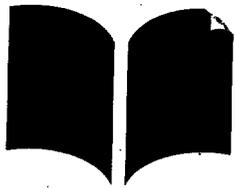


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Advancing Basic
Education and Literacy
Phase 2

Trip Report

**School Funding Options and Medium-term
Budgeting for Education in South Africa**

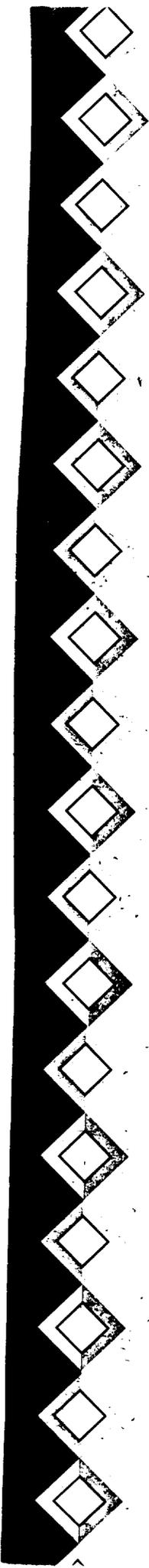
Prepared for the
The Department of Education South Africa
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***School Funding Options and Medium-Term Budgeting
for Education in South Africa***

Consultant's Report

Luis A. Crouch
Research Triangle Institute
Prepared for: Department of Education
South Africa

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Executive Summary

1. The author was asked to comment on current options for school finance in South Africa, and both evaluate and demonstrate an evaluation methodology. He was also asked to make suggestions as to how to develop more policy-driven medium-term plans and budgets. The author collaborated with Professor C. Colclough of IDS, Sussex, whose report is oriented toward the same issues as this one, but with a slightly different emphasis regarding specific subject-matter.
2. With regard to school finance, our conclusion is that a modified version of the Hunter Committee's Option 2 would be the most satisfactory. This is a formula-driven approach based on a sense of fiscal or "purchasing power" equalization; it lends itself to a visible and simple implementation of equity enhancement. The formula, we felt, should be as simple or nearly as simple as the Financial and Fiscal Commission's formulae. The modification we propose would be that school governance committees should be able to levy fees that are in some sense compulsory but not exclusionary of those without ability to pay. These fees would be set by the governing body of the school and could be set and used with broad but well-defined discretion. We believe that this kind of approach would best prevent a tendency towards a chaotic and uncontrolled bi-polarization of the whole education sector (independent plus public), albeit at the cost of allowing certain orderly variability **within** the public sector. This scheme would, we believe, better assure the long-term fiscal health of public education, and would more likely result in keeping important stakeholders fully engaged with public education, leading to better budgets and accountability.
3. With regard to provincial finance, we reviewed the Financial and Fiscal Commission's (FFC) proposals and essentially agree with their methodology, though we have some minor questions about the use of population rather than enrollment as the factor that drives the education subsidy.
4. The FFC's provincial proposals and the Hunter Report's Option 2 are not incompatible. On the contrary, with or without the modifications we have suggested to Option 2, the school or within-province financing scheme and the between-province financing schemes are synergistic.
5. With regards to medium-term budgeting, we suggested that:
 - Medium- term planning and budgeting needs to be less like "planning" and more like budgetary and policy suasion. Thus, "planning," at the summit of a decentralized system, means to analyze and execute mechanisms of budgetary, informational, and, to some limited extent, legal leverage on the implementors, rather than planning for one's own implementation.
 - Cost-adding or cost-rewarding formulae as a way of driving the budget should be abandoned as quickly as possible, and should be abandoned intellectually even if in practice they may be used for some time longer as a matter of practicality. They are not efficiency-enhancing or equity-enhancing.
 - There is limited, but not zero, scope for educational budget increases in the medium-term, yet they would have to be very hard fought and well-defended. Those limited resulting funds should ideally not be used for "delivery" or "implementation" of national projects in provinces. Rather, they should be used as a way to discover much more cost-effective means to deliver education via "transformative" pilot projects, as a way of preparing for a leaner future. Anything else is

less likely to “sell.” South Africa is rife with ideas about this, but the Department needs to take them more seriously and needs to mobilize to analyze, propose, evaluate, and disseminate these ideas. Examples abound in areas such as training, ABE, etc., which are areas of important policy commitment.

- Pilot projects engaged in or coordinated by the Department (which should be part of its budget) should not be oriented only at redress. They need to be “transformative” in the sense of finding more cost-effective ways to deliver, rather than simply attempting to solve problems with more money and more buildings, needed as these obviously are in some cases.
- The Department is making considerable effort at technical assistance and coordination with the provinces. This is to be encouraged, as this is the key to cooperative leverage in a decentralized system. It needs to work not only at the level of implementation, but also at the level of analysis and design, particularly of high-level budgetary issues in the provinces.
- Redress and the few truly transformative programs that exist tend to rob provinces and lower levels in the system of the capacity to address tradeoffs. It is true that there is little capacity to make decisions based on awareness of tradeoffs in the provinces, but if all the discretionary funding is “tranching” into various programs coming from various central bureaucracies, the provinces will have little incentive for improving their real decision-making.
- A great many organizations in civil society, as well as other organs of the state, are providing technical assistance in the provinces in areas related to education management and policy. Much can be learned from this. The Department need not necessarily control it, but it should, ideally, be one of the key nodes in the system, and one that lends vision and leadership, rather than just coordination and sanction. This role will not be granted to the Department; it needs to earn it through capability.
- We proposed that a specific “wing” or “unit” be created in the Department to be in charge of financial analysis, networking with economic authorities, and providing the Director General and Deputy Directors General with key input about policy and finance. This unit would be one of the key users of the Department’s own information systems and would network with other sources of secondary and primary information in the public and private sectors. This wing would contain at least three and perhaps at most six individuals. It would not execute projects or have an operating budget other than what is needed for its analytical functions.

I. Summary of Scope of Work

Our scope of work was to:

1. Evaluate South Africa's long-term options for reforming school finance, particularly in view of a rigorous evaluation of various extant proposals, focusing specifically on those in the Hunter Committee's Report. Assess the recommendations of the Financial and Fiscal Commission report, in relation to those in the Hunter Report. Suggest how the Department should best interact with such proposals.
2. Propose options for improving the budgeting and spending proposals for education in general, and for the National-level Department of Education specifically, so as to make such budgeting more policy- and program-driven, more internally coherent, and more innovative, with a view to helping Education secure healthy budgetary allocations. This is to be in the context of the specific pressure being felt by the Department to propose a medium-term strategic budgeting process that is satisfactory to the economic authorities of the country.

The trip to South Africa was organized under the direction of Mr. John Samuel, Deputy Director General, Systems and Resources (1), who provided the initial work-scope. The scope was confirmed verbally upon arrival by him and by Mr. Trevor Coombe, Deputy Director General, Systems and Resources (2). Funding was provided by USAID through the ABEL Project. Our gratitude to all for making the trip possible. During the trip we worked closely with Professor C. Colclough of IDS, Sussex, England.

It was recognized by our counterparts that such an ambitious scope could only be started in one visit, and we were urged to make suggestions as to how such work could be continued by the Department, by other consultants under the Department's coordination, or by ourselves in future trips. The generic issues involved in such continuation are mentioned here. Personal or institutional aspects are covered in a separate private memorandum.

The present report occasionally lapses into economics jargon. Though some of this jargon is inevitable, much of it is due to limitations in the author's capability for using more elegant and simpler language, for which we apologize. Most of the jargon can be skipped over without much loss of understanding, and with a considerable saving in energy.

II. Comments on the Hunter Committee's Finance Options

II.1. Preliminary

The Committee to Review the Organization, Governance and Funding of Schools (Hunter Committee for short), in its Report, has proposed three school funding options.¹ It was part of the brief of the author of these notes, as given verbally by Messrs. Samuel, Coombe, and others, to evaluate those three options against the stated objectives of the Committee's general recommendations (equity, redress, efficiency, etc.). The Report clearly says that the options are largely illustrative, and can be re-combined. All of the

¹We assume the reader of these notes has already read the Report.

specific components of the options are usually also given by way of illustration. Thus, we do not believe it would be presumptuous on our part to criticize these various options and to propose ways in which they can be re-combined to better suit the mandate of the Committee itself. We emphasize that what we want to propose is a transparent methodology whereby South African colleagues can come to their own decision. Thus, while our biases will inevitably inform much of what we say, at least such biases will be laid out transparently, and our colleagues can follow the same reasoning we followed, but discard our biases.

We have to note at the outset that all three extant options have serious problems and difficulties, of both conceptual and practical nature, with potentially discouraging implications for the long and short term (though the problems with some of the options show up in the long-term, and others' problems would show up almost immediately). However, given the inherited problems South Africa faces, any option that proposes serious change will face obstacles, and so will any option that does not propose serious change.² Given this dilemma, two temptations appear, and they should both be guarded against. First, there is the temptation to opt for the option with the least problems. Second, there is the politically appealing temptation to propose an option that appears to generate serious change (to satisfy or de-fuse certain types of opposition) but in the end delivers little or makes things worse (thus satisfying another set of constituents, who are perhaps more likely to read between the lines and understand that what is proposed will in the end effect little change).

The second temptation is something that will have to be negotiated between politicians and technocrats (both in the public sector and in civil society) with the public interest in mind. We will, perhaps naively or presumptuously point out what, in our opinion, some of these political vs. technical tradeoffs are, but will not suggest where South Africa should place itself on this tradeoff. We will suggest how South Africa can place itself somewhere on the tradeoff, rather than arriving at a second-best solution that is inferior to many others possible. That is, if we feel that South Africa, by exercising certain options, can have a system that is both more equitable and of higher quality and efficiency, we will state how this may be possible. But where we perceive there is a stark tradeoff between, say, academic excellence and equity, we, not being South African, must hold our peace.

The first temptation, that of taking the option with the least problems, is more subtle. We strongly feel that the options with the most problems in one or two specific areas may also be the options with the most promise to deliver to South Africa a system that is equity- and efficiency-enhancing, and that can best help create national cohesiveness while respecting regional and cultural heterogeneity, and being realistic about economic constraints. Thus, we believe the option chosen should be the one that maximizes the benefit/problem ratio, not the one that simply minimizes the problematical aspects. It is often assumed that minimizing the problems will maximize the benefit/problem ratio, which would be the case if the numerator (benefits) were fixed. But the fact is that the benefits and the problems are not unrelated to each other: certain options with very high benefits might have somewhat greater problems. It would then be up to the technocrats to first determine to what point the greater benefits are worth the

²Furthermore, it is also important to point out that all of the solutions presented in the document are considerably better than the status quo. Option 1, for example, appears weak only in comparison with the other two options, but it is, upon careful reflection and analysis, a good deal better than the status quo (assuming equalization of state-provided inputs at equal staffing ratios and equal quality profiles).

greater problems, and the feasibility of tackling the problems, and then to passionately and convincingly argue for the “best” option even if it has problems, in order to generate amongst the politicians the will to fight problems which will perhaps be mostly of a political and, even, in some cases, of a semantical nature.

II.2. A comparison of the options

We must first commend the Committee and its members for a lucid piece of work, which, under the circumstances, is a masterpiece of forceful tact. We can only hope that if we quibble with some of its conclusions or recommendations, this quibbling is taken against a backdrop of respect and admiration.

In the rest of this section, we will proceed as follows. First, we will attempt clarify the main options contained in the Hunter Report itself. We will do this in tabular and schematic form. Second, given this presentation of what each option actually contains, we will “rate” each option against a set of criteria in verbal or analytical terms. Third, we will embody those “ratings” into actual numerical scores, to come to a “synthesized” understanding of how well all of the options do against the totality of the criteria.

II.2.a. A schematization of the three options

The Hunter Report lays out the finance options in largely narrative format. This makes it very difficult to rigorously compare them, first in terms of actual features and proposals, and then in terms of relative benefits and problems. Thus, our first task is to try to make the presentation of the three options more schematic and rigorous. We realize we do this at the risk of over-simplifying and perhaps caricaturizing the options. Thus, we refer the reader to the Report itself for an appreciation of the possible subtleties we may have glossed over in our attempt to make the options more starkly comparable to each other. On the other hand, simplification, and sometimes even caricaturization, are often key to capturing the essence of things.

A further virtue of a tabular schematization is that it renders the task of devising “combinations and permutations” of the options, which the Committee implicitly calls for, much easier. Finally, a schematization of the actual features of each option is necessary in order to permit a more “synthetic” or “netted out” judgement as to their relative merits.

In table 1 we have therefore laid out the three options as columns, and have listed their features in rows. The contents of the features (rows) should be largely self-explanatory.

