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Determinants of Educational Achievement and Attainment in Africa

Findings from Nine Case Studies

Ronald G. Ridker
Institute for Policy Reform

Technical Paper No. 62
August 1997

Health and Human Resources Analysis for Africa Project

Human Resources and Democracy Division
Office of Sustainable Development
Bureau for Africa
U.S. Agency for International Development

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Contents

Foreword

For nearly 10 years USAID and its partners have taken a "systems" approach to education in Africa, trying to understand what combination of policy formation and implementation efforts will lead to the greatest benefit for students.

While we can often measure what has happened to simple aggregates such as enrollment during the course of an activity, we seldom know more. Did enrollment change during this period because of factors having nothing to do with the activity, such as household income, or, as we hope, did it improve because of one or more activity-related factors? Which factor or comination of factors had the largest effect: the provision of textbooks, the construction of new classrooms, or the training given to teachers?

Most of our notions about such matters are derived from studies undertaken in developed countries. High quality studies specifically focused on Africa are few and far between. The studies reported on here have resulted from an effort to correct this situation. All are focused on Africa. Four are based on sample survey materials that have been expanded to include information about households and the schools attended by household members. Five gathered their own data to assess the impact of specific interventions.

This paper presents an overview and attempts to compare and contrast both the findings and the methodoligies used in these studies. The result is a fascinating set of papers that should be of considerable interest to both policymakers and researchers concerned about improving educational outcomes in Africa.

—Julie Owen-Rea
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Executive Summary

This paper presents an overview and discussion of nine studies that attempt to explain educational achievement, attainment, and participation in different African countries. Available information on school, household, child, and community characteristics are explored for this purpose. Four of the studies base their analyses on national sample surveys, the remainder on evidence from field investigations of specific interventions at the primary level. This overview discusses the significance, limitations, and policy and research implications of the findings.

The studies speak to a variety of issues, such as the importance of socio-economic as opposed to school characteristics in determining educational outcomes, the effect of quality improvements on enrollment, the importance of hardware versus software, textbooks versus class size, professional versus para-professional teachers, and the role of parent participation. Most of the interventions were found to have positive (or in the case of those that have not been underway very long, promising) impacts. This overview finds that outcomes can differ significantly depending on the context and status of variables from all of the domains considered. This greatly complicates the analysis required and makes simple generalizations about policy difficult; but it should encourage the continued experimentation and search for innovative approaches.

Determinants of Educational Achievement and Attainment in Africa:

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Introduction

Policymakers would like researchers to tell them how different budgetary allocations to and within the education sector will affect educational and developmental outcomes. This should be done by assessing the incremental benefits and costs of alternative policy packages. But that requires quantitative information on the linkages between inputs to the education system and outcomes, between outcomes and developmental impacts, and between all these variables and others such as household, child, and community characteristics, some of which may be more important than policy variables in affecting the outcome. While some information is available about the variables involved and their typical magnitudes, information on how changes in some of them quantitatively affect others is rare. Moreover, to obtain such information, a host of assumptions and judgments must be made that are subject to debate. These gaps and problems make a complete assessment impossible at the present time. One can, however, undertake studies that provide pieces of information that should be helpful to policymakers even though a complete analysis is not possible. The studies presented in this series are designed to do this.

More specifically, the research program[1] discussed in this overview was designed to increase knowledge about operationally relevant determinants of school achievement and participation (which taken together provide a rough measure of the outcome of a school system—i.e., per student increase in knowledge and skills times the number of students achieving this increase). It was motivated by observations of declining achievement and enrollment and increasing dropout rates in a number of African countries. There is no lack of hypotheses proposed to explain these changes. But most of them are based on studies related to developed countries. In developing countries, and particularly in Africa, there is a dearth of evidence to prove or disprove these hypotheses, let alone to say much about their relative importance and the cost-effectiveness of policy implications flowing from these hypotheses.

At the outset we decided that the work would have two central features. First, wherever possible and relevant, it would attempt to take into account factors influencing the situation on both the demand (households) and supply (schools) sides of the equation, as well as relevant community and contextual characteristics. Typically, studies in this area investigate subsets of these determinants—for example, the household characteristics that influence parents' decisions to invest in their children's education or the effect of specific inputs on learning outcomes, without considering interactions between these two sets of factors or the way in which more general circumstances such as local employment opportunities affect these interactions. While providing valuable partial information, this approach is seldom adequate for policy purposes.

Second, because the factual basis of existing knowledge, particularly in Africa, is so weak, we decided to make this investigation as empirical and quantitative as possible. To maximize what we can achieve given our

limited time and financial budgets, we searched for situations that were ripe for analysis, where some data were already available, where an intervention was in place long enough so that at least some of its impacts are observable, and where we could leverage our funds by helping an existing evaluation effort expand the scope and power of what was originally planned. To avoid spreading ourselves too thinly, we focused primarily on interventions in primary education.

All the studies in this series can be thought of as attempts in different ways to illuminate one or more of the relationships in Figure 1 while holding other influences constant. The overall goal is social and economic development to be achieved by improving educational outcomes for an increasing number of persons. These clusters of variables—called educational achievement and attainment (roughly associated with "quality" and "quantity" of education) in the figure—are determined by five other clusters: directly by school, household, and child characteristics, and indirectly by community and other contextual factors, including external sources of funding. Needless to say, the real world is far more complex than this diagram. The only box that has been disaggregated to any extent is that for school characteristics since it contains most of the variables that pure education policy attempts to influence. But enough complexity has been included to remind the reader that policies affecting other spheres of life—for example, the market for educated labor—need to be taken into account along with more direct influences.

Four of the studies approach the task of illuminating parts of this framework by applying statistical methods to analyze survey and other data for different countries (Egypt, South Africa, Tanzania, and Kenya). The remaining five studies rely on data derived from specific interventions. One provides mainly technical assistance and training to improve the teaching and learning process but little in the way of physical inputs (SIP-Kenya). Two others (ICS-Kenya and CEF-Tanzania) take almost the opposite approach, providing physical inputs but hardly any "software;" the main difference between the two is how the physical inputs are decided upon, financed, and acquired. The remaining two involve more structural changes; they attempt to develop new, community-based schools as opposed to helping existing schools expand or improve (SCF-Malawi and SCF-Mali).

The remaining sections of this paper review the major findings of these studies, consider methodological problems they pose, and suggest policy and research implications. In doing so, they call upon the comments of discussants at a workshop held on December 2, 1996, where these studies were reviewed.[2]

