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**The Private Educational Sector
in Developing Countries**

**A Theoretical Framework,
A Case Study of Kenya
and Policy Implications**

**A Report Prepared for A.I.D.
by Estelle James, 1986**

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Introduction

Education, as a quasi-public good yielding both public and private benefits, can be financed through the public or private sectors. Even when financed publicly, it can be provided through private management. Thus, we observe a wide range in the public-private division of enrollments for both modern and developing countries. What factors account for these differences? How does the process of economic development affect the public-private division of responsibility for education and other quasi-public goods? Does the *raison d'être* for the private sector in education differ between modern and developing states? This paper investigates these closely related questions

Part I presents a theoretical framework for analyzing the role of the private sector in education. This framework, which is developed at greater length in another paper (James 1986a and 1986b), depicts the size of the private sector as determined by excess demand and differentiated demand for education and by the supply of nonprofit (religious) entrepreneurship in the society in question. This model leads to a number of predictions about the quantity of the private educational sector in modern versus developing countries. A corresponding set of predictions about quality are also explored.

Specifically, excess demand is more likely to be the source of private sector demand in developing countries, differentiated demand in advanced industrial societies. For reasons we shall discuss below, the former is likely to be concentrated at secondary and higher levels, the latter at primary and secondary levels. Private education in modern states is expected to be positively related to cultural heterogeneity and negatively related to quality of public education. Private education in developing countries, however, may be positively related to public sector quality and

negatively related to public quantity. In both cases, competition among religious groups for a larger market share of believers constitutes an important supply-side variable explaining the differential growth of the private sector. The direct impact of income and urbanization on private sector size cannot be predicted a priori because they may increase both total demand and public supply, hence opposing forces are present and the net outcome is an empirical question.

Part II presents empirical evidence from a sample of 50 modern and developing countries, all the countries for which data was available on private enrollments plus a large number of the explanatory variables. Results obtained to this point are consistent with the above predictions.

Part III uses a different approach, and presents a case study of the private education sector in one developing country, Kenya. In Kenya a large nongovernmental sector has developed at the secondary level, because the huge demand for education is only partially satisfied by government production and funding. I investigate the sources of private entrepreneurship and compare the public and private sectors with respect to various indices of quality and efficiency. Part IV concludes with a general discussion of policy issues in developing countries.

Part I. Determinants of the Private Sector in Education

The "percentage of enrollments that are private" at the primary and secondary levels for 50 countries are presented in Table 1. A wide range, covering the entire spectrum from 1% to 100%, is evident. More limited data at higher educational levels also show substantial dispersion.

How do we explain this great diversity? Is the choice of system by a

country a random event, or are there underlying forces which enable us to predict its choice? I argue that there are indeed underlying forces and in this section I summarize them in terms of demand and supply for private education.

Excess Demand and Differentiated Demand for Private Education

In a separate paper I develop more rigorously a model of demand-side forces which lead to the private provision of education and other quasi-public goods (James 1986a). I show there that two different patterns of private education have evolved, depending on whether it is motivated by excess demand or differentiated demand. These demand-side explanations view the private sector as a market response to a situation where large groups of people are dissatisfied with the amount or type of government production.

Excess demand for education exists when the capacity of the public school system, as determined by a collective choice process such as majority voting, is less than full enrollment. Weisbrod (1975) set forth this idea in earlier work on the nonprofit sector and I develop it for the cases of uniform tax shares, varying tax shares, equal and unequal production costs for the two sectors. Assuming for simplicity that public financing implies public production and that people are risk-neutral, the basic idea is that people will vote to expand the public school system so long as their expected (external plus private) benefits from expansion exceed their tax shares and these benefits cannot be purchased more cheaply in the private market; that is, so long as $T_i \leq (EXTB_i + \frac{b_i}{n})$ and also $T_i \leq (EXTB_i + \frac{P}{n})$, where:

n = the number of families in the population, each having 1 child

T_i = the i^{th} family's tax cost for each marginal public school place

$EXTB_i$ = the expected external benefit to family i of each marginal public school place

- b_i = the private benefit of school attendance by the i^{th} child
- b_i/n = the expected private benefit to family i of each marginal public school place, assuming everyone has an equal probability of enrollment
- P = tuition, which covers the cost of 1 place in private school

If the majority of voters (or the dominant political group) choose a public school system which is large enough to accommodate the entire population, n , there is no left-over demand for the private sector. On the other hand, if the majority prefer a smaller public sector, some people with high b_i may be left out and will enter the private sector. These two situations are depicted in Figures I and II.

This model leads to the conclusion that people will vote for public production over private because of the possibility for redistribution in kind of internal or external benefits, and the public sector will be larger if more people perceive this advantage.² On the other hand it will be smaller if, for many people, tax shares exceed their direct and external benefits, hence they are "redistributed away from" by government provision. In addition, people will tend to prefer a small public sector if public production is more costly than private production, i.e., if $\sum T_i > P$, due, for example, to bureaucratic rules, above-market civil service wages, and the deadweight loss from taxation. Kenya is a good example of a country where the ruling coalition has chosen a relatively small public secondary system but the high benefits and low cost of private education have led to a rapid growth of non-governmental "harambee" schools in the last two decades.

A second demand-side model views private production as a response to differentiated tastes about the kind of service to be consumed. The private sector would then grow larger if people's preferences with respect to product variety are more heterogeneous, intense, and not accommodated by

government production. I postulate that the most important taste differences are not individual but are due to deep-seated religious and linguistic differences that concern group identification.