Table 1. Schematization of the Hunter Committee's Three Financing Options

Features	Options		
	Option 1 - "minimalist-gradualist approach"	Option 2 - "school-based formula approach"	Option 3 - "partnership funding approach"
Provisioning or level of funding as such	Eventually equal per capita, based on staffing norms and convergence of salary costs based on re-working of salary scales and upgrading. Apparently little provision for redress or direct, progressive equity-enhancement, or favorable poverty- or rurality-weighting or targeting, except in the "non-personnel residue."	Driven by a formula or formulae that could be strongly targeted or not. In the latter case reverts to "equal per capita." In the former case there could be room for "permanent redress" or fiscal-base equalization as practiced in most developed countries. Note that provisioning is not driven by staffing patterns, but by equalization concerns.	This approach adds the twist of a provincial focus which is not present in the other two, rendering comparison a little difficult. Different types of provisioning have different approaches. Capital spending would be from provinces, with progressivity based on needs. A Redress Fund would also be based on need, but as identified by stakeholders. Core funds would be provided for central prov. mgmt. Salary costs would be driven by mandated staffing patterns. Operating costs would be targeted by income of parents.
"Ownership" implications	Similar to current "model C" for those who wish it and can afford it, similar to current state for the rest.	Public.	Not clearly stated. Presumably as in the cell to the left.
Governance implications	Similar to current "model C" but more limited.	Not clearly stated. Presumably similar to Option 1. Report states that all three options have similar governance and ownership implications, but it is hard to see how it could really be so given that equalization appears to be fiscally driven under this option, rather than driven by staffing patterns. This would mean that governing bodies or at least districts would have much broader decisions to make.	See cell to the left. Not clearly stated, but Report says all options have similar governance implications. Could be more limited than option 2, because the provisioning is not driven by a simple, single formula but by mandates chosen "above" the school level, and the biggest expense is driven by staffing mandates.
Fees	Can levy compulsory fees at school level, and of an amount determinable at school level. Can apply to staff provision, though there appears to be some contradiction on this score.	No compulsory fees allowed. Voluntary fees allowed and encouraged, and technical assistance provided.	Obligatory, but on a sliding scale, and oriented only towards operating costs. No child to be excluded from school on basis of parental non-payment.

II.2.b. How good is each option scored against various criteria?

With this characterization in hand, we can proceed to build a second table, which ranks all the options against a set of “optimality” criteria. The methodology proposed allows one to stress some of the criteria more than others, or even to negate one or more of the criteria. Thus, we have chosen to be expansive in our list of criteria. Restrictiveness, should it be desired, can then be easily implemented by giving a zero weight to one or more of the criteria we have proposed.

Several “optimality” criteria derive directly from the Constitution of the nation, or from the education White Paper, as summarized in the Hunter Report. Where possible, however, we have given these criteria a slightly more rigorous interpretation simply to make it easier to come to a systematic understanding of each option’s problems and benefits.

Equity. This is clearly a mandate. By this we will mean simply whether the proposed system results in improving the provision of social services to all income classes, after own-expenditures (that is, privately paid fees from families, or local taxation) are taken into account. The focusing or criterion of equity can be either geographic or individual (income-class), but ideally not racialist. Thus, the “ideal” here is equal provision of the basic inputs needed to guarantee the opportunity for cognitive and affective achievement. This can be ascertained relatively rigorously by looking at the distributional incidence of educational expenditure after taking into account both the private and the subsidy component. Summary measures, such as the Gini coefficient of the distribution of educational expenditure by income class, or a simple integration of the area under the Lorenz curve for both the public and private components or their sum, can be used. Simpler alternative summary measures, such as the proportion of the total educational expenditure “consumed” by the wealthiest 20% of the population are also possible.

Equity can be considered on two levels. First, “redress” in terms of “backlogs,” which seems to dominate the public policy discourse in South Africa. However, this is a point of view excessively oriented towards the short run, and towards capital construction projects. It may well be that real redress has to do with the ability, over, say, a 20- to 30-year horizon, of poor communities to be able to afford a quality teachers more similar to that which richer communities can afford. Ideally, the funding schema under discussion today should consider this issue and begin modeling solutions. Thus, second, equity can be seen as related to the equalization of educational purchasing power over a wide range of inputs and on a more or less permanent basis. This is the process used in most developed countries, although the progressivity with which it is done varies from country to country. Focusing on a broader understanding of equity, and a broad financing of it, rather than simply looking at “backlogs” or “redress” to be financed by various packages and agencies, also has the effect of forcing communities, districts, or provinces, to face real tradeoffs, make real decisions, and try to live with the consequences. If “redress,” “equity,” etc., are provided via a series of narrow, capital-oriented projects and special funds, this is an encouragement to communities and provinces to not assess the productivity of spending, and not engage in self-help and self-governance, but simply to try to “grab” as much of each special fund as their special pleading will allow them. This, oddly enough, was what apartheid itself did, by, in a sense, insulating whites against the public cost consequences of their decisions. The result was some of the best-provisioned public schools in the world, often far beyond what the parents would have provided themselves with had they been forced to feel the consequences in their own pockets, and probably considerably beyond what was really necessary for development of cognitive and affective achievement.

Obviously, such an inefficient system of funding could work only for a privileged minority within a country. The attempt to extend similar systems of funding, but now with an “equity” twist, would break the country. A more logical manner of subsidizing equity must be found than distributing special, isolated packages or adding a redress component to cost-reimbursing formulae.

It also seems clear that one should be concerned more with the distribution of cognitive achievement, rather than with the distribution of inputs or funds. Further, it appears to use that, at least technocrats if not politicians, should also be concerned more with the distribution of measurable outputs related to quality (such as measured cognitive development), rather than with vague attributes of quality such as the presence of certain inputs loosely (statistically, analytically, common-sensically) related to measurable quality. Nevertheless, the broad equity involved in the distribution of educational purchasing power is an important concern, and options should be evaluated along these lines.

Efficiency. This has to be understood as some notion of delivery of achievement (cognitive acquisition and affective development) per rand spent on inputs, ideally in a measurable manner. Prima facie evidence suggests that there has been inefficiency of various sorts in various levels and departments within South African education. Inefficiency is related to equity in that inefficiency robs the system of capacity for redress. Excessive focus on redress at all costs, however, can, if improperly implemented, ruin the incentives for efficiency.

Quality. This is an elusive issue, and one which, if not defined rigorously, can lead to “quality” becoming whatever the parents and teachers think it is, which would be fine if they were not asking for public money. In the latter case, pleading about issues of “quality” (quotation marks advisedly used) can then simply be a way to mask pleading about privilege and inefficient spending, with public money. If, for example, for us to feel that a school has “quality” means that the school must have a swimming program with both high-dive and racing pools, and musical instruments for everyone in the marching band, and Latin and French lessons, and we insist that this be paid for at broad tax-payer expense, it is clear that spending per child would get pushed to levels that are not needed for the components of education that are more nearly truly public and/or are related to cognitive achievement. However, if by a “quality” system we mean simply a system that can deliver high levels of cognitive achievement, then we have something measurable, and something with serious public spillovers, and hence something for which public spending can reasonably be provided. The Hunter Committee seems to wisely shy away from considering “quality” an important criterion of optimality in their finance proposals. We suggest that this be included, but only with the proviso that by “quality” we mean something measurable and of public interest, such as cognitive development tied to a system of comprehensive, internationally comparable national student assessment (not for filtering purposes but for assessment as well as parental and community information). (Subject, of course, to the usual caveat that cognitive development is hard to measure. But better—from a public spending point of view—something difficult to measure perfectly than something impossible to measure. Better to track and reward cognitive achievement, even if imperfectly measured, than bankrupt the state attempting to provide parents with a vague sense of “quality,” such as the satisfaction one derives from knowing there are instruments for the marching band. There is a legitimate philosophical debate as to whether the state should in fact provide to individuals, *qua* individuals, things that are not measurable and only of dubious social spillover. Note, however, that we are not recommending simple-minded testing.)

It must also be pointed out that, even if we take a rigorous rather than a “whatever feels good to us” definition of quality, South Africa is entering a stage of development, even in its under-privileged

segments, where continuing to emphasize access is not enough. Essentially all children are entering school. All, essentially, stay a few years, (the ratio of enrolment in the early grades to population is much greater than 1.0, and only some of this can be attributed to under- and over-age) then they drop out (about 50% do not complete Std. 10, according to some recent estimates). One can blame social conditions, but the relevance and quality of the education children receive surely is an important “push” factor, which, when combined with factors “pulling” from society, result in high levels of dropouts and poor performance in examinations, with consequent wastage of both money and human potential. Thus, designing financial formulae that do not simply “throw money and buildings” at problems, but encourage local decision-making, oversight, and capacity-building, are key.

Fiscal sustainability. This was an explicit consideration in the mandate of the Committee. By this we can understand the likelihood that the level of spending required by the financial recommendations is likely, or possibly, forthcoming from the fisc on a permanent basis, or for as long as “required” by a coherent long-term plan.

A key element of fiscal sustainability is the capacity of a proposed system to keep key technocrats and opinion-makers, both in the public sector and in civil society, personally and privately interested in the health of the public school system. In our experience, in systems where, say, the top 10% of the decision- and opinion-makers abandon the public education sector, fiscal support for the sector becomes more and more difficult, in a worsening spiral of mediocrity, lack of funding, and lack of accountability to the astute and powerful as well as to the majority. Thus, a key feature of each proposal’s financial sustainability is the possibility it offers of preventing the flight into private schools not just of the very rich but of the higher levels in the civil service, in the upper middle-income professions, and in the teachers’ unions. This is such an important aspect of sustainability that it might merit separate consideration in the “scoring criteria” whereby various funding options are assessed. It should really come as no surprise that the health of a public system depends to a considerable degree on whether the powerful in society still believe in it, and act as if they do. (To profess belief, and then send one’s children to private school, as do so many public school teachers and public sector union leaders in Latin America, hardly counts. It is true commitment, as demonstrated by what one does with one’s children, that works to generate both support and accountability pressure.) See Appendix D.

Implementability. This criterion was not explicitly stated by the Hunter Committee in their lists of criteria to be used, but clearly it was used, for example in their discussion of the implementability difficulties in option 2. We propose that implementability is a serious issue, and would suggest disaggregating it into three sub-issues: a) managerial and technical implementability, b) political implementability if no strong “salesmanship” or “marketing” is forthcoming, and c) political implementability if strong “salesmanship” or “marketing” is used.

We note that many of these issues are inter-related. For example, since economists are often almost compulsively concerned with efficiency, and since there certainly are more economists than teachers in the public bodies that determine fiscal allocations, a system that is efficient, or cost-effective, is also likely one that is more fiscally sustainable, because the economists and other decision-makers like to reward what they see as efficiency. We will try to point out these inter-connections below, as we evaluate the options.

In table 2 we assess each option against all of these criteria. Each one is discussed and then we present some more general considerations that overlap various issues. We then assign a numerical score to the

option's "contribution" to each criterion in an attempt to come to some kind of synthetic judgement.

Table 2. "Optimality" of various Hunter Committee financial options (Table continues over more than one page)			
Optimality criteria	Options		
	Option 1 - "minimalist-gradualist approach"	Option 2 - "school-based formula approach"	Option 3 - "partnership funding approach"
Equity	Probably weakest of all options, given lack of explicit redress spending, but more equitable than current if strong movement is made to equalized staffing patterns.	Could be very strong, since formula proposed lends itself to redress. Depends on how much redress is actually built in. Allows for conceiving of redress in a more "permanent" or "fiscal-equalization" sense than the other proposals.	Could be reasonably strong, depending on how well- and strongly-targeted the various redress components (capital, redress) and non-redress components (core) are targeted, as well as how fast progress is made towards standardized staffing.
Efficiency	Some positive impact. Some incentive effects for cost consciousness since some expenditures come from parents.	Perhaps lower than option 1, because of lack of cost-consciousness given no fee generation. However, simplicity and "unitariness" of funding would help induce cost consciousness if supported by capacity building and exercise of power by local authorities and governing bodies. Lack of plethora of funding mechanisms is attractive and could induce greater efficiency than option 3. With these provisos (supported and non-extreme decentralization of certain authorities, plus simplicity and "unitariness" of funding), could be the most efficient option. With fees could be more efficient still.	Perhaps the least efficient, because of plethora of funding forms implemented probably by different bureaucracies discourages sense of tradeoffs among key decision-makers. Some efficiency induced through operational cost watch-dog function induced through fees from parents for this limited function.
Quality	Medium, given lack of attention to low-end of the income spectrum.	Considerable, if waste is controlled, given uplift at bottom end of income spectrum.	Considerable, but inefficiencies could lead to waste and misuse of funds that could otherwise lift quality. Fees and targeting of operational costs could add quality.
Fiscal sustainability	Reasonable, given relative lack of need to spend on redress issues.	Low. Strong redress will be expensive, particularly if those at the upper end of the income spectrum are to be kept reasonably happy <u>and</u> they cannot use fees effectively (e.g., because they are only voluntary).	Reasonable, particularly if fees are obligatory and could be used for more than just operational expenses.