Analyses of Sample Surveys

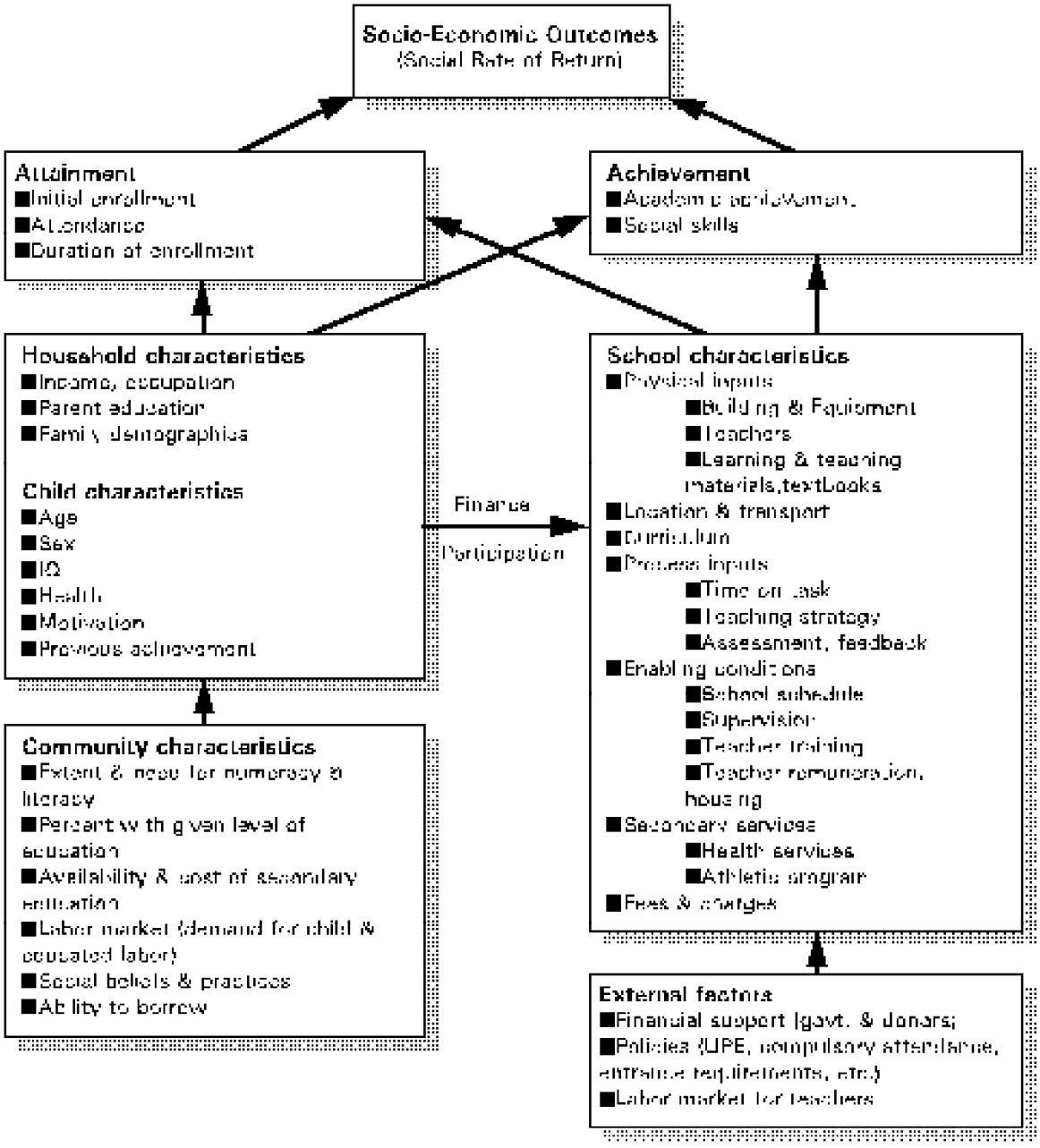
Enrollment in Primary Education and Cognitive Achievement in Egypt, Changes and Determinants

Nader Fergany, Ilham Farmaz, and Christiane Wissa

In 1994 a rich data set covering at least some aspects of each of the boxes in Figure 1 was developed under the principal author's direction. Analysis confirmed suspicions that indicators of primary education, which had made good progress up to the mid-1980s, had begun to decline. Initial enrollment stagnated at around 90 percent and there have been declines, at least since the late 1980s, in all the following indicators: the proportion of entrants who completed the primary cycle, the average speed of completing that cycle, the proportion of primary completers in the population at large, and school quality as measured by test scores, which had never been very high.

The purpose of the current study was to further enrich this data base by adding infor-

Figure 1: Determinants of Educational Outcomes



mation on schools routinely collected by the Ministry of Education and to undertake additional analyses to obtain a clearer picture of the determinants of the deterioration in primary schooling indicators. One earlier study[3] concluded that individual and family characteristics had a greater effect on skill levels than did schooling variables, suggesting or at least hinting at the possibility that the deterioration in primary schooling indicators might be due more to the deterioration in economic conditions since the mid to late 1980s than to deterioration in school quality. However, another study conducted by the

Ministry of Education[4] found that teacher characteristics, teaching practices, and the school environment accounted for a larger percent of total variation in student achievement than did differences among individual students and their families; and a study by Hanushek and Lavy[5], which used the same data set as Swanson, found that school quality has a significant effect on attendance, holding constant changes in socio-economic variables. The hope was that the present study would help resolve this difference of opinion.

On the surface, the study appears to have done so. For each of its three main dependent variables—initial enrollment, completion rate, and test scores—it found that most of the variance in the dependent variables that could be explained by the regression equations was accounted for by "socio-economic and context variables," not by school level variables. The authors find this to be a plausible conclusion given the government's policy of minimizing differences among schools. Furthermore, a more macro analysis that traced the changes in real GDP, the unemployment rate, and household expenditures per person over time found that in contrast to the 1960s and 1970s, the 1980s and 1990s have been periods of sharp deterioration in real standards of living for most households. This suggests that parents found it increasingly difficult to afford even the relatively modest expenses associated with primary school attendance and increasingly necessary to utilize children's time directly or indirectly helping with economic activities outside of school. The authors conclude that the "solution to the brewing crisis in education in Egypt cannot be found solely within the confines of the educational system."

Other conclusions reached by this study include the following. While initial enrollment and primary completion rates are lower for girls than for boys, once in school girls do not under-perform boys. The same is true for children from poor families: while enrollment and completion rates are lower, performance once in school is no worse than for children from less poor backgrounds. Children who devote more time to work outside school enroll later, attend less regularly, are less likely to complete the primary cycle, and have lower levels of cognitive achievement. A better-educated mother improves the odds for initial enrollment and cognitive achievement but not necessarily for completion; however, for the effect to be significant, the mother must have more than minimal literacy. Private tutoring and participation in in-school tutoring groups increases the chances for completion of the primary cycle but has no significant impact on cognitive achievement.

Finally, and quite significantly, the authors find that school quality, across the board, is quite poor and is likely to have deteriorated over time along with economic conditions.

The authors conclude that a solution to this set of problems cannot come solely from the Ministry of Education, and that a comprehensive approach that includes poverty alleviation programs and improvements in teachers' remuneration will be necessary if a reversal of current trends is to be achieved. This is an important message for policymakers in many countries.

While these conclusions are quite plausible, the statistical analysis by itself does not offer strong proof. The central problem, as discussants pointed out in the workshop, is the endogeneity of many of the relevant variables. Child labor force participation is a case in point. It is used in the analysis to help explain enrollment and test scores. But it is also influenced by these factors. For example, a parent that perceives that his child is doing poorly in school, either because school quality is poor or because his child's motivation or innate abilities are weak, is likely to encourage the child to start later, drop out sooner, and maybe even devote more time to work while in school. If the first effect dominates, it is proper to conclude, as the authors

seem to, that something must be done about the child labor market to make it less attractive. But if the feedback effects, from schooling to child labor, dominate, more of the onus must be placed on the school system to improve quality. Such interactions are difficult to disentangle and require the application of statistical methods that have their own set of difficulties, but the attempt should be made.

