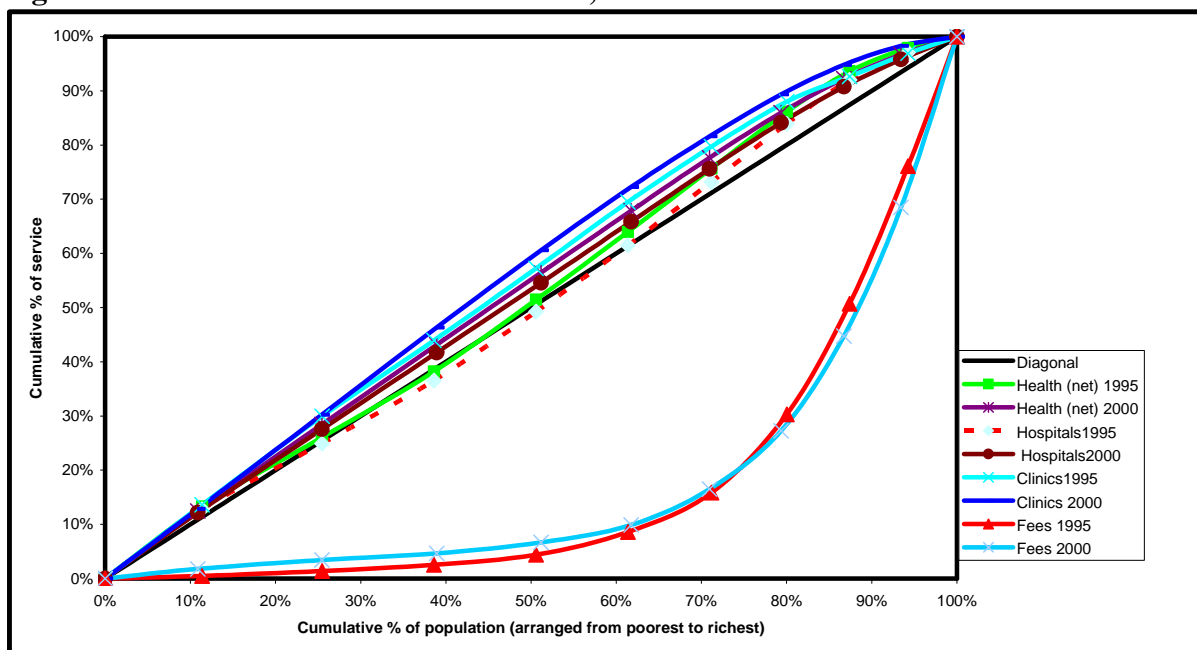
Figure 16: Concentration curves for tertiary education, 1995 and 2000
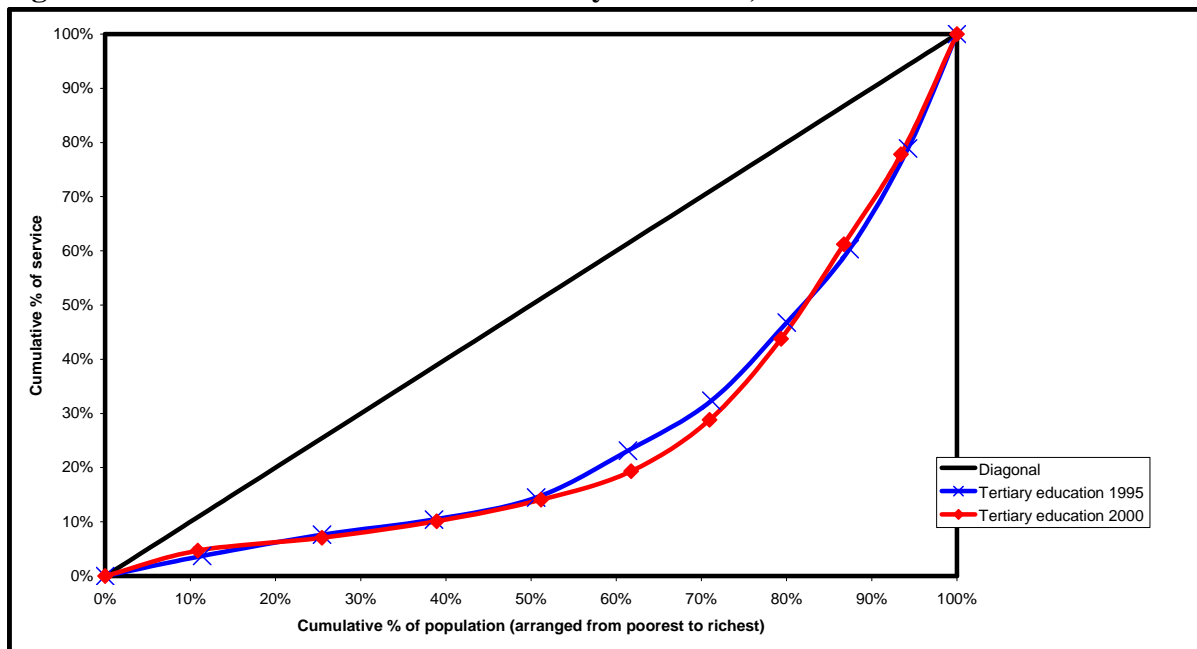
Figure 17: Concentration curves for social grants, 1995 and 2000