Table 2. "Optimality" of various Hunter Committee financial options
(Table continues over more than one page)

Optimality criteria	Options		
	Option 1 - "minimalist-gradualist approach"	Option 2 - "school-based formula approach"	Option 3 - "partnership funding approach"
Prevention of "opinion and decision-maker flight" from public system	Weak, but not clear whether those in the "Model C" schools would consider themselves part of the system, given the two-tier nature of the system. If staffing provisions are judged insufficient, and private compulsory fees cannot be used for increasing staffing, could generate massive flight to independent schools, particularly if the latter can receive subsidies.	Weakest as currently proposed. Very weak if no fees at all can be charged. Weak if only voluntary fees can be levied, since the targeting of resources towards the poor will make those at the upper end of the income spectrum unhappy with "quality" and with real quality, unless they can charge compulsory fees and use them for a broad range of inputs, including staff. Strong flight prevention if compulsory but non-exclusionary fees are allowed and can be used for broad array of expenditures.	Weak if the fees for operational expenses do not allow communities to provide themselves with levels of quality they find satisfactory, say because the fees revert to the system. In this case they act more like a direct tax. If fees are kept at school level and can be used broadly they are more like a price, and flight is less likely.
Implementability —practical	High. Most closely resembles current system, and requires little true capacity building at local level. Can be bureaucratically determined most easily.	Medium. Not as bad as seems to be suggested in the report. Depends on complexity of the formula, and whether the targeting is individualized or more regionalized. No reason why it cannot be the latter. It is easier, and though not quite as efficient as individual targeting, it is better than none.	Medium. In our opinion, not as good as the Report suggests. Plethora of options with different targeting guidelines would be rather more difficult to implement than the Report allows for, in our opinion. Household-based targeting of fees is not easy. Could be geographic.
Implementability —political, with no "marketing"	Low political implementability in the sense of popularity and electoral politics. Some support from special groups.	High. Popular with majority. Could deliver funding quickly and simply. Risks withdrawal of support of special groups. Option of allowing upper-income groups to charge and use fees and still receive some subsidy would prevent "opinion-maker flight" but could decrease political "salability."	Medium, given use of fees only for operating expenses, and given sliding-scale fees. Remaining opposition appears almost a semantical issue.
Implementability —political, with good "marketing"	Doubtful that it could be marketed at all.	Not needed in simple version. Good marketing would be required if system would allow compulsory but non-exclusionary fees to be charged.	Some marketing would be possible and would increase political salability. Could perhaps be done given almost semantical nature of departure from notion of "free."

Note that a prohibition against using voluntary or compulsory fees for the hiring of additional personnel by the governing bodies in any of the models would likely not stand, in practice. Informal ways to do so would be found, in all likelihood, and, if challenged, they are likely to be interpreted as legal and constitutional. For example, a governing body could simply create a small “foundation” that would hire a teacher, and the school would provide a classroom, free of charge, to the foundation for teaching extra classes. Considerable power over the determination of usage of school facilities is explicitly granted to the governing bodies (“community usage of school facilities”) in the governance proposals. In fact, in other countries where school autonomy experiments have been tried (e.g., Nicaragua), one of the most efficient developments has been the use of school facilities after hours for the imparting of classes, on a fee-per-class basis, in practical skills such as English, tailoring, etc. In this case, the teachers are not even hired by the parents, but the parents and principal collectively simply decide to allow the use of the school building for this purpose, and everyone is happy. Note that, to the extent legal ruses are needed, it is the better-off segments of the population that are likely to have the imagination to use these ruses, and to have the funds and legal knowledge to make them stick. Rather than prohibiting them to the better-off in a naive attempt to ensure equity, it seems better to us to make sure that, by using funding formulae that are rather strongly favorable to the poor, as well as providing capacity-building, the option would simply be available to the poor as well. This would mean that the formula used for funding should be as progressive as suggested by economic reasonableness and political feasibility.

It is important to emphasize that the criterion on “prevention of opinion-maker flight” is not based on what some might judge an inappropriately tender concern for the wealthy or the upper middle class. It is based instead on the very real fact that strong redress requires relatively high levels of spending on education, and such levels of spending will only materialize, or remain available to the public sector, if the opinions of budget-makers are favorable to the public system, which means that they must feel personally committed to it. If massive opinion-maker flight and some middle class flight (e.g., eventually settling at 25% of the population) takes place, public education will be at best seen as a way to “functionalize” individuals to the needs of the economy, with serious attendant dangers of reversion to a sort of non-racially-based apartheid. The call will be to provide children in the public system (since the children of the elites do not partake of it) with only the abilities they need in order to be “good workers.” This will coincide with other calls, for other political reasons, to vocationalize education and concentrate on training. Since vocational education and highly functional training are, in the end, perhaps really not even very functional, South Africa will be poorly served by such a system. We realize this whole problem of “exit vs. support” is key to the whole funding and governance issue, and that South Africans are frustrated by the dilemma. We have added additional information on these issues in Appendix D.

It seems that the issue of “voluntary” vs. “compulsory” fees has been overemphasized. A simple and common-sensical arrangement would say that if parent A can afford the fees in school X, then s/he cannot send his or her child to that particular school unless s/he pays the fees. Willingness to pay should not be the criterion around which “compulsoriness” should be built. Inability to pay should be: if a parent wishes to send his/her child to a certain school but cannot afford it, then the child cannot be turned away. The costs represented by such a child can be paid by the state. This might appear to pose a major problem for “good” schools, in that they could be flooded with children who legitimately cannot pay. To prevent this, each school could be asked to reserve a certain percentage (or absolute number, given that some schools may be operating below optimal capacity) of spaces for such cases, on a lottery or first-come, first-served basis. Exclusion would then be due not to inability to pay but to the school’s being too crowded. Note that the level of the subsidy the state offers can be manipulated to make it attractive for such schools to attend to these poorer children, or the school’s governance committee could simply

be forced (by law) to reserve X percent of the spaces for children who cannot pay the fees, even if this means that the rest of the parents have to subsidize this X percent of the children. Note that because of transportation and sociological considerations some schools may not even have demand for the X percent that is reserved. It may be said that a “reseerved space” and “sliding fee” scheme is too difficult to evaluate and run. However, even very poor countries, such as Mali, have devised simple and reasonably effective means for evaluating parental ability to pay, based not on income but on good proxies of income such as possession of assets or consumption habits that the community knows and can easily verify. Similarly, private but non-elite schools in South Africa, and in most of the Third World, currently employ sliding-scale fee schemes of reasonable subtlety and sensitivity. Thus, the ability is there. What may be lacking is the willingness. In any case, this whole issue should ideally be relevant only in the better-off areas. If school support is strongly and progressively targeted to favor the poor, then the issue of fees at that level should not arise. Schools in certain areas can be given enough support so that they need not charge fees, and in these areas fees could be prohibited, as in the sliding fee proposal for option 3. In all likelihood, if state support is high enough in poor areas, by virtue of the progressivity of funding, and if enough capacity-building has been done, it is likely that governing bodies in such areas would simply set fees at zero. Or, as we have said, they could simply be prohibited. Perhaps a useful semantic innovation for the types of fees we suggest could be “compulsory but non-exclusionary.”

We would also suggest that the smaller (within reason) the political unit within which “equalization” takes place using formulae such as that proposed for option 2, the more a sense of “shared fate” is likely. If the equalization takes place over the whole nation, then the sense of shared fate is lost, because the whole nation is very much an abstraction. If the provinces are allocated funds on a reasonably progressive basis, and then some further equalization takes place within provinces, it is likely that the sense of shared fate, or the prevention of “opinion-maker flight” might be a greater possibility than if equalization is conceived of as a grand national scheme that essentially stays at that level. In some sense, the ultimate, but perhaps impractical (and perhaps also somewhat paternalistic) ideal, would be if every “rich” school could somehow be induced to “bring along” four poorer ones, and the latter had the “purchasing power” (via the formula) to “buy” such services from the richer ones.

II.b.3. A numerical scoring of the options

In table 3 below, we numerically evaluate these options against each other and against the status quo. In each case, the number presented is a metric-less score whose “base” value is simply 1 for the current situation. In some cases there is an underlying index we are thinking of, such as a Gini coefficient, or an average score on a cognitive achievement test, but for simplicity’s sake we propose everything be scored on the simple basis of a departure from an index of 1. In some cases, such as in the “implementability” criteria, there is not a rigorous conceptual metric underlying the number.

We present an option 4, which is essentially a modification of option 2 that allows schools in wealthy areas to charge compulsory fees as long as they do not exclude the poor, but do exclude those who do not wish to pay. We would suggest that one could allow governing boards to use the money, thus collected, for anything they wished, perhaps with some practical limits. The overall public funding of the schools would be implemented via a generic, strongly progressive, or targeted formula as proposed in option 2. Another possibility is that the schools in the wealthy areas are forced to preserve a certain percentage of places for children who cannot pay, and the school’s fund covers the difference between what the

government pays for these children and the fees the school has set.

It may be stated that our method is very subjective. This is true in certain areas, but not in others. Some criteria can in principle be evaluated rather rigorously, particularly those related to equity. But even in the cases where the criteria must be evaluated using “soft” methods and subjective data, at least the method offers one the possibility of being a bit more transparent and obvious about such subjectivities. In that sense, it helps one in going a bit beyond the narrative evaluation contained in the Hunter Report.

It is important to note that the entries we have made below represent our best judgement of the proposals. But the proposals themselves are quite vague. For example, it is literally impossible to judge the impact of option 2 on equity if we do not know exactly what would be used in the formula, how strongly targeted towards the poor it would be. We will assume, for evaluation purposes, that it will be quite progressive: it gives to the poor 50% more than to the top of the distribution, but with a gradual slope. This is about the same, in the final effect, as the progressivity contained in the Basic Grant of the Financial and Fiscal Commission. The basic design of Option 2 certainly lends itself to a strong redress component, and the wording in the Hunter Report suggests that it would be thus used. Furthermore, even if we knew the actual weights and components of the formulae, it would be impossible in the space of one week to make the necessary estimates. We must say that before all these options become really “evaluable” one has to a) get much more specific (e.g., as the Financial and Fiscal Commission has done in its work) about what the formulae would contain, and b) simulate the distributional incidence of the options compared to the status quo and to each other. It is not a conceptually difficult exercise, and the data certainly exist in South Africa to allow a good estimate of these issues (e.g., using SALDRU and CSS datasets on household consumption). But the necessary steps would have to be taken, the data gathered, and the simulation exercises constructed. It is far more work than we could do in one or two weeks. What we were able to do, however, is to make some extensive suggestions and give some example exercises about how such issues would be evaluated, for a few of the criteria. This is contained in appendix C.

We also add a new column, which asks us to weigh the importance of each option to the construction of an “aggregate” of all the options, to end up with a composite sense of the “optimality” of each option. Obviously, we hardly have the legitimacy to set these values. These should strictly represent South Africans’ sense of how much they value these various criteria.

The scoring is then carried simply by multiplying the “weights” column times each column. Note that the “politics” weights are meant to sum 2.

We emphasize that some of these factors can be more or less rigorously evaluated. Others not. For those that can be rigorously evaluated, we have made an attempt to do so, as in Appendix C. More rigorous and systematic evaluations are proposed in Appendix B. There are many other issues that should be evaluated before a final presentation to a public, such as the proportion of spaces in each school that should be preserved for the poor, what that cutoff point should be, the actual degree of progressivity and weights in the funding formula, etc.

By “equity” below we will not mean equity in the distribution of public resources, but equity in the distribution of public plus private opportunity for cognitive achievement after second round effects of the policy. Note that since we are judging equity, efficiency, and quality after whatever “shakeouts” might take place, the criterion of “opinion-maker” flight is valued at zero. It seems to us that we are otherwise

double-counting. If readers disagree with us, they are welcome to activate this criterion. We nevertheless thought useful to keep it in the table, both in case the readers disagree, and simply to display the scoring of the options on that criterion.

Optimality criteria		Options				
		Option 0 - the status quo	Option 1 - "minimalist-gradualist approach"	Option 2 - "school-based formula approach"	Option 3 - "partnership funding approach"	Option 4 - A progressive version of Option 2, plus parental contribution
Criteria	Importance of each criterion					
Equity	2.0	1.0	1.05	1.05	1.10	1.15
Efficiency	1.0	1.0	1.1	1.1	1.15	1.15
Quality	1.0	1.0	1.1	1.05	1.15	1.25
Fiscal sustainability	1.0	1.0	1.0	0.9	1.0	1.1
Prevention of "opinion and decision-maker flight" from public system	0	1.0	1.0	0.8	0.9	1.1
Implementability—practical	2.0	1.0	1.0	0.9	0.85	0.9
Implementability—political	2.0					
- with no "marketing"	1.2	0.5	1.0	1.3	1.15	1.1
- with good "marketing"	0.8	0.5	1.1	1.3	1.25	1.2
Total "score" for each option		8	9.38	9.55	9.58	9.88

We assume in all cases that the options would be phased in over a few years, or that the human resource deployment problem would in one way or another be otherwise solved. It is clear that this is a real problem for any system that attempts redress. Steering adequate numbers of teachers towards previously under-served areas, and paying them well-enough so they stay and devote themselves to the community, will require a careful consideration of hiring and paying schemes, and will require a teaching force that is more mobile than historically appears to have been the case in South Africa. Centralized appointments and prohibitions on communities "topping off" teacher salaries will work directly against the efficient functioning of any attempt at redress. The point of redress formulae is precisely to enable the poor to attract good teachers and, in general, to attract resources. If the system that deploys those resources is not flexible, but insists on an excessively bureaucratic assignment of teachers and other resources, and a programmatic segmentation of redress efforts, our forecast is that efficient redress will be very difficult.