Moreover, even though the authors use a rich data base compared to what is available in most countries, detail is still inadequate, particularly about school characteristics, to help policymakers decide how, if at all, to reallocate expenditures to improve the situation. If more funds were allocated to the education sector, how much should be spent on improving teacher remuneration as opposed to other inputs such as textbooks and learning materials? How might the extremes of poverty be eliminated and the remuneration for child labor be reduced so that parents would be more able and willing to send and keep their children in school for a longer period of time? What factors might policymakers change to induce parents to send more of their girls to school? None of these questions can be answered using the data available in this study. Separate studies and data-gathering activities devoted specifically to these questions would be necessary.

A related issue pertains to the extent to which one set of variables explains results compared to another. This depends in good measure on the specific variables included in the analysis and their intercorrelations. If, for example, there had been more and better measures of detailed school characteristics, it is quite likely that these characteristics would have accounted for a greater percent of the explained variance (as acknowledged by the authors to be the likely explanation for the higher percent found in the Ministry of Education study). Moreover, even if the variance in inputs across schools is minimized by educational policy, variations over time might still be present. What happened to public expenditure on education during the 1980s and 1990s? It is likely that it decreased along with private expenditures. If that is the case, and if enrollment is strongly influenced by school quality, as Hanushek and Lavy believe, school quality could be quite important in determining enrollment and participation even though it does not show up in a cross-section. The authors recognizes many of these data limitations and devote the last few paragraphs of the paper to outlining what is necessary to improve this situation.

School Quality and Educational Outcomes in South Africa

Anne Case and Angus Deaton

Little is known about the relationship between school quality and educational outcomes in South Africa, and studies in other countries have produced mixed results, some (like the Fergany study) finding few significant effects compared to non-school factors and others finding quite substantial effects. This paper attempts to clarify this picture, at least for South Africa, by examining the effects of available measures of school quality—pupil-teacher (P/T) ratios and the presence of libraries and laboratories in schools—on a variety of educational outcome measures, holding constant the effects of other influences such as household income, head teacher's educational attainment, and race. It uses data from a comprehensive household survey undertaken in 1993 that was supplemented by a series of community questionnaires on local facilities, by a literacy and numeracy survey administered to a subset of individuals in the base survey, and by administrative data on P/T ratios by race and magisterial district. While each of these sources has major weaknesses, which the authors discuss in detail, the results are consistent with each other, no matter which data set is used.

The most significant finding concerns P/T ratios, which average 42 for Blacks, 24 for Coloured, 22 for Asians, and 19 for Whites. The authors find that reducing P/T ratios, particularly from the high ratios experienced by Blacks, improves the probability of children being enrolled and remaining in school longer, improves test scores, and encourages parents to make complementary expenditures on their children's education. For example, the estimates suggest that if the P/T ratio were reduced from 40 to 30, educational attainment is likely to increase by a third of a year. From one generation to the next, these effects are magnified, since the analysis also suggests that parents with more years of education have children who are more likely to attend school, remain in school longer, and do better on achievement tests. The authors also find, in another data set, that hourly earnings and family income increase with test scores, years of schooling and household head's schooling.

These findings are in sharp contrast to the often-expressed view that public expenditures, and in particular improvements in the P/T ratio, have little effect on the educational achievement and attainment of children. From that perspective they are important in supporting arguments for educational as opposed to other public expenditures. But they do not by themselves add up to a policy recommendation to reallocate budgets towards hiring more teachers at the expense of other expenditures on education. The limited information available on facilities indicates that they too could have some positive effects on outcomes. Many other school characteristics were omitted from this analysis, such as textbooks and school supplies, which are likely to be correlated with P/T ratios, and teachers' qualifications and years of experience. At a minimum, policymakers must consider improvements in these other variables as well as increasing the number of teachers. Also, the effect of a given change in P/T probably depends on many other things, such as the initial level of P/T (whether it is, for example, 20, 40, or 100), the style of teaching, whether the classes are multigrade, and the age and cognitive achievement of students. Because of all these factors, P/T is not, by itself, a good proxy for educational quality. Thus, this analysis by itself does not help policymakers decide how to allocate a given budget between various inputs. Here again, more detailed studies specifically focused on measuring the impacts of individual school characteristics would be necessary.

Household Schooling Decisions in Tanzania
Andrew D. Mason and Shahidur R. Khandker

The education sector in Tanzania is characterized by having one of the lowest secondary enrollment rates in the world (a gross rate of 10 percent in 1993), a declining primary enrollment rate (82 percent in 1993, lower than reported in 1980) and a late age of entry into primary (nearly 10 years of age). The low secondary enrollment rate is conventionally attributed to government restrictions on the number of places to conform to its estimates about the need for educated labor.[6] The decline in primary enrollment is generally attributed to deterioration in quality resulting from severe budget constraints during the 1980s. This study suggests that factors on the demand side may also be important.

The study utilizes several household and individual level surveys, including a 1993/94 household survey and a 1991 national labor force survey, to estimate the rate of return to schooling and the indirect as well as the direct costs of schooling. The methods it uses to estimate these costs are one of its chief contributions. It then utilizes regression analysis to assess the effects of these costs on schooling decisions independently of other determinants.

The authors find evidence suggesting that private rates of return to primary and sec-

ondary schooling for wage employees may be low by regional standards. Comparison with earlier studies also suggests that these returns may have declined during the 1980s. The authors recognize that, due to methodological and data differences between countries, such comparisons should be made with care. However, if private returns to schooling declined, this could help explain the decline in enrollment that occurred over the period.

The authors also find dramatic differences in the costs of primary and secondary education. At the primary level, direct costs, which include fees and contributions, uniforms, school supplies, and transportation, comprise no more than 6 percent of total per capita expenditure, even among households in the lowest fifth of the income distribution. Even when opportunity costs of children's time are added—which the authors estimate to be 2.5 to 3 times larger than the direct costs—most households can afford these expenses. At the secondary level, however, direct costs constitute 80 percent of per capita expenditures of the poorest fifth of households and opportunity costs are roughly 2.5 times greater than at the primary level. At these levels, in the absence of opportunities to borrow for children's education, there is no way that the vast majority of households could send their children to secondary school.

The econometric findings are quite consistent with the paper's descriptive analysis. At the primary level, enrollment and late starting are not significantly affected by direct costs or household income; but they are affected by the much larger opportunity costs estimates. Opportunity costs of girls' time is especially important. At the secondary level, however, household income as well as household costs are significant determinants of enrollment and late starting. Distance to schools is also important.

The analysis is limited by the fact that no data exist on the availability of school places or of school quality. The authors use number of schools per 1,000 population as a proxy for availability; but variations in this variable may be more a reflection of variations in regional population density or per capita income than in a pure supply constraint. They have no variables like P/T ratio or textbooks per students that might serve as proxies for school quality.

Nevertheless, the study strongly suggests that the Tanzanian situation cannot be explained solely on the basis of supply constraints. Policies that focus on building more secondary schools and improving school budgets may have only limited effect on the situation. Adjustments in schooling fees and subsidies may be necessary. Even then, significant increases in enrollment may have to await improvements in the market for educated labor.

Increasing School Quantity vs. Quality in Kenya: Impact on Children from Low- and High-Income Households

Anil B. Deolalikar

This paper has three objectives. First, it attempts to estimate the joint demand for primary school enrollment and schooling expenditures per pupil for Kenya, a country in which primary enrollment has declined after reaching a peak of more than 90 percent in the early 1990s. Second, it looks at information relevant to the quantity-quality tradeoff in budget allocations, by comparing the impact on primary enrollment of additional school facilities with that of reductions in P/T ratios. Third, the paper explores the way estimates of these effects vary with the level of income, a line of investigation seldom followed in studies of the demand for schooling in developing countries. For these purposes, the author used data from two sources, a 1993 household survey (the Second Welfare Monitoring Survey developed by the Central Bureau of Statistics) and district-level data on numbers of schools, students, and teachers from the Ministry of Education and Training.