Figure 18: Concentration curves for housing subsidies, 1995 and 2000

Figure 19: Concentration curves for all social spending programmes, 1995
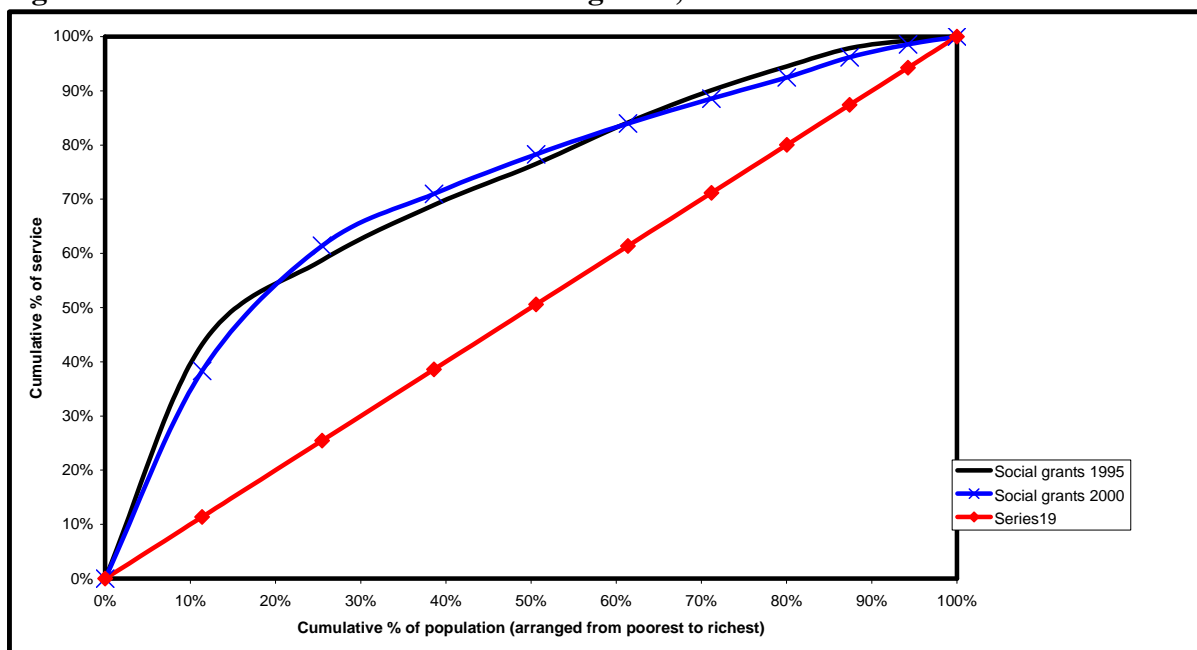
Figure 20: Concentration curves for all social spending programmes, 2000
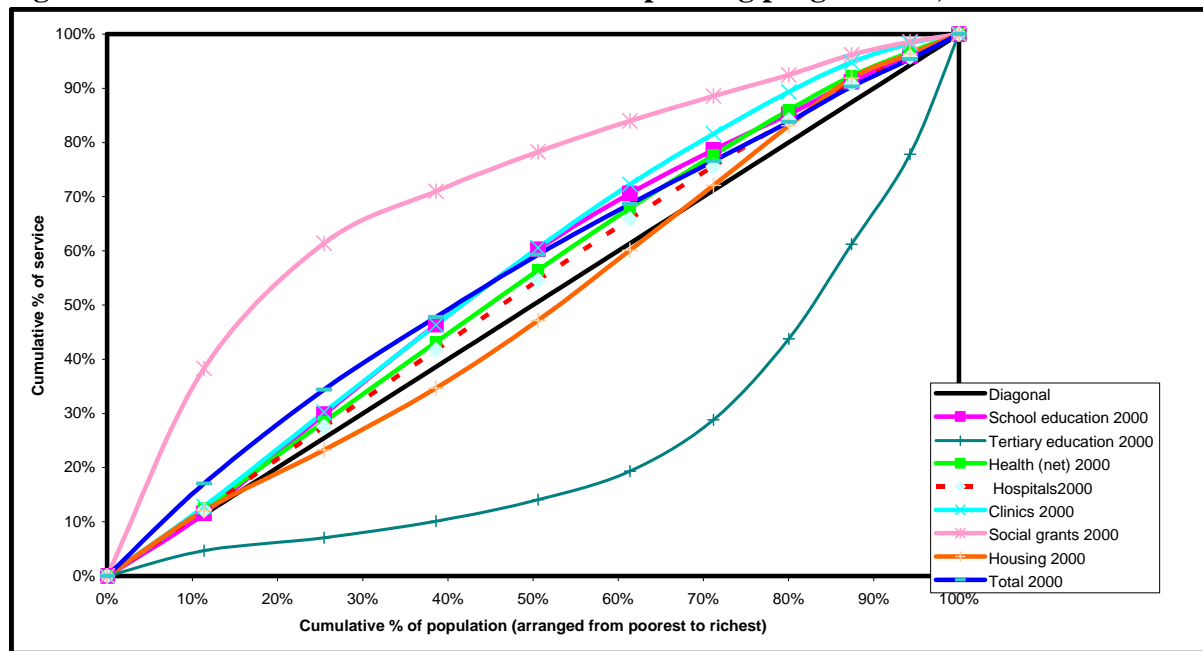
The results can be summarised as follows:

- The poor gained mainly from spending shifts to programmes/sub-programmes that were particularly well targeted, viz. social grants, clinics (primary health care) and to some extent housing.

- Spending shifts within programmes were particularly beneficial to the poor in school education, the largest spending programme covered.