We understand the concerns of teachers and teachers' unions about giving governing bodies too much power over the nomination of teachers. In many areas of the Third World (and much of rural South Africa would seem to be squarely in the Third World), local power is often arbitrary and unaccountable. We realize that the Hunter Report calls for a great deal of capacity building so as to make local power

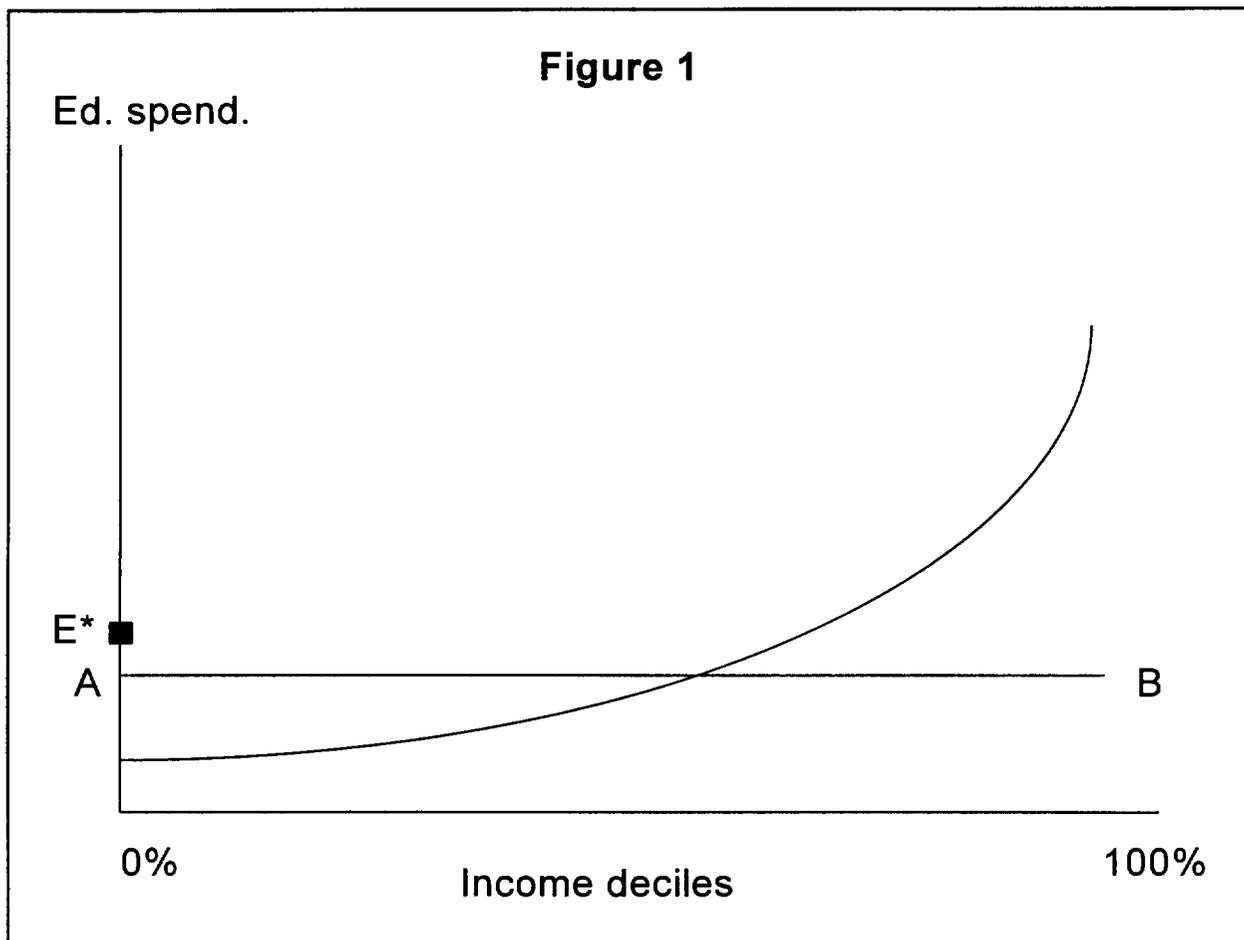
more democratic and more accountable, but this will be a very long process. Thus, one has to find interim solutions that creatively deal with the teachers' concerns, but also give communities and school governing bodies some say over teacher appointments, and some ability to "top-off" salaries beyond a basic national or provincial scale. The method proposed in the Hunter Report is, in our opinion, perhaps a bit cumbersome and does not really get at the problem.

An alternative option could be something like the following. Teachers are appointed into the teaching body at the provincial level and by provincial authorities, but to teach in specific school X they must be appointed to that school out of the provincial body, by the school governing board. If the teacher is not satisfactory to the community or the governing board, s/he is not laid off, but is sent back to the provincial teaching pool. The grievance procedures would be handled at the level of the provincial body. Collective bargaining takes place at the provincial level, which should make the arrangement more satisfactory to union leadership. Teachers that are not satisfactory to one particular community could still enjoy certain tenure and salary protection, but dismissal from several communities back into the general teaching pool might be seen as evidence of unsuitability, and could result in eventual dismissal. The teacher could have a maximum number of "tries" at working in communities, or one could simply impose a limit to the amount of allowable time that the teacher could be in the pool each time they are "between jobs" but without actually teaching (a few months, say).

Obviously, the system would have to be designed with incentives so as to prevent the provincial teaching body from becoming a dole, or a way to sop up unemployed teachers—it would clearly be a very strong temptation, since these teachers could be important in electoral political support for politicians, so politicians would have an incentive to manipulate any scheme such as that proposed. It seems to us that a system like that proposed here creates a win-win situation for governing boards and teachers, and for that reason is at least worth thinking about. Governing boards get to express, and act upon, their desire for particular teachers, but teachers are protected against arbitrary local power and corruption. Information and assignment costs are minimized, and the fine-tuning of community need to teacher characteristics can take place. Governing boards can reward those they consider to be good teachers, or can attract teachers to difficult locations, by "topping off" their salaries. If the funding formula is sufficiently "redressive," and the redress component can be used for salaries, or simply to hire staff, within limits, then communities will indeed have the funding with which to carry out this "topping off." We have no doubt that this is technically feasible, but it will require a great deal of leadership and political will, and obviously cannot be implemented immediately. Note that this arrangement could work with either provincial or national teaching bodies. The important point is that there is a national or provincial appointment to the teaching body, but appointment to specific schools is determined by the school governance committee.

Appendix A. A diagrammatic treatment of the possible political-economic dynamics of public education in South Africa

Some of the points we raise in the text go into areas that may be unfamiliar territory to our South African colleagues. Here we lay out some of our points in graphical format. Note that in some cases we have exaggerated the shapes of the curves so as to make the point graphically visible. There is no claim as to numerical accuracy of the shapes and heights of the curves we have used.



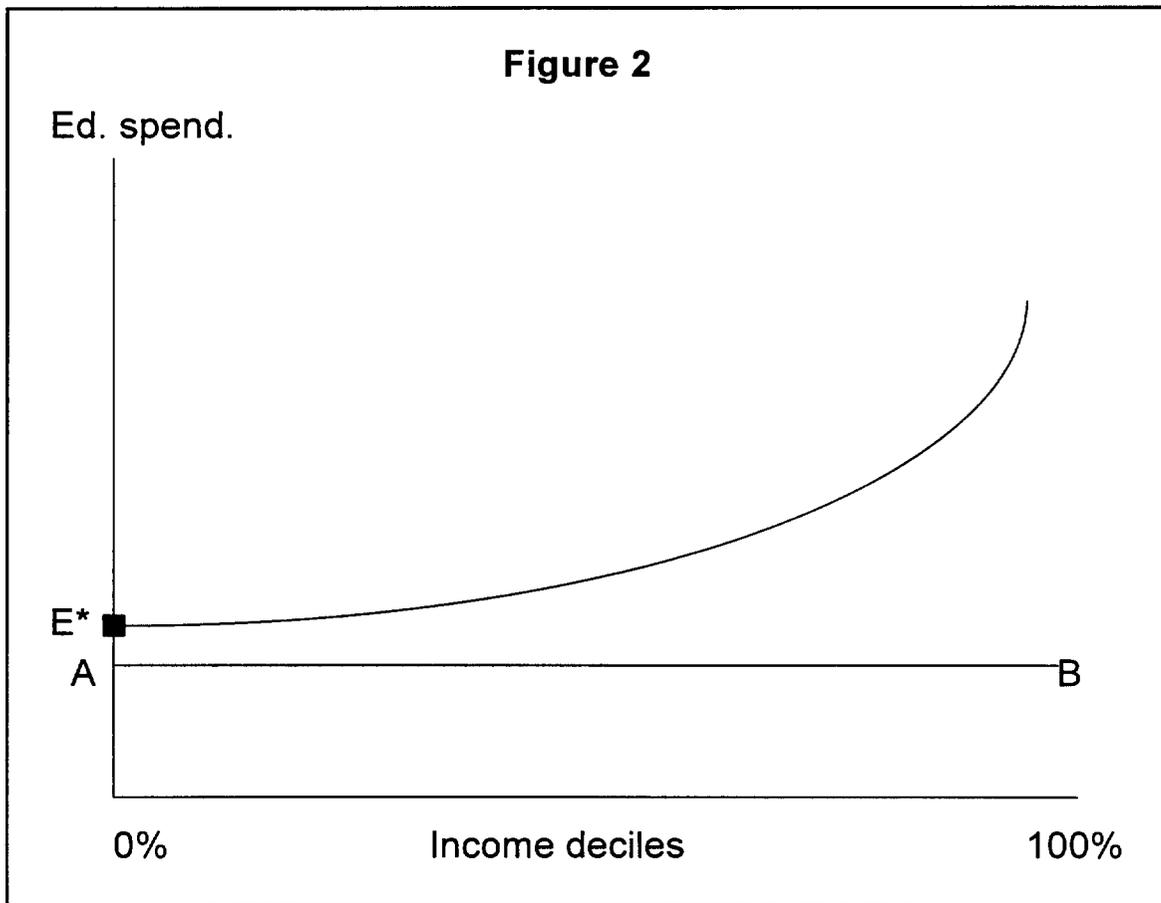
All figures have income deciles as the X axis, and per capita education spending on the Y axis.

In figure 1 we show a curve that traces out private willingness to pay for education. The curve intercepts the Y axis at a low point, and then increases at an increasing rate. Note well that if the X axis was income, this increase would not happen, or would not be nearly as steep. Essentially this curve is shaped as it is largely as a function of the inequality of income distribution. We are tracing out, to a large

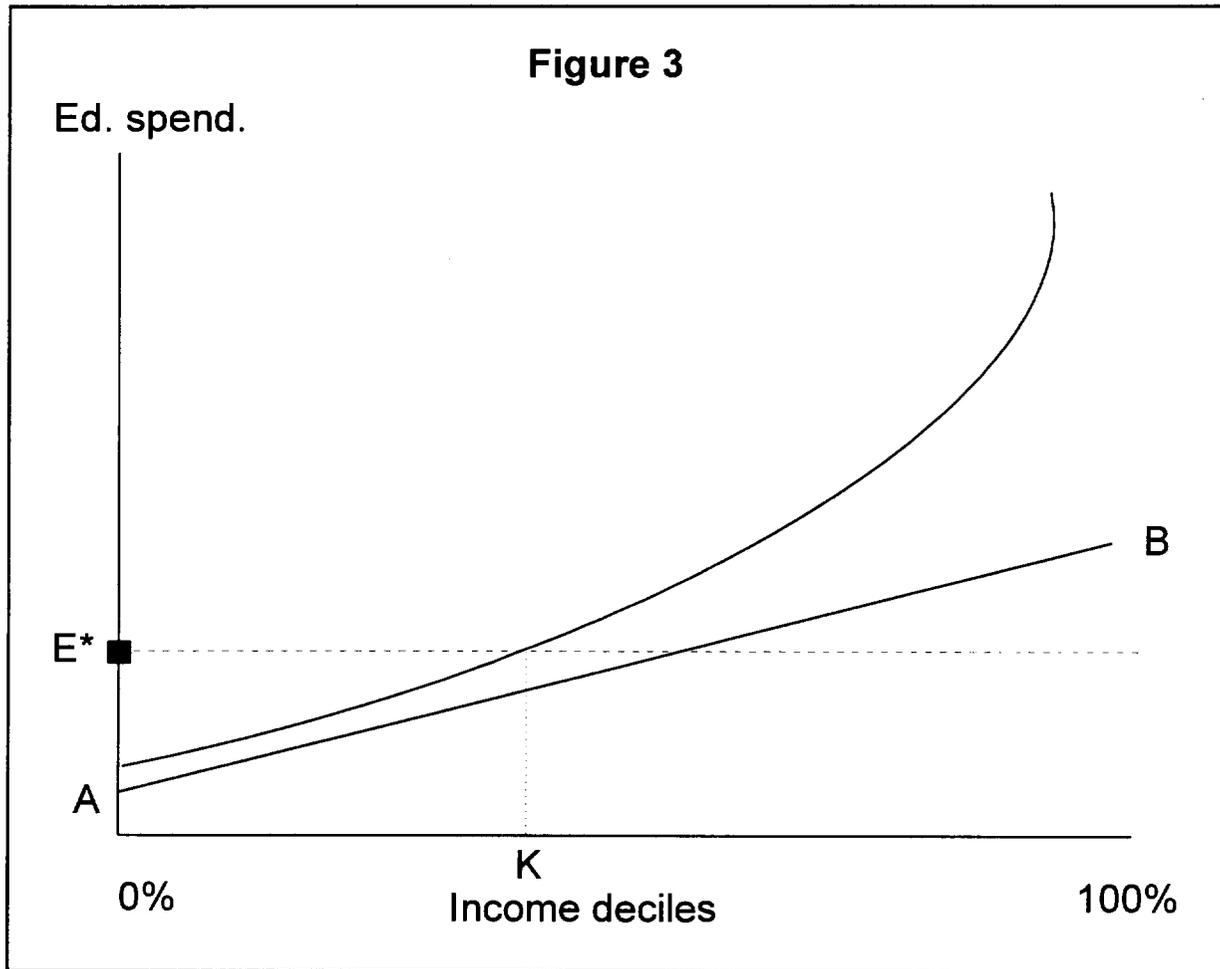
extent, the Lorenz curve for private education spending in the absence of subsidies.