Of the many conclusions this study makes, three are discussed here. First, while many studies have found that mother's education has a beneficial effect on child's schooling, this study finds that this effect is much stronger for poor than for rich households.[7] This strengthens the policy implication that female schooling should be an important part of any poverty alleviation program.

Second, the study seems to shed light on the perennial question of whether policymakers should spend their limited budgets on providing more facilities or more teachers. The study finds that an increase in facilities increases enrollment of the poor but has virtually no effect on enrollment of the rich. It also finds that a decrease in the P/T ratio has a negative effect on enrollment of the poor but a positive effect on that of the rich. Why should this be the case?

The first effect may result from there being fewer places in school available to the poor than to the rich. For example, the poor might reside in more remote areas where there are fewer schools. In this case, opening new schools in such areas would result in an immediate increase in enrollment. The author suggests that this effect could also result from a price effect (in this case a reduction in costs of attending school) induced by the increase in supply of schools, which has a larger beneficial effect on the poor.

The negative effect of a reduction in the P/T ratio on the poor is more puzzling. The author suggests that this could also be explained by a price effect—that increasing the number of teachers may adversely affect provisions for inputs such as bursaries and scholarships that are more important to the poor than to the rich. But it is not clear how this result might come about in a given region when all teacher salaries and positions are provided by the central government. More investigation of this relationship and the possible mechanisms underlying it is needed.

Third, while the study presents raw data indicating that per capita household expenditures on education increase with per capita household income[8], the regression equations, which attempt to hold other influences constant, suggest the opposite, leading to the unlikely implication that education is an inferior good. The author suggests that the absence of adequate school quality measures and prices in the statistical analysis accounts for this anomaly. While that may be, if the absence of such information is confounding this counter-intuitive result, it might also be confounding other results that seem to be intuitively correct.

This paper clearly demonstrates that income level influences the nature of many other relationships. But in the process it raises as many questions as it answers. Some additional analysis of this data set may help resolve these ambiguities—for example, running the analysis separately for rural and urban samples and testing for intercorrelations that may be affecting the coefficients in strange ways. But in the end, more in-depth field study may be necessary, for example, to determine whether local communities contribute to teacher benefits and other school expenditures in ways that could explain the anomalous results.

Analyses of Specific Interventions

Textbooks, Class Size, and Test Scores: Evidence from a Prospective Evaluation in Kenya

Michael Kremer, Sylvie Moulin, David Myatt, and Robert Namunyu

The problem with all the studies presented above is that it is impossible to be certain that the results obtained have not been biased by the omission of important variables. None of these studies takes into account all the variables suggested by Figure 1, let alone any that would be included in a

more comprehensive system; and even the variables that are studied are often measured using proxies several steps removed from what one would really prefer to measure. This second set of studies circumvents many of these problems by comparing the impact of specific interventions with what happened in comparable schools where these interventions were not introduced. This first study goes further in that it was able to randomly assign schools to treatment and control groups, thereby, in principle at least, eliminating all differences between the two groups other than the treatment.

The case involves a program operated by the Internationale Christelijke Stichting (ICS), a Dutch non-governmental organization (NGO) that offered textbooks and uniforms to seven rural primary schools that were chosen randomly from a group of 14 schools in Busia, Kenya. Data on test scores and enrollment, among other things, were collected from all 14 schools near the time of the inception of the project and again after a year and a half of implementation. The treatment schools were provided with uniforms (worth about $10 each) and approximately 1.3 textbooks for each student (the schools chose the subjects and decided how to distribute the books).

This program appears to have increased enrollment, improved attendance, and reduced dropout rates by significant numbers in the test schools compared to the control schools. But no significant differences in test scores were observed between the two sets of schools. Test scores did rise in grades and schools whose enrollment went up the least, but fell in schools where enrollment went up the most. This association between test scores and enrollment suggests the hypothesis that the program had two offsetting effects: an increase in test scores because of the provision of textbooks and an offsetting decrease in test scores because there were fewer teachers and other school inputs per student. To estimate the magnitude of these effects, the authors establish a model that uses an instrumental variable approach to distinguish between these direct and indirect effects. This model suggests that if enrollment were held constant, test scores would have increased by one-third of a standard deviation, and that if school inputs were held constant, each additional student would have reduced test scores by 6 percent of a standard deviation. These estimates imply that textbooks are more cost-effective in improving test scores than are reductions in class size.

Several problems with this analysis need to be pointed out. First, the sample sizes are so small that one cannot have a great deal of confidence in the ability of the randomization process to control for extraneous differences in the two samples. At a minimum, it would be useful to compare the means of important household, child, and school characteristics in the treatment and control samples to ensure that they are not significantly different in some crucial but unexpected way. Unfortunately, a number of the variables one would like to have for such a test—for example, household income, parent educational attainment, and head teacher quality—were not available or measured.

Second, the instrumental variable approach, while very cleverly applied, requires the introduction of assumptions about the determinants of some variables that cannot themselves be verified. It is very hard to find instrumental variables that meet econometric criteria and it is not clear that the authors have succeeded in doing so. Third, test scores may have increased in part because of the one-third cut in absence rates. This effect needs to be separated from the effect of textbooks.[9]

Finally, the results and their policy implications would be more meaningful if one knew more about what was going on in the schools: how the textbooks were used, how teachers and students coped with the in-

creased enrollment, why the absence rate decreased, and so forth. The goal of such an investigation would be to determine how likely or plausible these statistical results are. Is it plausible to find that the provision of textbooks per se, without providing complementary assistance and teacher training in their use, and in the limited improvement in the textbook-pupil ratio that ended up occurring once the increased enrollment took place, has such a significant effect on test scores after only a year and a half of use?[10] Is it plausible that increased crowding—to the extent it occurred—could have such a strong negative effect on test scores? Fortunately, there will be an opportunity to answer these questions, since both the authors and the ICS are continuing and expanding this project and trying out a variety of treatments using much larger sample sizes.

An Evaluation of Village Based Schools in Mangochi, Malawi

Karin A. L. Hyde, Esme C. Kadzamira, Juliet C. Sichinga, Mike P. Chibwana, and Ronald Ridker

An Evaluation of Save the Children's Community Schools Project in Kolondieba, Mali

Joshua Muskin

These two studies are reviewed together since they entail evaluations of very similar projects, are both patterned after the community schools established by the Bangladesh Rural Advancement Committee (BRAC), and are both sponsored by Save the Children Federation (SCF). In both projects the goal was to establish primary schools in remote areas where no school facilities existed before. Moreover, the schools differed from traditional government schools in that the teachers were selected by the communities in which they lived and typically had no more than a primary school certificate, instruction was in the local language, and the curriculum was scaled down and adapted to local needs.[11] Other features included small classes (restricted to 30 in Mali and 50 in Malawi), substantial supervision and in-service training, the provision of school supplies and teaching and learning materials, a school schedule adapted to the local calendar, and greater efforts at community participation than was typical in government schools. In both cases, villagers were responsible for school construction; in Mali, villagers were also responsible for teacher salaries. Pupils were enrolled in grade one, the intention being to carry that cohort through three years of schooling before starting another cohort of pupils. In Mali, at the end of the first three years it was agreed to extend the schools to six years. At the time the field work was initiated, the Mali program had been operating for four years and had established 75 schools (plus another 81 operated by Malian partner NGOs), and the Malawi program had been operating for one and a half years and had established eight schools.