- Targeting of social grant spending became somewhat weaker, but this is probably a temporary phenomenon, with the rapidly growing child support grants initially not well rolled out to deep rural areas and many of the poorest not benefiting initially.

- In overall terms, the top two deciles experienced a reduction in real per capita spending incidence, resulting largely from reduced school spending that was not fully made up for by increased overall social spending that benefited this relatively affluent group.

- The bottom four deciles were the major beneficiaries of increased spending, gaining between R286 and R597 per capita, mainly from spending on social grants. Relative to their incomes (before social grants), these groups gained quite substantially from the increased spending. Compared to their overall income before grants of R22.5 billion, the value of social spending of R52.3 billion to the poorest four deciles of households dramatically increased their access to resources. Given their poverty, however, it is quite likely that they would prefer spending in the form of social grants rather than

other social spending over which they have no control. In this respect, the rising share of grants in overall social spending would have been particularly welcome to the poor.

- In terms of population groups, all groups other than blacks experienced a small decline in per capita social spending, accounted for mainly by the equalisation of the teacher-pupil ratio. The increase in social grant spending on whites is probably over-estimated by the available data, otherwise the decline in spending they experienced may have been larger. Blacks gained considerably, with the increase targeting of spending on schools, increased spending on social grants and larger clinic spending being the contributory factors.

- The data on spending by location separate secondary cities from the category "other urban" for 2000 only. Because of definitional problems in the data, categories may not exactly match for the two years, which may account for the seeming exaggerated shift of population to metropolitan areas. In terms of per capita spending, metropolitan areas experience a slight decline in social spending per person, driven by the drive to equity in school education. Rural regions gain very significantly, R543 per person, an increase of one-third. School education, social grants and health spending all contributed.

Table 5: Incidence analysis results by decile, 1995 and 2000

			Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10	Total
Spending (R'm)	**School education**	1995	4 087	5 434	4 910	4 217	3 591	3 217	2 894	2 761	2 660	1 799	35 571
		2000	4 334	6 826	6 202	5 196	3 838	3 020	2 454	2 236	1 800	1 504	37 410
	Tertiary education	1995	208	221	159	228	487	520	812	763	1 045	1 189	5 633
		2000	308	156	197	261	345	619	978	1 142	1 084	1 452	6 541
	Health	1995	2 351	2 258	2 151	2 343	2 209	2 076	1 845	1 319	761	395	17 685
		2000	2 757	3 542	3 252	2 945	2 540	2 157	1 847	1 387	987	733	22 147
	Health: Hospitals	*1995*	2 180	2 054	1 979	2 180	2 077	1 988	1 825	1 381	858	498	17 002
		2000	2 249	2 850	2 611	2 381	2 082	1 805	1 574	1 230	930	775	18 487
	Health: Clinics	*1995*	174	209	179	174	157	131	106	60	54	39	1 279
		2000	515	698	645	572	468	375	311	218	141	69	4 012
	Minus: Health: Fees	*1995*	3	5	7	11	25	43	86	121	152	142	596
		2000	6	6	4	7	11	23	38	62	83	111	352
	Social grants	1995	5 478	1 966	1 293	963	965	753	561	425	176	93	12 674
		2000	7 283	4 387	1 817	1 387	1 081	873	746	703	447	276	19 001
	Housing	1995	113	125	133	190	40	50	61	70	74	74	931
		2000	367	340	347	379	393	364	335	267	135	112	3 040
	Total	1995	12 237	10 004	8 645	7 942	7 293	6 616	6 173	5 338	4 718	3 551	72 495
		2000	15 049	15 252	11 815	10 168	8 196	7 032	6 360	5 736	4 453	4 076	88 138
Share of spending	**School education**	1995	11.5%	15.3%	13.8%	11.9%	10.1%	9.0%	8.1%	7.8%	7.5%	5.1%	100.0%
		2000	11.6%	18.2%	16.6%	13.9%	10.3%	8.1%	6.6%	6.0%	4.8%	4.0%	100.0%
	Tertiary education	1995	3.7%	3.9%	2.8%	4.0%	8.7%	9.2%	14.4%	13.5%	18.6%	21.1%	100.0%
		2000	4.7%	2.4%	3.0%	4.0%	5.3%	9.5%	15.0%	17.5%	16.6%	22.2%	100.0%
	Health	1995	13.3%	12.8%	12.2%	13.3%	12.5%	11.7%	10.4%	7.5%	4.3%	2.2%	100.1%
		2000	12.5%	16.0%	14.7%	13.3%	11.5%	9.7%	8.3%	6.3%	4.5%	3.3%	100.0%
	Health: Hospitals	1995	12.8%	12.1%	11.6%	12.7%	12.2%	11.7%	10.7%	8.1%	5.0%	2.9%	100.0%
		2000	12.2%	15.4%	14.1%	12.9%	11.3%	9.8%	8.5%	6.7%	5.0%	4.2%	100.0%
	Health: Clinics	1995	13.6%	16.3%	14.0%	13.3%	12.2%	10.2%	8.3%	4.7%	4.3%	3.1%	100.0%
		2000	12.8%	17.4%	16.1%	14.2%	11.7%	9.3%	7.7%	5.4%	3.5%	1.7%	100.0%
	Minus: Health: Fees	1995	0.5%	0.9%	1.1%	1.8%	4.2%	7.2%	14.5%	20.4%	25.4%	23.9%	100.0%
		2000	1.8%	1.6%	1.2%	2.0%	3.2%	6.6%	10.8%	17.5%	23.7%	31.5%	100.0%