Now, suppose the state determines that at a minimum, a level of spending of E^* is necessary. Since there is some willingness to spend, the state then provides, in many situations, a level of spending represented by the line AB, on an equal per capita basis to all groups. The initial, or first-round result is what we see in figure 2.

Private plus public spending for all classes covers the minimum needed. The private spending component may “flatten out” as a result of the floor on spending laid by the government. Intuitive reasoning will suggest why this might be so. Suppose expenditure on entertainment is very income-sensitive. But suppose the government subsidizes entertainment for all at a “reasonable” level. This is likely to reduce the sensitivity of total spending to income. In any case, it is not a particularly important issue, unless the level of public spending is so high that it totally flattens out private willingness to spend.



Note that private spending may or may not include spending on fees. There is always private spending, even if it is on uniforms, transport, and, certainly, in some cases, opportunity cost. Private spending in South Africa is considerable.

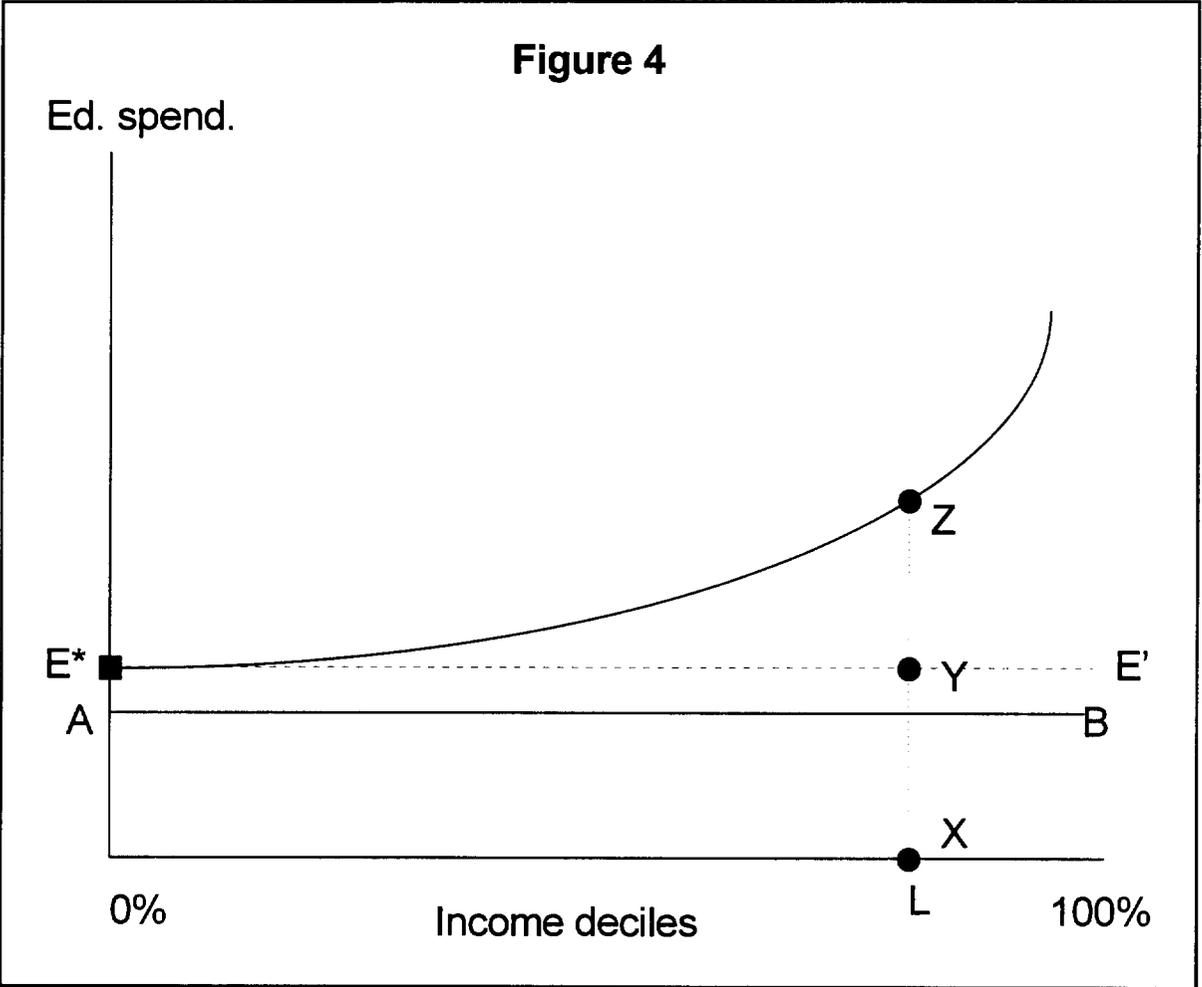


The situation in South Africa currently and over the past few decades, however, is nothing like that depicted in Figure 2. Figure 3 depicts the situation.

Since public support was not on an equal per capita basis, but in fact reinforced the inequality in the private willingness to spend, the curve of public support, AB, slopes upwards in such a way that point B is about 4 to 6 times higher than point A. This means that when adding public and private expenditure together, everyone to the left of income decile K is left without proper funding for a “decent” education. That is about 40% of the population as the graph is drawn, which may not differ from South African reality by much.

The situation depicted below in figure 4 is what is often described as something like a solution to the problems of South Africa: equal per capita provision along line AB.

However, many of the proposals would limit parental or community contribution. Suppose we limit parental contribution, either by simply legally limiting it, or by allowing only “voluntary” contributions, to (just to pick a reasonable point) what rather poor people would spend privately, namely the difference between A and E*.



Since private willingness to pay is so high for, say, the upper 10th or so of the income distribution, the consequences of not allowing for private contributions on a reasonably rigorous basis, is essentially lost revenue, in a sense. But there is an even more important danger. If private willingness to pay is sufficiently high, as described by the curved line, what will happen is that the population to the right of decile L will abandon the public school system. Why? Because their willingness to pay for what they consider “good” education is more than twice the level of state support. That is, there is a point where the distance ZY becomes greater than the distance YX. Everyone to the right of that point will tend to abandon public education.

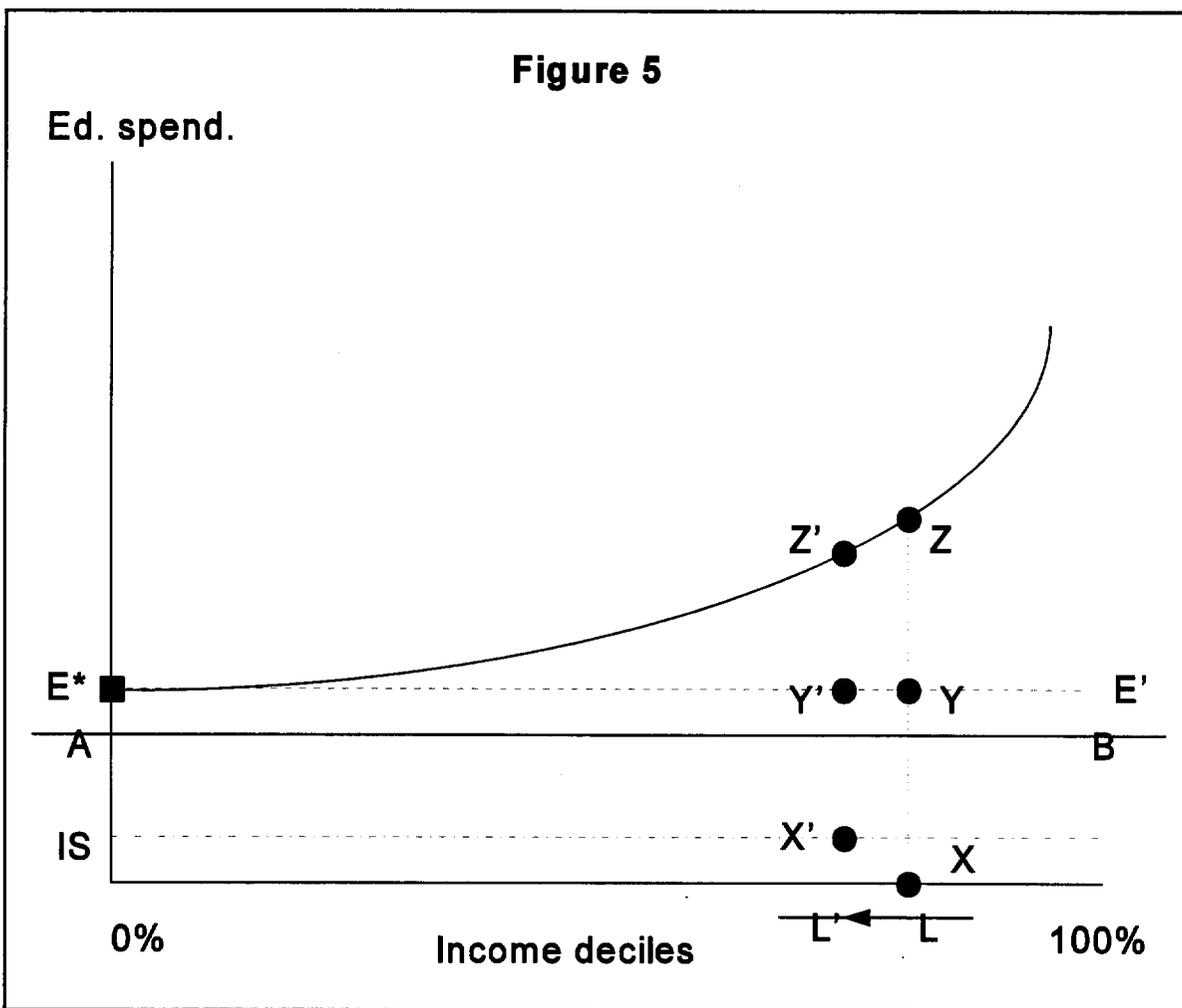
Notice that the situation is made much worse if, as some have argued for, independent or private schools can receive some subsidy that is simply targeted to independent schools rather than targeted on an