The goals of these studies were to compare cognitive achievement in these schools with that in government schools, determine why these results were obtained, determine how these programs were actually implemented (e.g., the nature of community participation and how meaningful and important it was), and to consider issues such as cost-effectiveness, sustainability, and pupils' ability to move into the regular school system for higher grades. For these purposes, the researchers developed and administered a set of achievement tests, observed classroom activities, and conducted interviews with teachers, school administrators and supervisors, pupils, parents, and community leaders. The more quantitative materials were subjected to statistical analysis to separate program from non-program influences on pupil performance.

In Mali the evaluation team visited 28 schools, 13 SCF schools, three partner NGO schools, and 12 government schools. Tests of

knowledge of the local language, French, mathematics, and local conditions were administered to over 800 pupils in classes three and four. Household interviews were conducted with over 250 parents. In Malawi, the researchers visited 10 schools—four SCF schools, three government schools that had received some SCF assistance, and four unassisted government schools. Tests in the local language, English, and mathematics were administered to 269 pupils in standards 2 and 3 (used as a baseline). Household interviews with parents were obtained for 234 of the standard 2 pupils who took the tests. It was not possible to find completely comparable program and government schools. Community schools were located in remote rural villages not served by the Ministry of Education. The closest approximations were government schools in smaller market towns that tended to have better infrastructure, more public services, and higher incomes. This made it particularly unfortunate not to have baseline data since it would have permitted comparisons of changes in test scores that would have been less influenced by differences in permanent characteristics of the two groups. Nevertheless, interesting and suggestive results emerged in both cases.

Test scores, particularly for the languages, were generally low (except for fourth year pupils). However, in both countries, children in the SCF schools performed as well or better than children in government schools in all core subjects.[12] In addition, repetition and dropout rates were lower, and progression rates were higher in the SCF schools. Attendance records in Malawi were too incomplete to use, but two questions in the household survey suggest that absenteeism was lower also. Available data from Mali suggest the same is true there.

Regression analysis of the Malawi data suggests that these findings cannot be explained by household or child characteristics. Test scores do differ significantly by school, independent of the treatment group the schools are in. These school-level effects seem to be associated with differences in characteristics of classroom activities: in the better schools there appeared to be a higher level of pupil participation and engagement, which was encouraged by the teacher. Such participation seems to be greater in SCF than in government schools, but not by a wide margin. Corresponding conclusions are difficult to derive from the Mali regression analysis, but the information available seems consistent with the general finding that measured household and child characteristics cannot explain the results.

In Malawi, the principal reasons for the equal or better performance despite the use of paraprofessional teachers with minimal education are: substantially better and more frequent supervision, smaller class size, better use of instructional time, and emphasis on core subjects. Large differences were observed in each of these cases. Supervision visits averaged four per year in SCF schools compared to close to zero in government schools (one visit in only one government school during the year). Average standard 2 class size was 51 pupils compared to 172 in assisted and 133 in unassisted government schools. Class time devoted to learning core subjects was 25 percent greater, and all teachers had teacher guides compared to only 50 percent in assisted and 29 percent in unassisted government schools. While villagers expressed considerable satisfaction with the SCF program, community participation and support was limited to school construction, not very different from what was found in government schools. School committees were somewhat more active, but not in ways that suggest that it could be an important explanatory variable.

The explanation for the similar findings in Mali differs in some interesting ways. Differences in class size, supervision, and availability of teaching and learning materials,

while favoring the SCF schools, were smaller and less significant. For example, while differences in the number of visits by supervisors was equally great in Mali, their educational qualifications and training for supervisory work was weak and school directors in government schools played an active daily role in teacher supervision. Instead, other differences stand out. First, government pupils may have been disadvantaged by their use of French. This could account for the fact that they did poorer in the language tests (where they had to compete with SCF pupils who were using their native language), equally well in arithmetic (where language plays a less significant role), and better in local knowledge (the only examination given to both groups of pupils in the local language).[13] Second, nearly 30 percent of the government classes but none of the SCF classes were multigrade classes. Third, researchers found the SCF class environment to be more relaxed and conducive to learning and communication. The author suggests that this could be due to the fact that the teachers came from the same community and were less well-trained in pedagogical techniques emphasizing repetition, responses in unison, and strict discipline. It could also be because of the use of the local language, which undoubtedly makes for easier and more relaxed communication. Fourth, the SCF school management committees appeared to be more actively involved in school affairs, frequently visiting classes and holding meetings with teachers. This difference from Malawi is probably explained by the fact that teachers' salaries are paid by the local community, a fact that gives committee members more reason to carefully monitor teacher performance.

In Malawi, graduates of the village schools will probably not have a difficult time continuing in regular government schools since SCF and government schools use both English and the local language in about the same way. The situation differs significantly in Mali since SCF teachers do not have the background necessary to train pupils in French to the degree required in seventh and later grades. To bridge the gap, some remedial instruction must be provided. Since the number of pupils likely to continue their education beyond the sixth grade is small, the problem should be manageable.

Information on costs is inadequate and difficult to interpret. In Malawi, relevant operating costs per pupil in the SCF schools are probably larger than in the government schools. While teacher salaries are lower, costs due to differences in class size, supervision, and provision of teaching materials are greater. If the SCF program were operated at the same scale as the government program and if the government program were operated according to its design parameters, the differences in costs would be much smaller; but then the accomplishments of the two systems would be quite different. The situation is even less clear in Mali because of differences in class size, supervision arrangements, and the need (eventually) for some remedial French classes, among other things. A more careful study of costs should be undertaken in both cases.

Financial sustainability, in the absence of continued external funding, is questionable. In Malawi, while parents want to see the village school program continue and have begun to think about ways they might assist, it is unlikely they will be able to afford to pay teacher salaries. While the government might be willing to pay these salaries, it is unlikely that it will have the budget to provide similar levels of supervision, material inputs, and class sizes. The Mali situation differs because villagers are already paying teacher salaries. However, they are not always paid on time and salaries are sometimes so low that community pressure must be brought to bear to keep teachers from quitting; but at least the precedent has been established. Thus, the financial burden to the government of taking

over the remaining costs would be much lower and might be affordable.

These evaluations should be repeated in another couple of years to determine if the program remains effective in lower grades[14], if SCF teachers are able to be effective in higher grades (standards 3 and 4 in Malawi and 5 and 6 in Mali), and if pupils have been able to transfer smoothly to government schools. At the same time, more detailed investigations of costs and financing possibilities should be undertaken. Since the data and analysis developed in the current studies can be used as a baseline, the results of these future studies should be more definitive.

An Evaluation of the Aga Khan Foundation's School Improvement Program in Kisumu, Kenya

Joanne Capper

In contrast to the other interventions discussed in this report, the Aga Khan Foundation's School Improvement Program (SIP) focuses on the provision of software rather than hardware. It aims to improve teacher performance in the classroom—in particular, to utilize child-centered teaching techniques to develop pupils' cognitive and problem-solving abilities in core subjects. This was to be done by providing teacher training in a workshop setting, classroom-based coaching for teachers, and instructional materials. In addition, SIP provided some training for parents, head teachers, inspectors, and staff of teacher resource centers, and encouraged parents to contribute to improving school buildings and providing furniture.