			Decile 1	Decile 2	Decile 3	Decile 4	Decile 5	Decile 6	Decile 7	Decile 8	Decile 9	Decile 10	Total
	Social grants	1995	43.2%	15.5%	10.2%	7.6%	7.6%	5.9%	4.4%	3.4%	1.4%	0.7%	100.0%
		2000	38.3%	23.1%	9.6%	7.3%	5.7%	4.6%	3.9%	3.7%	2.4%	1.5%	100.0%
	Housing	1995	12.1%	13.4%	14.2%	20.5%	4.3%	5.4%	6.6%	7.5%	8.0%	8.0%	100.0%
		2000	12.1%	11.2%	11.4%	12.5%	12.9%	12.0%	11.0%	8.8%	4.4%	3.7%	100.0%
	Total	1995	16.9%	13.8%	11.9%	11.0%	10.1%	9.1%	8.5%	7.4%	6.5%	4.9%	100.0%
		2000	17.1%	17.3%	13.4%	11.5%	9.3%	8.0%	7.2%	6.5%	5.1%	4.6%	100.0%
Per capita spending	**School education**	1995	R872	R936	R907	R854	R808	R797	R794	R910	R941	R760	R863
		2000	R906	R1 068	R1 046	R966	R824	R747	R665	R690	R611	R520	R851
	Tertiary education	1995	R44	R38	R29	R46	R110	R129	R223	R252	R370	R502	R137
		2000	R64	R24	R33	R48	R74	R153	R265	R352	R368	R502	R149
	Health	1995	R502	R389	R397	R475	R497	R514	R506	R435	R269	R167	R429
		2000	R577	R554	R549	R547	R545	R534	R501	R428	R335	R254	R504
	Health: Hospitals	1995	R465	R354	R366	R442	R467	R492	R501	R455	R304	R210	R413
		2000	R470	R446	R440	R442	R447	R447	R427	R380	R316	R268	R421
	Health: Clinics	1995	R37	R36	R33	R35	R35	R32	R29	R20	R19	R17	R31
		2000	R108	R109	R109	R106	R101	R93	R84	R67	R48	R24	R91
	Minus: Health: Fees	1995	R1	R1	R1	R2	R6	R11	R24	R40	R54	R60	R14
		2000	R1	R1	R1	R1	R2	R6	R10	R19	R28	R38	R8
	Social grants	1995	R1 169	R339	R239	R195	R217	R186	R154	R140	R62	R39	R308
		2000	R1 523	R686	R306	R258	R232	R216	R202	R217	R152	R95	R432
	Housing	1995	R24	R22	R24	R39	R9	R12	R17	R23	R26	R31	R23
		2000	R77	R53	R58	R70	R85	R90	R91	R83	R46	R39	R69
	Total	1995	R2 611	R1 723	R1 597	R1 608	R1 641	R1 638	R1 695	R1 760	R1 669	R1 499	R1 760
		2000	R3 147	R2 385	R1 993	R1 890	R1 760	R1 740	R1 724	R1 770	R1 512	R1 410	R2 006
Total per capita increase		1995-2000	R536	R662	R396	R281	R119	R102	R30	R11	-R157	-R89	R246
Total per capita increase (%)		1995-2001	20.5%	38.4%	24.8%	17.5%	7.3%	6.2%	1.7%	0.6%	-9.4%	-5.9%	14.0%
Population		1995	4 687 073	5 806 150	5 413 103	4 937 567	4 444 192	4 039 468	3 643 058	3 033 967	2 827 309	2 368 113	41 200 000
		2000	4 781 589	6 394 426	5 928 993	5 381 375	4 655 813	4 041 405	3 688 778	3 240 119	2 945 405	2 890 142	43 948 045

Table 6: Incidence analysis results by race group, 1995 and 2000

			Black	Coloured	Indian	White	Total
Spending (R'm)	**School education**	1995	25 083	3 872	1 405	5 212	35 571
		2000	31 030	2 884	807	2 689	37 410
	Tertiary education	1995	2 863	331	359	2 080	5 633
		2000	3 984	347	439	1 771	6 541
	Health	1995	14 322	1 373	667	1 264	17 626
		2000	17 875	2 420	921	931	22 147
	Health: Hospitals	*1995*	13 535	1 320	671	1 476	17 002
		2000	14 449	2 135	893	1 009	18 487
	Health: Clinics	*1995*	1 000	110	22	88	1 220
		2000	3 556	329	45	82	4 012
	Minus: Health: Fees	*1995*	213	57	25	301	596
		2000	130	44	17	161	352
	Social grants	1995	9 987	1 472	293	923	12 674
		2000	14 627	1 771	643	1 960	19 001
	Housing	1995	664	91	23	154	931
		2000	2 407	302	64	267	3 040
	Total	1995	52 919	7 138	2 746	9 632	72 436
		2000	69 922	7 724	2 874	7 618	88 138
Share of spending	**School education**	1995	70.5%	10.9%	4.0%	14.7%	100.0%
		2000	82.9%	7.7%	2.2%	7.2%	100.0%
	Tertiary education	1995	50.8%	5.9%	6.4%	36.9%	100.0%
		2000	60.9%	5.3%	6.7%	27.1%	100.0%
	Health	1995	80.7%	10.9%	4.2%	4.2%	100.0%
		2000	79.6%	7.8%	3.9%	8.7%	100.0%
	Health: Hospitals	1995	79.6%	7.8%	3.9%	8.7%	100.0%
		2000	78.2%	11.6%	4.8%	5.5%	100.0%
	Health: Clinics	1995	82.8%	8.6%	1.7%	6.9%	100.0%
		2000	88.6%	8.2%	1.1%	2.0%	100.0%
	Minus: Health: Fees	1995	35.8%	9.6%	4.2%	50.4%	100.0%
		2000	36.9%	12.5%	4.9%	45.7%	100.0%