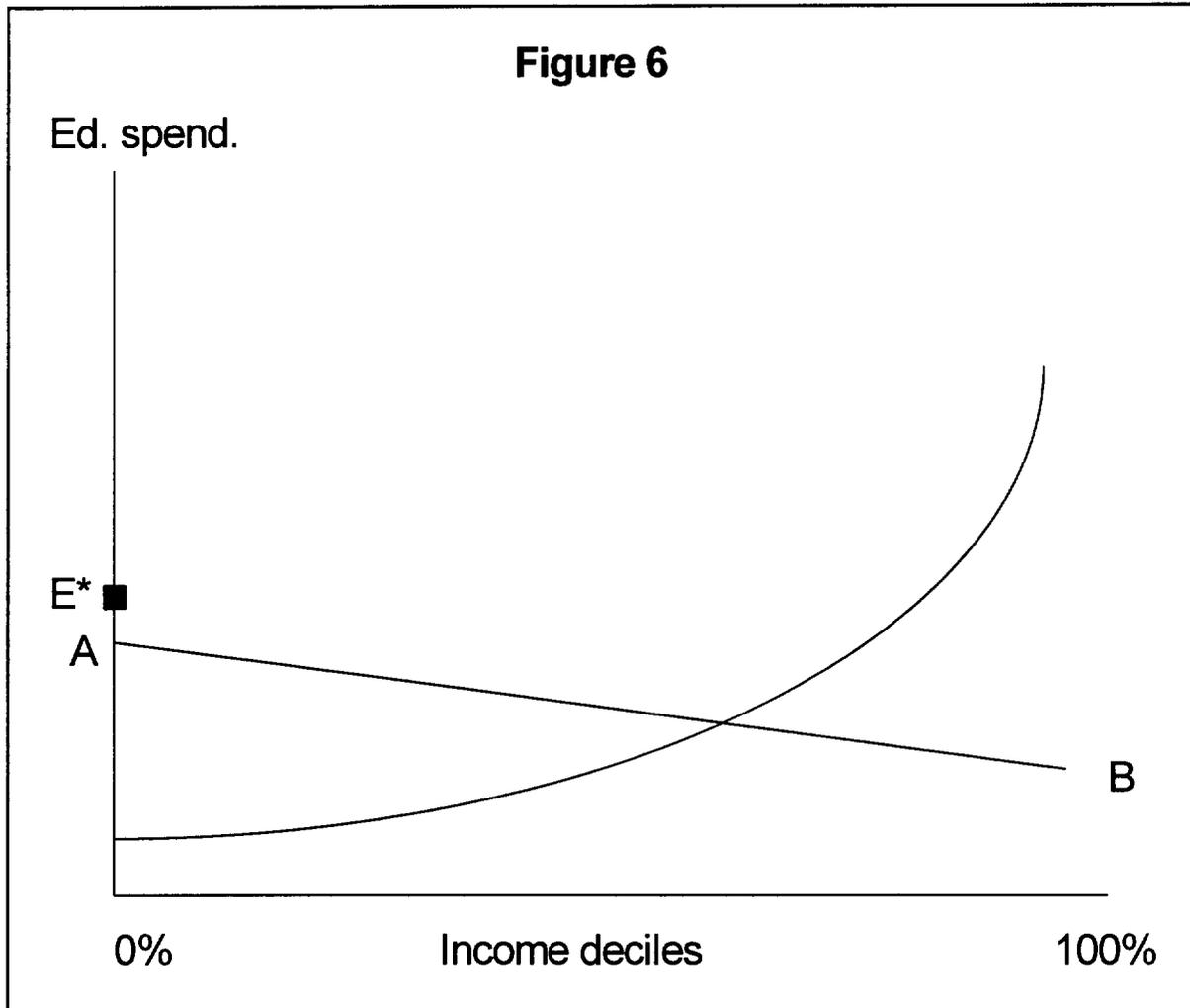
income basis. Suppose independent or private schools receive an equal per capita allocation of IS. Then the “break-even” income decile is now L' rather than L, and another 5% to 10% of the population would abandon public schooling. That is because now Z'Y' needs to be higher than Y'X', whose value has decreased by the value of IS, so it is easier for Z'Y' to be bigger than Y'Z' than for ZY to be bigger than YX.

The situation can be improved by not calling for independent school subsidies that are simply “less than those received by public schools” but by calling for independent school subsidies that are, ideally, also targeted by income.

Now, a strongly “redressive” program would try to compensate for the past by not simply making the state support line AB flat, but sloped negatively, as is shown in this example in figure 6. In fact, all the options in the Hunter Report, except for option 1, call for something like this, although the exact slope of progressivity is not really discussed in option 2, and must be inferred, rather than read, in option 3.

So, the idea is that public support is targeted strongly to the poor, either via RDP-like redress programs, or by using weights as in the Basic Grant portion of the Fiscal and Financial Commission’s proposals.

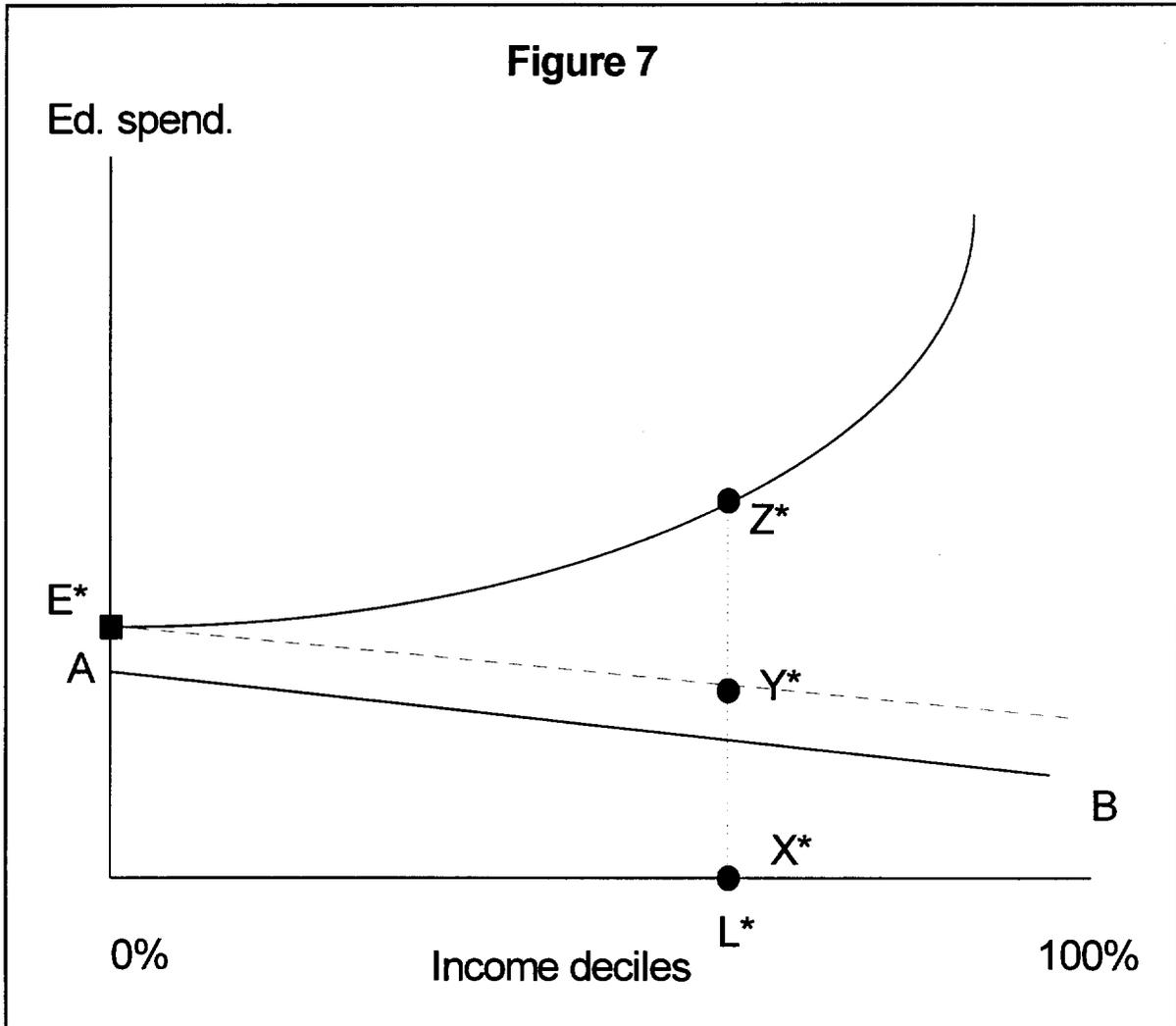




The fact that the line AB is sloping negatively means that the portion Z^*Y^* is equal to Y^*X^* at a point to the left of L, or perhaps to the left of L' as shown in figure 7.

Now let's add a further complication shown below in figure 8. Suppose that in fact the gradual withdrawal of up to 20% of the top end of the income distribution from the public system means that the share of education out of GDP begins to slowly creep downward, as seems to be the case wherever the powerful do not have a stake in the system. This means that the line AB must fall throughout its length from the level found in figure 7: the intercept A simply falls. Conceivably in that case in order to preserve equity, the slope is made even steeper, with the result that one gets even more flight, since, as we saw, imposing more progressivity without allowing the well-off to exercise their willingness to pay encourages flight, all other things being equal. This means that at this point private plus state support is not enough for a "decent" level of education at E^* . E^* is actually higher than A plus the private

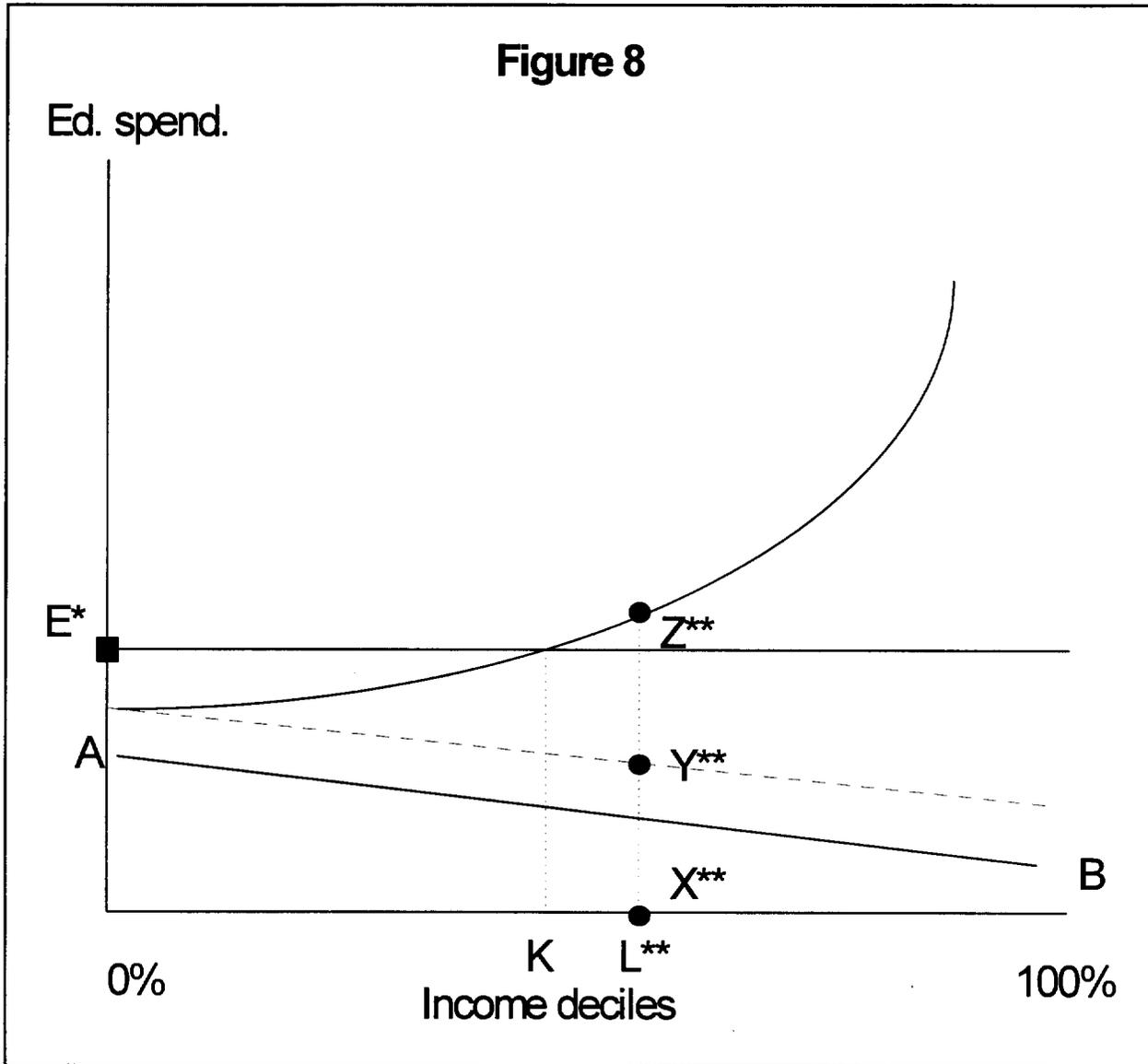
willingness to pay of the poor. If that is the case, and we extend a line to the right of E^* , and look for the intersection between this line and the curve, we notice that everyone to the left of K would be poorly served even if they could exercise their private willingness to pay. Everyone to the right of L^{**} has fled the system. About 10% to 30%, those between K and L^{**} , would be more or less well-served within the public system if they could exercise their willingness to pay.



This is in fact, in encapsulated form the dismal state of education in much of the Third World, particularly Latin America, which is likely South Africa's most relevant model: the poorest 40-50% of the population is badly served by the system, and does not have enough private resources to improve their lot to a "decent" standard. Another 20%-40% or so continues to be served by the public system, but supplement what they see as poor quality by hiring private tutors, sending their children to either fly-by-night or decent evening schools, etc. The top 20%-30% or so of the income scale has abandoned the system.

It seems to us that the only way to avoid this scenario and to generate sufficient funding from redress are:

a) make public spending as progressive as reasonable and/or possible, but b) rely on private contributions so that the top 20% or so of the income distribution has an incentive to stay with the system. This scenario, we would venture to guess, can otherwise be avoided only if the taxation funding is amply forthcoming so that one can target funding (engage in redress) and at the same time keep the upper end of the income distribution engaged. Our feeling is that the latter (full reliance on taxation or re-orientation of the budget within a fixed tax resource limit) might be a bit over-optimistic, considering the amounts needed and the apparent mood of economic authorities.



Of course, it may be that with enormous increases in efficiency, E^* could be brought down enough to solve most of these problems. This seems unlikely too, given what we know about the relationship between funding and achievement even in departments that were reputedly well-administered. But it should be considered a possibility.