The program began in January 1990 and has been operating for six years. Phase I (the first three years) worked with teachers in standards 1 to 3 in 15 schools; Phase II added 27 more schools and, after the first year of that phase, expanded coverage to include standards 4 through 6 in 13 of these schools. Four schools were phased in each academic term. During that four-month period, program officers worked with teachers in their classrooms on a daily basis; thereafter, attention was reduced substantially. The study took this phasing into account by selecting schools within three groups: schools that entered the program during Phase I, schools that entered the program during the first two and a half years of Phase I, and schools that began receiving treatment during the last four months of the project. Since all schools in Kisumu were affected by the program to at least some extent, a fourth group of schools from a nearby town was selected for comparison purposes.

Field work for this evaluation was undertaken in June 1996, two months before the end of Phase II. It consisted of the administration of examinations in English and mathematics to pupils in standards 3 and 6 in the sample schools and Swahili tests to pupils standard six, classroom observations in these standards, and interviews with teachers, head teachers, municipal education officials, and parents. As in the case of the studies of the SCF programs, no baseline data were available and the comparability of control and the treatment groups may be questionable.

While SIP was quite successful in creating broad-based support for its activities, the impact on test scores was mixed. On short-answer and multiple-choice tests, pupils in both treatment and control groups performed reasonably well, suggesting that they are learning what is in the curriculum in the way that it is taught. Moreover, in a simple comparison of means, the longer a school had been in SIP the better its pupils did on these examinations. However, when regression analysis was applied to control for household income, mothers' education, and teachers' years of experience, SIP's influence on test scores declined; it remained significant for standard 3 pupils but became insignificant for standard 6 pupils (SIP only began working with teachers in standards 4 through 6 in late 1994, one and one-half years before the

evaluation study). On open-ended questions, while T1 pupils did somewhat better than those in other groups, all groups had exceptionally low scores—around 10 percent on average. Many pupils wrote nothing at all or simply rewrote the prompt. There is clear evidence that they are not learning how to read, write, or communicate in English or Swahili. Nor are they learning to apply simple mathematical concepts and skills to real-life types of problems.

The program component found to contribute most to increasing test scores at the standard 3 level was the number of workshops a teacher attended, which in part was a function of how long the teacher had been in the program. Classroom-based coaching and teacher materials had positive but much smaller effects. The child-centered teaching behaviors promoted by SIP did not seem to have a positive influence on test scores at either grade level.

These limited results appear to be caused by five factors, each with fairly straightforward policy implications.

- Both teachers and their trainers were found to have an inadequate level of mastery of child-centered teaching techniques. Lack of time devoted to training of trainers as well as teachers, high rates of staff turnover, and inadequate attention to practice and application (as opposed to the principles of child-centered teaching techniques) appear to be the main reasons for this situation.

- Teachers are under pressure to prepare pupils for standard national examinations that focus on short answers and recall of facts. The nature of these examinations must change or they must be supplemented with other examinations.

- The amount of time actually spent teaching is quite limited because of frequent school closing for special events and teachers' absences (in part because of illness and death but also because of lax supervision); yet there are many subjects to cover, and teaching reading comprehension, essay writing, and problem solving (as opposed to grammar, word recall, and the simple mechanics of arithmetic) is time-consuming.

- Teachers appear to need more continuous supportive supervision than they got after the initial four-month intensive training period. Head teachers who might serve as instructional leaders on a regular basis were not trained for this role and often do not see this function as an important part of their job. SIP waited until very late in their program to work with this important group.

- Teachers are under pressure to teach in English beginning in the very early grades.

While SIP was able to significantly reduce costs per teacher/educator trained during Phase 2, these costs remain so much higher than those currently incurred by the government as to raise questions about financial sustainability of the program. Other reasons for doubting long-term sustainability include high rates of turnover of both school and SIP staff, limited transportation facilities, currently untrained SIP staff, expansion of municipal boundaries that triples the size of the target audience, and pressures to prepare pupils for the national examinations. The paper lays out a thoughtful, but long and complex, list of recommendations to correct this situation.

An Assessment of the Community Education Fund in Tanzania, Pretest Phase
Suleman Sumra

The Community Education Fund (CEF) is a program that would provide funds to local communities on a matching basis to

encourage and empower them to improve their schools. If it works well, it would provide governments and donors with a way to efficiently reach a large number of local communities without substantial staff inputs, to mobilize local resources for school improvements, and to increase the probability that these resources are used for high priority local needs. This paper presents an assessment of a pretest of this concept.

The principal mechanism involved is the offer of a grant related to the amount of school fees collected. Schools in communities with below-average incomes would receive 200 percent of the amount parents raised; average income communities would receive 150 percent and above-average communities would receive 100 percent. The maximum amount that any school could receive from the fund was set at 6,000 Kenya shillings (Ksh), or about $11 per pupil. To qualify for the grants, the school authorities must prepare and obtain local approval for a school improvement plan, establish a school bank account and procedures for its proper use, and keep detailed financial and operational records. Training in developing a school plan and keeping financial records was provided.

The scheme is similar to the Busia program in that communities are invited to indicate what their needs are; but it differs in that the funds are turned over to the communities to be administered by them according to a plan approved by community leaders. In Busia, no formal plans were prepared, the donor had the last word in deciding what the funds would be spent on, and the donor rather than the community administered the funds. While this approach required a field staff, community leaders urged this approach on the donor to avoid misuse of the funds. Misuse of funds in the CEF case is to be avoided by making public detailed spending plans and periodic reports on use of these funds and by requiring that all funds be kept in a bank account requiring two signatures (typically the head teacher and a school committee member) for withdrawal. During the pretest phase, a third factor was the detailed, almost daily oversight, provided by the implementing agency, a well respected local NGO.

The pretest started in September 1995 by providing this offer to four schools after an intensive period of promotion, education, and discussion with parents and teachers. Since data for this study was collected over a three month period starting in November 1995, it was only possible to assess the operation of the program, not its effect on enrollment or attainment. The principle findings to date are the following.

- Parents' contributions substantially increased—for example, in one school's fee collection increased from 28,000 to 98,000 KSh, and another went from 43,000 to 155,000 KSh. In one case, the school committee kept fees at the same level as the previous year but collected a much greater portion of the total pledged; in another where the fees were raised, parents agreed to pay after the sale of their spring harvest and to borrow in the interim in order to meet the deadline set by CEF for raising the funds. This outcome is explained only in part by the incentive provided by the matching funds. When asked why they were contributing more, most parents answered that it was because they had confidence under this scheme that the funds were going to be properly utilized.

- Teachers (usually the head teacher or deputy) did in fact develop acceptable plans and have so far kept the detailed records required by the scheme, despite the fact that these activities added substantially to their work-load.

- Three schools decided to use their funds to build an additional classroom, the fourth to construct desks. In no case were the funds

used to purchase textbooks or teaching materials, although outside observers believe such materials were inadequate. So far, implementation has proceeded according to plans.

- The scheme has generated considerable enthusiasm among parents and teachers. They feel that for the first time they have a few degrees of freedom to improve school conditions, and that the initiative for doing so is no longer in the hands of a discredited bureaucracy.

The author raises a number of questions about the long-term viability of the scheme, particularly if it is expanded. There is a mismatch in timing between the beginning of school when the funds are supposed to be available and the availability of income from the sale of crops after the harvest. Many villages do not have banks in close proximity. The design of some classrooms is of poor quality; construction quality is also likely to vary considerably. To date, the scheme has been managed by an NGO with a competent and enthusiastic staff that is determined to make the scheme operate well; if it is turned over to a regular line agency of the government, the situation could change dramatically. Difficult though they may be, these problems can probably be resolved.