			Black	Coloured	Indian	White	Total
	Social grants	1995	78.8%	11.6%	2.3%	7.3%	100.0%
		2000	77.0%	9.3%	3.4%	10.3%	100.0%
	Housing	1995	71.3%	9.7%	2.4%	16.5%	100.0%
		2000	79.2%	9.9%	2.1%	8.8%	100.0%
	Total	1995	73.0%	9.8%	3.8%	13.3%	99.9%
		2000	79.3%	8.8%	3.3%	8.6%	100.0%
Per capita spending	**School education**	1995	R798	R1 084	R1 348	R1 008	R863
		2000	R900	R723	R727	R614	R851
	Tertiary education	1995	R91	R93	R344	R402	R137
		2000	R116	R87	R395	R405	R149
	Health	1995	R456	R384	R640	R244	R428
		2000	R519	R607	R830	R213	R504
	Health: Hospitals	1995	R431	R370	R643	R285	R413
		2000	R419	R536	R805	R231	R421
	Health: Clinics	1995	R32	R31	R21	R17	R30
		2000	R103	R82	R41	R19	R91
	Minus: Health: Fees	1995	R7	R16	R24	R58	R14
		2000	R4	R11	R16	R37	R8
	Social grants	1995	R318	R412	R281	R178	R308
		2000	R424	R444	R580	R448	R432
	Housing	1995	R21	R25	R22	R30	R23
		2000	R70	R76	R58	R61	R69
	Total	1995	R1 685	R1 998	R2 635	R1 863	R1 758
		2000	R2 028	R1 937	R2 590	R1 740	R2 006
Total per capita increase		1995-2000	R344	-R61	-R45	-R122	R247
Total per capita increase (%)		1995-2001	20.4%	-3.0%	-1.7%	-6.6%	14.1%
Population		1995	31 413 885	3 572 428	1 042 430	5 171 257	41 200 000
		2000	34 474 273	3 986 758	1 109 680	4 377 334	43 948 045

Table 7: Incidence analysis results by location, 1995 and 2000

			Metro-politan	Secon-dary cities	Other urban	Rural	Total
Spending (R'm)	**School education**	1995	11 520		12 125	11 926	35 571
		2000	9 497	3 120	5 783	19 009	37 410
	Tertiary education	1995	2 159		1 863	1 611	5 633
		2000	3 170	762	1 153	1 456	6 540
	Health	1995	4 671		4 570	8 443	17 685
		2000	6 658	1 810	3 541	10 063	22 072
	Health: Hospitals	*1995*	4 697		4 513	7 793	17 002
		2000	5 709	1 530	2 973	8 200	18 412
	Health: Clinics	*1995*	281		291	708	1 279
		2000	1 140	332	637	1 903	4 012
	Minus: Health: Fees	*1995*	306		233	57	
		2000	191	52	68	40	
	Social grants	1995	1 779	0	3 838	7 058	12 674
		2000	5 037	1 418	2 925	9 620	19 001
	Housing	1995	374	0	557	0	931
		2000	1 626	494	919	0	3 040
	Total	1995	20 503	0	22 953	29 038	72 495
		2000	25 988	7 605	14 322	40 147	88 063
Share of spending	**School education**	1995	32.4%		34.1%	33.5%	100.0%
		2000	25.4%	8.3%	15.5%	50.8%	
	Tertiary education	1995	38.3%		33.1%	28.6%	100.0%
		2000	48.5%	11.6%	17.6%	22.3%	100.0%
	Health	1995	26.4%		25.8%	47.7%	100.0%
		2000	30.2%	8.2%	16.0%	45.6%	100.0%
	Health: Hospitals	1995	27.6%		26.5%	45.8%	99.6%
		2000	30.9%	8.7%	16.1%	44.4%	104.8%
	Health: Clinics	1995	21.9%		22.7%	55.3%	100.0%
		2000	28.4%	8.3%	15.9%	47.4%	0.0%
	Minus: Health: Fees	1995	51.3%		39.1%	9.6%	0.0%
		2000	54.3%	14.8%	19.4%	11.5%	100.0%

			Metro-politan	Secon-dary cities	Other urban	Rural	Total
	Social grants	1995	14.0%		30.3%	55.7%	100.0%
		2000	26.5%	7.5%	15.4%	50.6%	100.0%
	Housing	1995	40.2%		59.8%	0.0%	100.0%
		2000	53.5%	16.3%	30.2%	0.0%	100.0%
	Total	1995	28.3%		31.7%	40.1%	100.0%
		2000	29.5%	8.6%	16.3%	45.6%	100.0%
Per capita spending	**School education**	1995	R1 031		R1 000	R666	R863
		2000	R663	R788	R812	R1 025	R851
	Tertiary education	1995	R193		R154	R90	R137
		2000	R221	R192	R162	R78	R149
	Health	1995	R418		R377	R472	R429
		2000	R465	R457	R497	R543	R502
	Health: Hospitals	1995	R420		R372	R435	R413
		2000	R399	R386	R417	R442	R419
	Health: Clinics	1995	R25		R24	R40	R31
		2000	R80	R84	R89	R103	R91
	Minus: Health: Fees	1995	R27		R19	R3	R0
		2000	R13	R13	R10	R2	R0
	Social grants	1995	R159		R317	R394	R308
		2000	R352	R358	R411	R519	R432
	Housing	1995	R33		R46	R0	R23
		2000	R114	R125	R129	R0	R69
	Total	1995	R1 835		R1 894	R1 622	R1 760
		2000	R1 815	R1 920	R1 978*	R2 165	R2 004
Total per capita increase		1995-2000	-R20	..	R85*	R543	
Total per capita increase (%)		1995-2001	-1.1%	..	4.5*	33.5%	13.9%
Population			11 173 440		12 121 040	17 905 520	41 200 000
			14 320 415	3 960 659	7 122 547	18 544 424	43 948 045