Appendix B. An algebraic treatment of the political economy issues

Various of our statements above, both in general and in developing a simple numerical basis for evaluating the various financing options in the Hunter Report, can be summarized in the form of a simple model. This model would hopefully allow one to more rigorously quantify some of the issues raised in that report, as well as assess some of the various tradeoffs implicit in the funding formulae.

In what follows, we first set out the model in symbolic form, and then we give some values to the parameters, and present some simulation results.³

The first equation below says that private willingness to pay increases non-linearly as a function of income percentile. Note well: income percentile, not income. We realize this is unconventional, but in evaluating equity considerations it helps quite a lot to reason from the outset in terms of percentiles or quintiles.

$$pw = a + bD^\beta \quad (1)$$

where pw is private willingness to pay, in Rands per child, and D is the income percentile (1, 2, ..., 100). Note that this is a simple non-linear function of the type well-known to economists, but with a non-zero intercept.

We suppose that support to education as a share of GDP, "edsh," depends in a simple fashion on the ability to keep some of the upper end of the income distribution engaged in the system. Thus:

$$edsh = c - \gamma PE \quad (2)$$

where PE is private enrollment by percentile (that is, $100-D^*$, where D^* is the equilibrium percentile that stays in the public sector). We assume that support to education as a share of GDP will decline one percentage point for every ten percentage points that the proportion of the population in private schools goes up, so we would set γ at 0.10. This is obviously a simple rule of thumb, and its strength could be altered by simply using values smaller than 0.10. One-tenth seems to be empirically justifiable, as a "thumb-suck," by comparing OECD, East Asian, and Latin American countries to each other and to South Africa, in terms of percentage of enrollment that is private, and percentage of GDP that is devoted to education. We will carry out more research on this as we quantify the model.

We can also suppose that b (or β , but this would make the whole thing very highly non-linear) in equation 1 above is sensitive to the level of per capita funding f , which in turn depends on income. Thus:

$$b = d - \epsilon f \quad (3)$$

³In fact we did not have time to quantify the model. That will remain a challenge for later.

and

$$f = e^* - gD \quad (4)$$

This tells us that public funding per person will go down with income percentile from a high of e^* which is deemed necessary for redress (in a short-run point of view) or tax-base equalization (in a long-run point of view). If g is zero, then we have “equal per capita” provision. If g is non-zero, then we have a “progressive” or “redressive” system, whose progressivity depends on the size of g .

The availability of public funding per child will then be:

$$avail = \frac{edsh \text{ GDP} - i^* PE}{D} \quad (5)$$

This tells us that the amount of funding available per child in the public system will be dependent on:

- the share of GDP one can garner for education ($edsh$),
- the size of GDP,
- minus the share going to the independent system (which is determined by the per capita allocation therein, i^* , times the amount of enrollment therein, PE),
- divided by the enrollment in the public system, D , which is total enrollment E minus private enrollment PE .

GDP and E are taken to be exogenous variables. E can be set at an index of 100 for convenience.

The percentage of individuals going over to the private system will be given by the equilibrium condition:

$$pw = 2f - i^* \quad (6)$$

if schools are not allowed to charge compulsory fees. The condition is not operative and $PE=0$ if they are allowed to charge fees. (Note that this is a simplification, of course. PE will be non-zero but small even in the latter case.) This will determine the level of “flight” from the public system for percentile D .

Finally note that an elementary fiscal constraint says that the amount of availability out of GDP has to equal the total need determined by the funding formula, which constrains either the degree of progressivity g or the per capita allocation to the poorest groups, e^* , depending on all the other parameters and choices made:

$$\text{avail } D = \int_0^{D^*} f \, dD \quad (7)$$

where D^* is the equilibrium level. Since f is a linear function of D , integrating the above, and using the integral in a set of simultaneous equations, is a simple trick. Even if it were non-linear, it would not be a serious problem, since most numerical algorithms, even on spreadsheets, could deal with this.

We thus have 7 equations to determine 7 unknowns: D , $edsh$, pw , b , f , $avail$, and g (PE , an eighth variable, is determined by the trivial eighth equation $PE=100-D$.) Note the exogenous variables and parameters: $E=100$, GDP , a , β , γ , d , and ϵ . And, finally, the policy variables are: e^* , i^* , and the choice as to whether to permit school boards to charge private fees on a more or less obligatory basis (rather, that is, on an obligatory basis for those with the ability to pay). Note that if we decide we'd like b to be an exogenous variable or parameter, we lose both one equation and one unknown. This may well be worth it, since it is doubtful that equation 3 enriches the model in any significant way.

This is a highly non-linear system. For this reason, it is clear that it cannot be solved analytically (at least I don't think so, but it could be that I am not good enough a mathematician), but it can be solved numerically. Its non-linearity means that it has to be solved iteratively. Since it is so small, we believe it can be solved in any of the many spreadsheet adaptations of the Newton-Raphson method. First, naturally, one would have to put real values on the model's parameters. We will attempt to do both of these tasks if we have time, but if not it remains a task for some other day. We at least wanted to give some evidence of serious thought around the inter-relations between progressivity, fees, etc.

For example, an interesting insight that arises simply out of counting unknowns and equations is that either g or e^* can be policy variables, but not both. In a very simple system that is obvious: if you have a fixed budget and you set the level of support to the poor at some arbitrary level that is deemed necessary for redress, and if you apply this minimum to everyone you go beyond your fixed budget. Then, your subsidy has to be progressive. Here we note that this is the case even in a more complex system. Thus, if e^* (the per capita allocation to the poorest), is determined by policy choice, then the degree of progressivity allowable after that is a result of all the other parameters and relationships in the system, and is not a matter for policy choice. Or, if g (the degree of progressivity or targeting in the funding formula) is determined as a matter of policy choice, then e^* would disappear as a choice variable and gets determined by real constraints in the system. In retrospect this seems obvious, but it is also obvious that this kind of thing often gets forgotten in policy discussions.

Appendix C. Examples of how to assess distributional incidence of education programs using a single-valued equity criterion

This discussion can be at best a simple illustration. We will show how this is done, and show how it can be done specifically to get a systematic idea of the impact of the various options in the Hunter Report.

One simple way to assess distributional incidence of programs is to construct a Lorenz curve of the program's funding, and then take the area under the curve.

A Lorenz curve is a curve that traces out the percentage of income (or wealth, or shares of a social program) each income group has. On the X axis we lay out the income groups, from poorest on the origin to richest at the right. On the Y axis we lay out the cumulative shares of income. In a "perfect equality" situation, the poorest 10% has 10% of the income, the poorest 20% has 20% of the income, etc. (Note that in that case the notion of "poorest" 10% is in some sense meaningless, since everyone has the same, but it is a useful expository device.) Thus, the Lorenz curve is a straight line between 0 and 1.0. The area under the curve will therefore be 0.5. In a totally unequal society, 99% of the population will have no income, and the top 1% of the population will have all the income. The line becomes essentially a right angle (with its corner on the right, away from the origin), and the area under the line is 0. Thus, the area under the line is a "single-valued" indicator of equity.

An illustration with some data on the distribution of subsidies to primary school in South Africa may help make the point clearer.

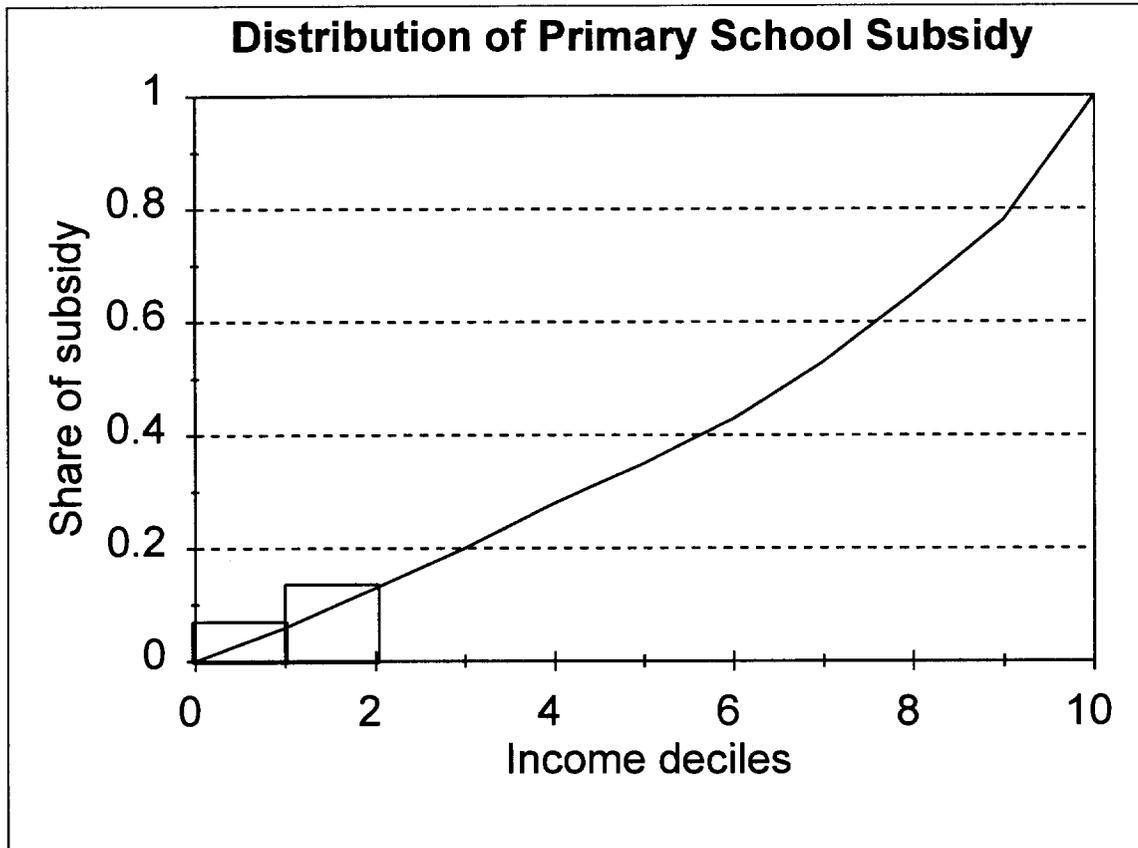
The following table shows what percentage of the subsidy each income group has, starting with the poorest at the top. The data are approximate only, and are based on a household survey.

Current situat. of primary subsid.			
Income decile	Share	Cumulat. share	Area under curve
1	0.06	0.060	0.030
2	0.07	0.130	0.095
3	0.07	0.200	0.165
4	0.08	0.280	0.240
5	0.07	0.350	0.315
6	0.08	0.430	0.390
7	0.1	0.530	0.480
8	0.12	0.650	0.590
9	0.13	0.780	0.715
10	0.22	1.000	0.890

The situation can be graphically depicted as in the following diagram. The income deciles are the horizontal axis. The vertical axis shows the cumulative shares, column 3 of the table. Now, in order to calculate the area under the curve, note that each decile's cumulative share is a little rectangle. The line

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cuts through the top of each rectangle, cutting approximately in half another little rectangle that is the difference between each decile's cumulative share and the preceding decile's cumulative share. This is because in reality we should be dealing with percentiles, or even finer subdivision, rather than deciles. Thus, we must take not the whole rectangle, but the rectangle minus the little triangle. This is done in the last column of the table. The area then is the sum of the values in the last column of the table, multiplied by 0.1 (because it is the cumulative share of the deciles we want.)



In this particular case, the area under the curve is about 0.39. That is South Africa's primary education subsidy is 20% less equitable than "perfect equality." (The latter being 0.5.) In most developing countries the subsidies are progressive, namely the area under the curve is about 0.6 or so, not because the subsidies are designed to be progressive, but because the poor quality of public education makes the top 20% or 30% of the income distribution flee the public education system. This leaves the bottom 70% with few resources, because the top 20% to 30% then do not support budgetary allocations to education. In the end, the distribution of public plus private spending, and, to some degree, the consequent distribution of cognitive achievement is highly unequal, because private spending by the top 20% is very high.

In order to determine how equal or unequal a certain subsidy is, one can take the kind of approach we have shown here.

For example, it is useful in order to calculate how equity-inducing is a “top-slice” of 20% of the budget, that gets distributed preferentially to the poorest 40%, the other 80% being equally distributed to all. This can be simulated as follows.

If we top-slice 20% and give it to the bottom 40% of the income distribution, we are giving each decile .2/4 or .05 of the total, and we are still giving everyone .8/10=0.08, so the bottom 40% get .13 each, and the top 60% get .08 each. Thus, we construct a table like the one above, but with the following data:

Example of top-slice calculations			
Income decile	Share	Cumulat. share	Area under curve
1	0.13	0.130	0.065
2	0.13	0.260	0.195
3	0.13	0.390	0.325
4	0.13	0.520	0.455
5	0.08	0.600	0.560
6	0.08	0.680	0.640
7	0.08	0.760	0.720
8	0.08	0.840	0.800
9	0.08	0.920	0.880
10	0.08	1.000	0.960

Summing the fourth column and multiplying by 0.1 yields 0.56: a 20% top-slice distributed to the bottom 40% of the income distribution yields a 6/50 or about 12% improvement over “equal per capita.”