In addition, there are a number of more fundamental problems for which solutions will be more difficult to find. First, while KSh 6000 per pupil is not a large sum compared to needs—indeed the author believes it is woefully inadequate—the government could not afford expenditures of this magnitude on a national scale. This level of spending is 170 percent more than the government now spends on primary education.

Second, given the extreme shortage of resources, one must ask whether building classrooms and furniture are the highest priority uses for additional resources. While parents obviously think so, most experienced outside observers would want the limited funds spent on other things: textbooks, teacher supplies, teacher training and supervision, and perhaps teacher salaries and housing in some circumstances. It is possible that parents will come to this conclusion on their own once they see that improvements in educational quality are not occurring. But before this happens, a lot of resources could be wasted and donors' enthusiasm for the scheme could dissipate. It is also possible that a significant shift away from hardware, with its longer effective life, towards recurrent cost items such as teaching supplies and textbooks, whose benefits disappear after a year or two if they are not replaced, will not occur so long as parents are uncertain whether the scheme is going to continue after a year or two.

A third possibility is that inputs into the education process other than classrooms and furniture are seen to be the responsibility of the central government. This leads to the last point, that the scheme in its present form may have taken too small a step in the direction of local autonomy to have a significant effect on educational quality. In effect, all the scheme does is provide villagers with extra funds to help finance expenditures they have been traditionally responsible for; it has not widened their area of responsibility. To make a real difference, it may be necessary to take a much larger step in the direction of local autonomy, e.g., by making it clear that the center will no longer take responsibility for the provision of teaching materials and textbooks (though it will make funds available for this purpose depending on need and will set standards and requirements), or by giving communities more of a voice in decisions about hiring, firing, and disciplining teachers.

One argument against this approach is that villagers are not capable of intelligently exercising such responsibility. Another is that they will not necessarily exercise this respon-

sibility in ways consistent with national goals—to unify the country and provide a basic education to all regardless of income. These arguments can be taken into account by setting standards and requirements that must be met to qualify for grants. Hopefully, the CEF will be able to experiment with somewhat larger steps in the direction of local autonomy once it demonstrates that the first small step it has introduced can be made to work. First signs from this evaluation of the pretest are promising.

Some Cross-cutting Issues

Comparisons and contrasts between these studies are difficult to derive because of their complexity and the special circumstances surrounding each. The best that can be done here is to consider what these studies say about a few of the issues that originally motivated this line of inquiry.[15]

The Value of a Comprehensive Analytical Framework

The studies clearly demonstrate the value of using a comprehensive analytical framework. Taken together, they provided at least some evidence for nearly all the linkages between the various boxes of Figure 1. They demonstrate that improvements in school quality can have indirect as well as direct effects on achievement, the indirect effects occurring because of the effect on participation (enrollment, attendance, and continuation), which in turn affects achievement. They demonstrate the important mediating effects that household characteristics such as income and parent education can have on educational outcomes in some circumstances. They demonstrate that these influences can be very different in different circumstances.

While the importance of demand as well as supply constraints was evident in all of the papers based on national surveys, it is interesting that it did not appear to be important in the evaluations of the SCF programs. Both found no problems in recruiting children for the new schools being established despite the very low levels of income in the villages in which SCF worked. This could be the result of a backlog of unmet demand because of the prior absence of schools in the area. Once this backlog has been satisfied, demand for additional places may no longer be that great.[16]

Indeed, if we had been able to start from scratch—developing our own national surveys and pilot studies—we would have taken into account many more variables from different realms. All the national surveys would have benefited from more information on school characteristics. The studies of specific interventions do a much better job at opening up the school box (in large part because they used qualitative as well as quantitative methods); but they would have benefited from more information on household and community characteristics.

Stakeholder Participation in Education Planning and Management

All the interventions covered in this review include greater stakeholder participation among their objectives, the long-term goals being to improve relevance and quality of education, build consensus for reform, encourage resource mobilization, and strengthen institutional capacity for sustained development. While there is some evidence of greater participation by teachers and school administrators, there is little evidence of significantly greater parent participation, and no evidence that the longer-term goals of participation are being achieved. Observers tend to attribute this situation to reluctance on the part of poorly educated parents to challenge teachers, limited understanding of what is needed to improve educational quality, and lack of local planning and managerial

skills. The studies in this program suggest that an additional factor may be failure to turn over sufficient effective authority to local communities to make a significant difference. This can be seen by contrasting the ICS and CEF projects with the two SCF projects.

The ICS and CEF projects require active school committees, collective decisions about what the funds they offer should be spent on, and partially matching contributions by parents. While these programs resulted in more funds being raised locally for schools, these are small steps in the direction of greater participation since villagers in these areas were accustomed to raising funds for local schools before these programs started. In the ICS case, once spending decisions were made, the ICS went into the market to purchase the required materials, a procedure encouraged by some village leaders to minimize mismanagement of funds. In contrast the CEF turned the funds over to local authorities, but with safeguards to ensure that they were used as planned. So far, the CEF approach appears to be working well. But in none of these cases is there any evidence that teachers are being held highly accountable for the achievement of their pupils. An important reason is that local communities have little or no influence over any decisions regarding teachers, their terms of employment, how they perform, or what they teach.

The SCF projects, while also requiring local funds for school construction, have gone further by actively involving villagers in the selection of teachers from the local community and in decisions about the school schedule and some aspects of the curriculum. The Mali program has taken an important additional step, requiring local communities to pay the salaries of these locally recruited teachers. The results in terms of increased participation and local accountability, while still modest, appear significantly greater, particularly for the Mali program.

These cases are important in helping to demonstrate that villagers can manage their own affairs to a greater extent than is typically assumed. But they also suggest that local communities often need help in doing so—in overcoming inertia, understanding what makes a school effective, designing a program to improve school quality and effectiveness, and in establishing mechanisms to instill trust and fairness. It should be possible to provide this help in ways that contribute to, rather than detract from, local empowerment. However, the evidence from these studies is limited. This is a topic that needs to be treated in both national surveys and pilot programs to a much greater extent.

Hardware Versus Software Versus a Balanced Package of Inputs

Hardware (construction/repair of classrooms, furniture, textbooks, and school supplies) is fairly easy to provide compared to software (teacher training, supervision, reform of teaching methods, and curriculum). But how much good can they do by themselves?

These studies provide some bits of evidence to answer this question. Construction/repair of classrooms and furniture can have an obvious and immediate effect on enrollment in villages where no school existed before or where existing facilities are extremely poor. But there is no evidence in this set of studies that the provision of such basic facilities, independent of improvements in other inputs, will improve academic performance.[17] The provision of textbooks by themselves—even without providing training in their use—appears to have promise, at least in very poorly furnished and equipped schools. The provision of additional teachers to reduce class size has also been shown to have a positive effect over certain ranges. The provision of in-service training (proxied by the number of workshops attended) and good supervision, appear to have very significant

positive effects—the SCF programs provide the most striking evidence of this. But as demonstrated by the SIP program, they must be applied steadily and continuously over time to have significant, long-lasting effects.