* Other urban here includes secondary cities

The link between spending and delivery: Some preliminary evidence

The above analysis focuses on the distribution of public spending. Underlying such analyses is the implicit assumption that spending is relatively efficient, or that inefficiency is relatively uniformly distributed. However, a major legacy that the government is still trying to address is systematic differences in the efficiency of social delivery to different areas, population groups and income groups. Even scrupulously equitable spending may not lead to equity in social outcomes. Indeed, continuing large differentials in social outcomes despite the massive shifts in spending documented above illustrates the limitations of expenditure incidence analysis.

Health:

International evidence indicates that government health spending has a limited impact on health outcomes (cf. e.g. Filmer, Hammer & Pritchett 1997; Gupta, Verhoefen & Tiongson 1995; Inter-American Development Bank 1998). In all social services also, there is often a long chain between public spending and social outcomes.

Government attempts at improving health services have focused on improving access. Shifts of health spending to historically poorly endowed provinces (see e.g. Collins et al. 2000) and within provinces to primary health care were accompanied by the provision of free health care to pregnant women and young children. However, consumers still seem to prefer private health facilities. Palmer (1999) identified four themes from focus group discussions in rural towns in the Western and Eastern Cape as to why people choose private services: Respondents felt paying for a service meant there was an incentive for good service delivery; that the public sector did not provide effective care, that nurses "merely prescribe pills"; that clinics are primarily for pregnant mothers, babies and tuberculosis sufferers; and that public sector nurses treat patients badly, in contrast to the friendly attitude of private doctors. In the perception of potential users, quality of public health care requires attention to ensure that expanded provision of public health resources is positively evaluated by the intended beneficiaries.

The demand for health care reflects an overwhelming preference for private care where this is available and affordable (see e.g. Palmer et al. 2002; Havemann & Van der Berg 2003); public care is an inferior good in economic terms, the demand for which declines as people's

incomes increase. Figure 21, based on research by Booysen (2002) utilising the 1998 Demographic and Health Survey, illustrates this. Utilisation of private facilities is surprisingly large throughout the population. Even amongst the poorest wealth quintile, only 1.1% of whom have medical aid coverage, 8% visited private health facilities in the month preceding the survey, indicating that many of the poor are prepared to pay from own funds to visit private health care providers. Public health facilities are utilised less by people in the top quintile, whose own income and access to medical aid make private care more affordable. Even amongst the second richest wealth quintile, where only one-fifth are covered by medical insurance, utilisation of private health care far exceeds that of public care.

Fig. 21: Medical aid coverage and utilisation of public and private health care facilities in month preceding 1998 Demographic and Health Survey by wealth quintile
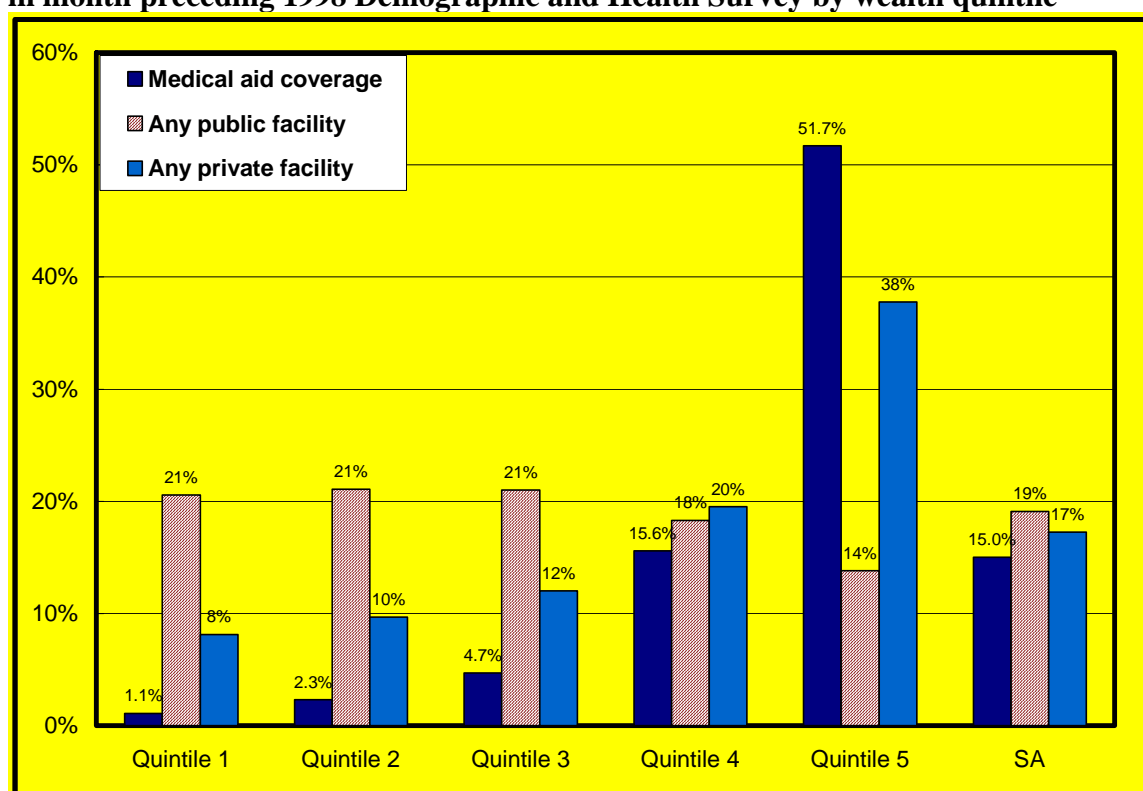
Source: *Own calculations from Booysen (2002).*