The following table shows various combinations of top-slices distributed to various groups.

Summary Measure Impact of Top-Slices and Targeting				
Target groups (deciles)	Top-slice			
	0.05	0.1	0.2	0.3
1	0.523	0.545	0.590	0.640
2	0.52	0.540	0.580	0.620
3	0.518	0.534	0.571	0.605
4	0.517	0.530	0.560	0.590

Now, how can these methodologies be used to give a synthetic view of the options in the Hunter Committee Report. Here we give a detailed illustration of how to apply these techniques to Option 3. We emphasize that it is an illustration only. The reader is invited to check these data and methods.

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Assume operating costs are only 10% of total costs. Assume personnel costs are distributed on an equal per capita basis. Assume optimistically 1 billion Rands are available for redress on an equal basis each year for the bottom 40% of the income distribution, for PRIMARY education. This is essentially RDP money, or "redress" and "capital" money identified in Option 3. We will call it "RDP" for short. Note that 1 billion Rands currently represents about 8% of primary education. This means that the bottom 40% of the income distribution each gets 2% of this money. Assume bottom 40% of the income distribution does not pay operating costs. Only the top 60% of the income distribution pays operating costs but on a sliding scale, such that:

- middle 20% pays 33.3% of operating costs
- second from top 20% pays 66.6% of operating costs
- top 20% of the income distribution pays 100% of its operating costs.

The bottom end of the distribution gets what is thus saved, evenly spread.

On that basis, we construct the following table:

Shares of subsidy under option 3					
Deciles	Op. exp.	"RDP"	Salary	Total	Area curve
1	0.020	0.02	0.082	0.122	0.061
2	0.020	0.02	0.082	0.122	0.183
3	0.020	0.02	0.082	0.122	0.305
4	0.020	0.02	0.082	0.122	0.427
5	0.007	0	0.082	0.089	0.532
6	0.007	0	0.082	0.089	0.621
7	0.003	0	0.082	0.085	0.708
8	0.003	0	0.082	0.085	0.793
9	0.000	0	0.082	0.082	0.877
10	0.000	0	0.082	0.082	0.959

The sum of the last column turns out to be 0.55. However, this degree of progressivity is not of a "permanent" or "fiscal equalization" type. It would become lower after "RDP" types of expenditures were finished, but it would be reduced down to only about 0.53. This points out how relatively unimportant RDP-like capital expenditures are in education. Educational problems will be a matter of gradual and permanent "redress" more of a fiscal-base equalization type, than a matter of spending large amounts of money quickly on buildings, even if some of this is politically necessary.

In the following tables we show various calculations of the impact of the Hunter Committee options, as well as a few others, on equity, and some comments on quality.

Illustration of systematic use of Lorenz curve calculations for equity-impact assessment with some quality considerations added

Income decile	Current situat. of primary subsid.		Progressive scheme, e.g. Opt. 2		Option 3 with RDP		Option 3 after RDP		FFC Basic Grant		Option 2 after private flight		Modified Option 2		Modifications to Option 2		
	Share	Area curve	Share	Area curve	Share	Area curve	Share	Area curve	Share	Area curve	Share	Area curve	Share	Area curve	Public	Private	Total
1	0.06	0.030	0.12	0.060	0.122	0.061	0.115	0.058	0.111	0.056	0.077	0.039	0.082	0.041	0.12	0.00	0.12
2	0.07	0.095	0.12	0.178	0.122	0.183	0.115	0.173	0.111	0.167	0.077	0.116	0.079	0.121	0.12	0.00	0.12
3	0.07	0.165	0.11	0.291	0.122	0.305	0.115	0.288	0.111	0.278	0.077	0.193	0.082	0.201	0.11	0.01	0.12
4	0.08	0.240	0.11	0.400	0.122	0.427	0.115	0.403	0.111	0.389	0.077	0.270	0.079	0.282	0.11	0.01	0.12
5	0.07	0.315	0.10	0.504	0.089	0.532	0.095	0.508	0.111	0.500	0.077	0.347	0.097	0.370	0.10	0.04	0.14
6	0.08	0.390	0.10	0.604	0.089	0.621	0.095	0.603	0.089	0.600	0.077	0.424	0.094	0.466	0.10	0.04	0.14
7	0.1	0.480	0.09	0.700	0.085	0.708	0.090	0.695	0.089	0.689	0.077	0.501	0.111	0.568	0.09	0.07	0.16
8	0.12	0.590	0.09	0.791	0.085	0.793	0.090	0.785	0.089	0.778	0.154	0.616	0.115	0.681	0.09	0.08	0.17
9	0.13	0.715	0.08	0.878	0.082	0.877	0.085	0.873	0.089	0.867	0.154	0.770	0.125	0.801	0.08	0.10	0.18
10	0.22	0.890	0.08	0.960	0.082	0.959	0.085	0.958	0.089	0.956	0.154	0.924	0.136	0.932	0.08	0.12	0.20
Summary (area under curve X 0.10)		0.39		0.54		0.55		0.53		0.53		0.42		0.45	Note: these are nominal		
Index of summary		1		1.37		1.40		1.37		1.35		1.07		1.14	amounts. They are added up, and then divided by their total.		
Share of GDP for public education, initially												0.07		0.07	That, then, is the final share		
Share of GDP for public education, after private flight												0.04		0.065	presented to the left in the		
Share of GDP going for ed. of bottom 70%												0.04		0.049	modified Option 2.		

Caution: illustrations are carried out with primary education base data as a reference point.

Conclusions:

1. Option 2 would be ideal, if people would not react with flight.
2. All "pre-flight" options are about the same with regard to equity.
3. The FFC's Basic Grant is shown for comparison. Most options are similar to it.
4. All the options are about 35% to 40% better than the status quo as of about 1993.
5. With "flight", all options become only about 5% - 10% better than the status quo and marginally better than the status quo with regard to quality for the bottom 70%.
6. A "modified Option 2" would be worse than any of the idealized options, but better than the reality that would ensue if flight takes place.

In particular, it allows a greater degree of quality at all levels of the system, because the bottom 70% get a decent share of a larger pie, since the share of GDP going to education does not fall as much. This means an increase of about 20% in the financial ability of the bottom 70% with respect to both the status quo and a "flight" scenario.

Appendix D. Further comments on “Latin-Americanization”

It is clear that the issue of what might happen to public support to education, as a proportion of GDP, if the upper end of the income spectrum leaves the system is a critical matter in South Africa. Another critical issue is how likely a massive (say, 25%) flight is, over the next few years, depending on various variables such as if the level of public support per child is deemed unacceptably low by that end of the income spectrum (given the need to give support to poor areas) and if they are not allowed to rigorously and efficiently collect fees which can supplement the state subsidy.

The issue of the amount of “private flight” we cannot address here. But the issue of the correlation between “private flight” and lack of support can be documented. The issue is complex, of course, but contemplation of the following table is instructive. The three columns mean the following. AVGPP is the proportion of enrollment in primary education that is private. AVGPS is the same, for secondary, and AVGSH is the share of public spending on education in GDP. The data are sorted by level of support to public education, from smallest to largest. The “avg” in all these refers to the average over the 1980s. Data are standard Unesco data. We have selected essentially Latin American and OECD countries, because these have the clearest demarcation of private and public. We have sprinkled in a few other countries for variety. Please note that this is not a random or complete sample. We have excluded some countries in the middle as well as most non-Latin and non-OECD countries, and those that did not have data in the representative period.

COUNTRY	AVGPP	AVGPS	AVGSH
Haiti	62	82	0.014
Paraguay	15	25	0.016
Bangladesh	14	92	0.016
Dominican Republic	19	22	0.018
United Arab Emirates	26	16	0.019
Bolivia	9	22	0.021
Senegal	10	26	0.023
Indonesia	18	50	0.023
Guatemala	14	38	0.024
Uruguay	16	17	0.027
El Salvador	12	56	0.028
Colombia	14	41	0.028
Burundi	21	32	0.028
Mexico	6	14	0.030
Peru	12	15	0.032
Ecuador	16	34	0.036
Spain	35	34	0.037
Argentina	19	32	0.038
Germany	2	7	0.039
Honduras	5	46	0.039
Chile	32	37	0.041
Japan	1	14	0.048
United Kingdom	5	9	0.049

COUNTRY	AVGPP	AVGPS	AVGSH
France	15	21	0.049
Kuwait	29	17	0.050
Switzerland	2	6	0.050
Ireland	100	70	0.050
Luxembourg	1	7	0.051
Italy	7	6	0.051
Austria	4	7	0.052
Australia	23	30	0.052
New Zealand	4	8	0.053
Tunisia	1	11	0.053
Costa Rica	4	10	0.053
Norway	1	4	0.054
Panama	7	13	0.055
Finland	1	4	0.056
Dominica	4	4	0.058
Malaysia		5	0.058
Netherlands	69	72	0.059
United States	11	8	0.060
Jamaica	4	4	0.061
Turkey	1	3	0.062
Saudi Arabia	4	3	0.062
Belgium	55	66	0.065
Jordan	13	15	0.065
Sweden	1	1	0.068
Denmark	9	14	0.069
Canada	4	6	0.072
Zimbabwe	86	62	0.074
Barbados	9	16	0.080

A few observations must be made.

First, what is cause and what is effect, what is chicken and what is egg? Egg: clearly, if public support is not forthcoming, private support has to increase. Chicken: alternatively, if the well-off have their education all "set up" in their own schools, the level of budgetary support for public education will tend to be reduced. Furthermore, the accountability pressure of the powerful in society is useful in keeping bureaucracies efficient (not only "well-managed," but efficient—those are very different concepts). But note that the egg begets the chicken: if public support in South Africa is not seen as forthcoming by the well-off, and they cannot supplement, they will tend to leave. Once they leave, tax-based support will wane. Those of us that have participated in budgetary negotiations in a wide variety of countries realize that when the Minister of Finance and his assistants, the Minister of Plan and his assistants, and the bureaucracy in the Ministry of Education and in the teachers' union have never been inside a public school to pick up their own children, the level of unreality in the discussion about what the public sector needs is severe.

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Second, note the instructive exceptions. Ireland, Zimbabwe, Belgium, the Netherlands, to some degree Spain and France, all allow some measure (strong in some of these cases) of public support to the private or parochial/religious sector. In Ireland, in a loose sense, all education is “private” or “non-state” but with public support. Chile is, as far as we know, the only non Anglo-Saxon-influenced developing country that follows this pattern of providing public support to any school that does a reasonably acceptable job, be they private or not. Thus, the cases of high level of public spending on education and high levels of private schooling are an exception that tends to prove the point. Similarly, looking at the Latin cases of reasonably enlightened social policy (other than Chile), namely Costa Rica and Panama, note that they are the only Latin countries in the rank of the OECD countries: low level of private participation, high level of public support.

One reason that might mitigate “flight” is that higher cost in South Africa does not necessarily buy higher “measurable” quality. Thus, the well-off and middle classes may not be willing to take their purchasing power to the independent schools as massively as one might otherwise think. They may decide they are simply satisfied with reasonable achievement, and will forego the ability to spend on musical instruments and/or on “extra” quality. At the same time, however, the ineffable issue of “control” might grate, and parents may leave simply because they do not like the “feel” of the state schools anymore, even if their leaving does not result in actual, increased cognitive achievement for their children. Which of these two factors will weigh more no one can tell at this point.

Another important point is that as parents flee the public sector, the range of options available in the independent sector will increase, thus encouraging flight even more. A range of relatively reliable, relatively inexpensive middle-class schools will emerge, catering, for example, even to middle-class and lower-middle class Africans living in cities. Some of these may be “fly-by-night” but possibly the majority will be reasonable-cost, reasonable-quality. Many will be condemned because they don’t “look and feel” like a “good” white school, but they may well be offering good value for money. (Few studies of cognitive-achievement per Rand paid have been done at all in South Africa, much less in the “fly-by-night” or middle-class independent urban schools frequented by Africans.) Reality shifts in response to policy.

South Africa’s situation is different from that of many of the countries in the table. The income distribution in South Africa is among the most skewed in the world. The rich are very rich, relative to the poor. That means two things. First, they pay relatively a lot of the taxes, and they know it. Second, they have a lot of purchasing power that gives them alternatives to the public sector schools if they become unhappy. Thus, the flight in South Africa may be greater than in, say, Colombia, or Ecuador.

One last point. If we exclude the countries such as Ireland, Zimbabwe, etc., where the “private” sector is very much publicly-supported, we note that, on average, countries with a level of support to education of about 3% of GDP, have about 30% of their enrolment in the private sector. Countries with about 5% of GDP in education, have about 5% to 10% of their enrolment in the private sector. This would suggest that, in very rough terms, the relationship of public support to public enrollment is about 1 to 10: for every 10 percentage points decrease in publicly supported enrollment, there is a 1 percentage point of GDP withdrawn from public education. In South Africa that would mean that if private education became, say, 25% or so of enrollment, public support to education might eventually come down to about 4% of GDP.