But each of these approaches, even when they appear to be successful in pilot programs, could run into diminishing returns after a few years of more general application. Efforts to improve school quality will fail to increase enrollment significantly if costs of sending children to school relative to family income are too high. Efforts to improve teaching methods are unlikely to have sustainable results if training is not carried to a point of mastery and if the examination system provides no incentive to use these methods. Children will have little incentive to become literate if they live in an essentially nonliterate community. In most cases, a package of inputs and policy changes will be necessary to make a critical, long lasting difference.

Implications for Future Research

The studies based on national surveys relied on existing materials. While they were useful in raising questions and generating new hypotheses for testing, their results are limited by the fact that data was not gathered specifically for their purposes. The data on school characteristics was particularly weak, forcing some analysts to rely on crude aggregates like the P/T ratio. Ideally, one would want to start from scratch, with the opportunity to collect substantially more school level information than was possible in these cases.

But in the end, just as laboratory studies are often required to confirm findings of epidemiological studies, pilot tests and detailed evaluations of existing programs are likely to be necessary to confirm results derived from national surveys and at the same time provide the level of detail needed by policymakers. The studies of interventions included in this series are generally quite rich in details and descriptions of what is actually going on. But even they are flawed in important ways. First and foremost, none of them, with the partial exception of the ICS study, include any baseline data. Had that been available, so that before-after as well as with-without comparisons could be made, the level of confidence in the results would have been far greater.

Second, again with the exception of the ICS study, none of the studies had the opportunity to randomly assign subjects to treatment and control groups. It is often assumed that randomization is not possible on political grounds, because of the objections that would be raised by those left out. But this study demonstrates that random assignment will sometimes be accepted as a fair way to decide who should be included and who left out when resources are insufficient to include everyone.

Third, future studies should try hard to include an even broader range of variables—not just better estimates of school inputs and household characteristics, but additional factors that the studies in this series did not, or only briefly, touched upon. With coefficients of determination generally below 50 percent, there are clearly many omitted variables; some of them are likely to be important for policy purposes.

One such set may be those related to health and nutrition. Pilot tests to determine the effects on achievement and attainment of providing simple health services or a noon meal in schools could be very productive. Another possible set of important omitted variables could be those related to desire or motivation to learn. While proxies for motivation that are independent of outcome variables like test scores are difficult to find, it could be interesting to determine whether variables that might affect motivation have an influence on educational outcomes. Ex-

amples are the extent of reading material in the home and the community, the educational needs of the jobs available to graduates, and a school atmosphere that expects and rewards hard work and achievement. Closely related are credit and scholarship arrangements for secondary school, since the availability of affordable places there may strongly affect the desire to do well in and complete primary school. Finally, more investigation is needed into the linkages between school outcomes and social and economic development. Except for small forays in this direction by the authors who considered the impact of schooling on wages, the papers in this series did not investigate these linkages. The private rates of return to primary and secondary education are high in many circumstances in Africa, but this is not universally true and there is some evidence that they have been falling. We also know that there are social returns to education—benefits to society that are not captured by individuals in the market place; but we know very little about how to measure them, let alone how other variables affect them.

Notes

1. This program was funded under an agreement between the Institute for Policy Reform and USAID. Supplementary funds were received from the International Insititute for Educational Planning, Save the Children Federation, and the Aga Khan Foundation. The Mason and Khandikar and Keolalikar papers were not funded by this program but were presented and discussed with the others in a workshop that took place in December 1996.

2. Formal discussants for the papers analyzing sample survey data were Paul Glewwe and Harold Alderman of the World Bank. Those for the impact evaluations were Hyacinth Evans, University of West Indies, Jamaica, and Elizabeth King and Charles Griffin of the World Bank.

3. Swanson, E. (1987). Achievement and Wastage: An Econometric Analysis of the Retention of Basic Skills in a Developing Country. (Unpublished dissertation) Buffalo: University of New York.

4. Ministry of Education (1993). General Report on National Survey of Teaching Practices, Student Achievement and Schoo Effectivenss, June, 1993.

5. Hanushek, E. A. and V. Lavy (1994). School Quality, Achievement Bias, and Dropout Behavior in Egypt. Living Standards Measurement Study, Working Paper No. 107. Washington, D.C.: World Bank.

6. In recent years the government has allowed the development of private secondary schools, but most observers believe that this has not significantly relieved the supply constraint for school places as yet.

7. The data gathered for the study of the Aga Khan program in Kisumu, Kenya, show the same thing.

8. More accurately, per capita household expenditures. But as expenditures are used as a proxy for household income, the latter term is used here.

9. Test scores and absenteeism may also have been positively affected by improved student health. To gain the cooperation of the control schools, all 14 schools were provided with health kits and some external assistance in their use. Anecdotal evidence suggests that these kits and services reduced the extent of worms, diarhea and infections. These improvements in health should have had both direct and indirect effects on test scores, by making children more alert and able to study and by improving attendance, in both sets of schools.

10. It is interesting to note that, in a similar program operated by this NGO in Lamu, Kenya, where improved infrastructure and textbooks but no uniforms, were provided, both enrollment and test scores (in this case KCPE scores) declined by about the same amounts in all schools, both program and nonprogram schools. The circumstances are quite different and the KCPE is not the best examination to rely on for this purpose. But these results add to doubts about the likelihood that the provision of a modest number of textbooks can, by itself, raise test scores over a brief period of time. See Ronald Ridker, “A Tentative Evaluation of the School-to-School Program in Lamu, Kenya”, report submitted to Internationale Christelijke Steunfonds Africa, 1996.

11. In Mali, the curriculum consisted of the local language, mathematics, general studies (em-

phasizing local conditions) and, from the third year on, French. In Malawi, it consisted of the local language, English, mathematics and general studies.

12. In Mali, since the language of instruction in government schools is French, it is not surprising that SCF students did better in the local language; but it is very surprising that in the fourth grade at least, they did better in French as well. This does not mean that SCF students know any French. The test required students to write down a sentence given to them orally. So it does at least mean that SCF students were more capable of transcribing phonetics to paper, even in a foreign language.

Another surprise pertains to a non-core subject—local knowledge—administered in Mali. While this subject was part of the SCF, but not the government curriculum, SCF students did slightly worse than government students. It could be that the subject was poorly taught in SCF schools, that the content was imparted to students in government schools although not taught as a specific subject, or that the test was poorly conceived or administered. But it is important to note that the local knowledge test was administered in the local language in the government as well as the SCF schools. Perhaps students in government schools would have performed better in other subjects as well had they been permitted to use their mother tongue.

13. It would be interesting to test this hypothesis by administering the arithmetic test to government school students in the local language and the local knowledge test to these students in French.

14. It is not self-evident that it will. Indeed, one explanation for the better performance of SCF schools is the possibility that, just because of the complete absence of schools before the program, a disproportionately large number of the children who enrolled in the SCF schools were bright and highly motivated. If that is the case, performance of the next cohort to enter these schools could be lower. On the other hand, teachers, if they stay on the job, will have gained significant experience and may be able to raise performance.

15. Several commentators suggested including a table for each outcome variable with columns for the various studies, rows for each of the factors included in Figure 1, and entries indicating the nature of the relationships found. After several tries, I decided not to do so because I could not figure out how to avoid excessive simplicity (which would not be fair to the authors) or over-complexity (which would not help the reader). To obtain a useful understanding of the findings, there is no substitute for a careful reading of the papers.

16. It is interesting to note that in Mali where the SCF program has been operating for over three years, no new cohorts of students have been enrolled. The reason for this in the face of the enthusiasm for the program to date is not known.

17. Case and Deaton’s evidence on this score pertains to the presence of specialized facilities like libraries and laboratories.