Education:

Real spending on school education increased substantially after 1994, with a dramatic shift towards formerly black schools. State paid teachers per 1000 students increased from 24 to 31 in formerly black schools, and decreased from 59 to 31 in formerly white schools (Fiske & Ladd 2002). Another 12 teachers per 1000 students, on average, are paid for by parents in formerly white schools. Even considering these privately funded teachers, teachers per 1000 students declined from 59 to 43 in formerly white schools and increased from 24 to 31 in black schools. However, despite these real resource shifts, between 1991 and 2000 results

somewhat deteriorated in formerly black schools (perhaps because some more affluent black students moved to historically white schools, who maintained their results over the period). Differences in school performance are striking, particularly when quality is measured. Lags in outcomes may explain some of the perseverance of performance differentials, but there is strong evidence that resource efficiency is a severe problem.

Figure 22 shows that, despite the additional resources channelled into school education and the more equitable distribution of such resources, the aggregate number of successful matric candidates has increased very little since the transition to democracy. Increases in pass rates were largely driven by a reduction in the number of candidates, mainly through restrictions on over-age children in the school system. Figure 23 reflects the distribution of matriculation results for 2003 for Higher Grade Mathematics, an important gateway to tertiary education in many technical disciplines. There is a very poor distribution of HG Maths marks of candidates in schools where blacks constitute the majority of pupils (mainly former DET or homeland schools) compared to other schools which historically largely served the white, coloured and Indian populations. The largest concentration of candidates from mainly black schools obtain Maths marks of even below 20%. This exceedingly poor performance in the bulk of the school system is a cause for great concern in terms of equity of educational outcomes and also, ultimately, equity in the labour market, and it is likely to constrain technologically driven economic growth.

Poorer schools struggle to attract better qualified teachers. Good teachers are scarce and it is difficult to entice them to work in deep rural areas and townships, where they are most needed. Equally, a factor that appears to be particularly crucial for well-functioning schools, management, is in scarce supply in many poor schools and is little influenced by fiscal shifts.

Figure 22: Matriculation candidates and passes, 1979-2003
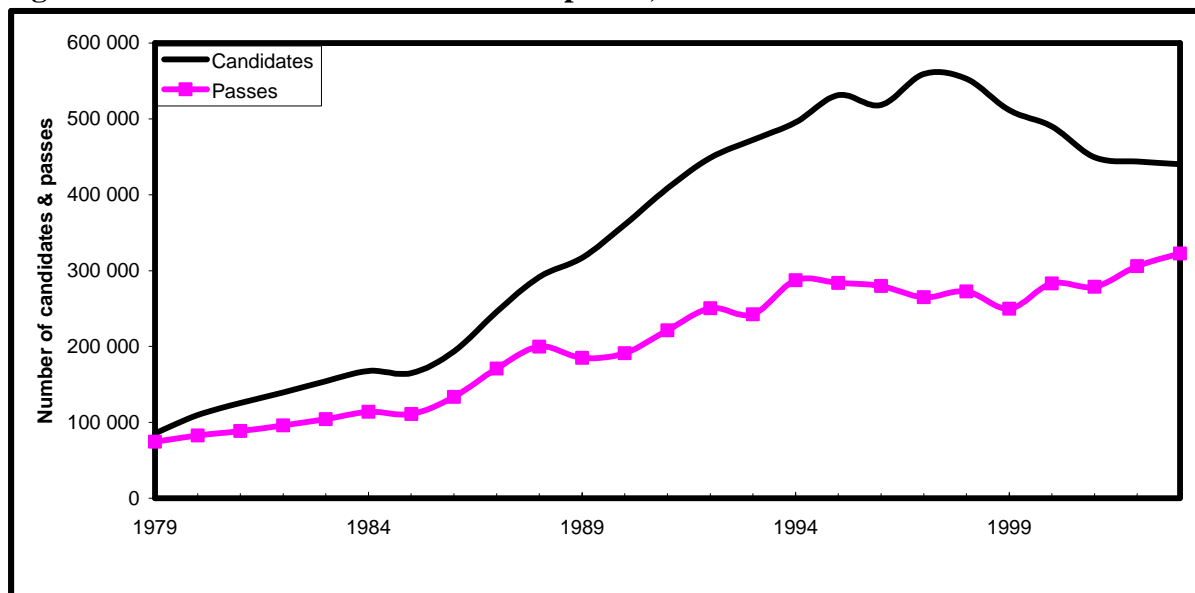
Sources: Fiske & Ladd, 2004, Figure 9.5, p.185; SA Institute of Race Relations 2001, p.156; Department of National Education, website.

Figure 23: Distribution of HG Mathematics marks by main race group in school 2003
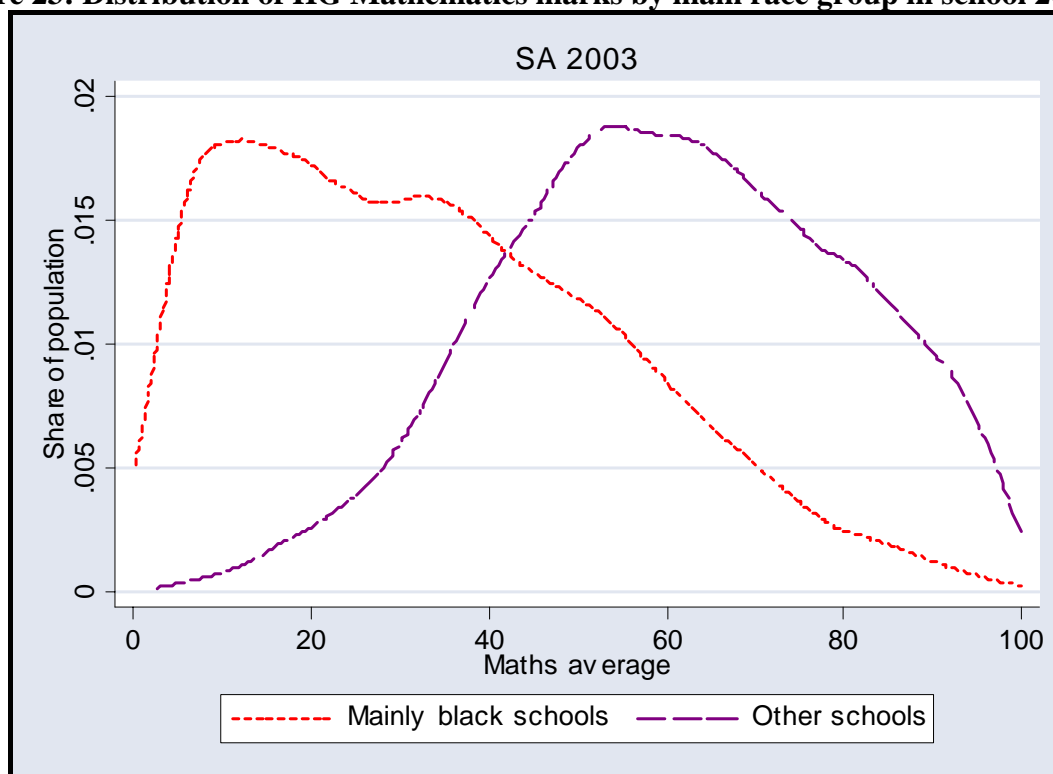
Source: Calculated from National Senior Certificate examination results. "Mainly black schools" were taken to be those in which black matric candidates were more than those from all other race groups.

Overall assessment:

The above illustrates that fiscal resource inputs are no guarantee of desired social outcomes.

There are two possible areas of slippage between fiscal resource inputs and social outcomes.

On the one hand, fiscal resources do not necessarily translate into the scarce real resources

(qualified teachers, nurses, etc.) required to improve social delivery. For instance, more funding for poor schools does not necessarily convert into attracting more well-qualified teachers into township or rural schools. Secondly, even where the real resources are available, their effective utilisation is not necessarily guaranteed.

Government well recognises the urgent need for improved service delivery. Good targeting of expenditure, as found in this research, only ensures that expenditure is equitably applied, not that it is well and effectively spent. For equity of social outcomes, well targeted fiscal expenditure is a necessary but insufficient condition. In education, resources were shifted to the poor, but outcomes remained largely unchanged, particularly when measured in terms of higher quality outcomes; and in health, the services provided by the public health sector are not highly rated by the population, with even the poor often opting for higher quality and higher cost private health care. Only in the case of social grants (where resources are shifted directly to the intended beneficiaries) and perhaps in the cases of housing, physical infrastructure and water provision (where provision of services often bring direct benefits) was there an unequivocal improvement in the position of the poor.

CONCLUSION

The fiscal expenditure estimates presented above show continuation of the trend found in the earlier fiscal expenditure incidence study towards even better targeting of social spending. Admittedly, the data sources were far from perfect and in a number of cases judgment had to be used to select from and interpret data. Nevertheless, there are good reasons for accepting the broad conclusions even though there could be greater hesitancy in accepting the estimates for individual programmes:

- The major shift within programmes, in public ordinary school education, clearly did take place and was driven not by the survey data, but by greater equity in the spending per child at school due to the equalisation of teacher-pupil ratios.
- The bulk of the rest of the changes in incidence largely related to relative shifts in expenditure between towards programmes towards those that are better targeted at the poor, particularly social grants, clinics (primary health care) and Housing.

Even ignoring the improved targeting found in some other areas (e.g. hospitals and clinics), the overall conclusions would still stand. Thus spending is clearly very well targeted for a developing country, and targeting has indeed further improved in the period 1995 to 2000.

Some recent policy changes (the introduction of the Child Support Grant, of free basic municipal services and post-provisioning in schools favouring poorer schools) have not yet been fully reflected in the 2000 data, so spending is likely to be even better targeted today than in 2000. Further improvement in targeting spending would become increasingly difficult, thus emphasising the importance of improving equity of outcomes through improved efficiency of social delivery to the poor. Government's success in reaching its objectives in terms of resource shifts gives it the opportunity to now focus more on the quality and efficiency of social delivery as a means of achieving the ultimate goal of improved social outcomes for the poor.

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