Economic models usually assume that local governments provide quasi-public goods, that people will move to a geographic community offering the kinds of services they prefer, and those with like tastes will therefore congregate together to get the product variety of their choice. The greater the local control that is permitted the smaller the differentiated demand for private education would be. Switzerland is an example of a country with great linguistic differences and local control over public schools that accommodates these differences. However, the barriers to mobility often stop this process at a point where considerable heterogeneity still exists within a local political unit. Yet, economies of scale and standardization or other political constraints prevent the government from satisfying this diversity. Private production is then based on a "community of interest" rather than a geographic community and constitutes an institutional mechanism for responding to diverse tastes without incurring movement costs or overcoming other movement barriers. For example, private school clients may share a preference for a particular type of service, even though they wish to live in different neighborhoods for other reasons. Each private school then has a homogeneous "label," and heterogeneity occurs across schools, in contrast to the public sector, which has unlabelled mixtures within each school. Holland and Belgium are examples of countries where religious and linguistic differences have been accommodated in large private sectors.

Supply Side Explanations and the Theory of Nonprofit Organizations

Private schools are usually established as nonprofit organizations (NPO's), i.e., as organizations which cannot distribute a monetary residual.

Indeed, nonprofit status is often a legal requirement for educational institutions, particularly for those which receive government subsidies. Even if not legally required, nonprofit organizations may have lower cost functions due to donated capital, hence may effectively compete with government services when profit-maximizing enterprises could not. The availability of nonprofit entrepreneurs, then, may strongly influence the growth of the private educational sector. It thus becomes necessary to ask: what are the motives of the founders (in the absence of a profit motive and reward), why do nonprofit founders often enter the education industry, and what factors determine their availability in a region?

One potential motive for founding private schools and universities is the possibility of earning disguised profits, status or prestige. The opportunities for earning disguised profits seem particularly prevalent in excess demand countries, where profit-making and nonprofit schools often co-exist. Status and prestige are commonly associated with nonprofit entrepreneurship and philanthropy in the U.S. and other Western countries.

However, another motivation seems much more potent. We observe that most founders of private schools (and other NPO's) are "ideological" organizations--political groups (as in colonial countries such as India and Kenya before independence), Socialist labor unions (as in Swedish adult educational associations), and, first and foremost, organized religion. We see this in the origin of many private schools in the U.S. and England, Catholic schools in France and Latin America, Calvinist schools in Holland, missionary activities in developing countries, services provided by Moslem waqfs (religious trusts), etc. Usually these are proselytizing religions, but other religious/ideological groups often start their own schools as a defensive reaction (e.g. the "independence schools" in Kenya and the caste-

dominated schools in India were started partly to provide an alternative to the Western mission schools). I argue that these nonprofit founders concentrated on education because schools are one of the most important institutions of taste formation and socialization. The nonprofit form was chosen because their object was not to maximize profits but to maximize religious faith or adherents, a goal which was often not compatible with profit-maximizing behavior.

These religious or other ideological schools have several advantages which enable them to compete with government schools and undercut their secular profit-maximizing rivals. They start out with a core of believers as a "captive audience" of customers, they may charge a price below the profit-maximizing level in order to attract new members, they often have access to low cost volunteer labor (e.g. priests and nuns) and donated capital from the parent organization, which helps them to get started and to cover periodic deficits. Their lower cost and potentially more rapid supply response mean that excess or differentiated demanders are more likely to find an outlet in the private sector in countries with strong independent proselytizing religious organizations competing for clients, and I test this hypothesis below.

Some Predictions About Quantity

What does this demand and supply model imply about the quantity of private versus public education in modern and developing countries?

1. At the start of an educational system, before the benefits of formal education are widely recognized, it is certainly possible that the median voter or dominant political group may prefer government production of zero. "Excess demand" is then total demand minus a zero public supply. Private schools will be started by people or organizations who perceive

benefits from educating (and shaping) others and used by those people who perceive benefits from being educated themselves. While this paper does not study the historical development of private schools rigorously, impressionistic evidence from many countries is supportive. For example, we had church-run schools in the Middle Ages before strong secular states existed, private tutors in wealthy European families, voluntary religious or proprietary schools in early nineteenth century U.S. and U.K., terakoya schools in Tokugawa Japan. In colonial countries in the 19th and early 20th century, public education was provided only to the limited extent that the ruling group (i.e. the foreign power) received net benefits. The indigenous population, however, often perceived high marginal returns to education. The resulting excess demand was accommodated by (private) missionary societies which were frequently the main or only source of formal schooling.

2. Public schools will be started when this is seen to be in the interest of the median voter or the group with dominant political power, i.e., when this group feels it will receive a redistribution in kind from public education. For example, when colonial countries became independent political power shifted to an indigenous group which made a different benefit-cost calculation that often resulted in more public education. However, public schools do not immediately have full-enrollment capacity, i.e. the capacity to accommodate everyone who wants to attend. In developing countries today, the private return to education is high in the growing urban areas but perceived as low in rural areas. In addition, the urban upper class may be unwilling to subsidize a large public sector from which others will benefit. A coalition of low demanders and high taxpayers, in the face of the relatively high cost of government production (see James, 1987), may effectively restrict the supply of public schools, leaving an

excess demand for the private sector that co-exists with positive production in the public sector. Excess demand is thus seen as a major *raison d'être* for the private educational sector in developing countries.

3. I hypothesize that this coalition of low demanders and high taxpayers will be strongest at the secondary level. At the primary level, where private benefits are substantial in rural as well as urban areas and where externalities are most often perceived, the group of low demanders may be relatively small. At the university level, high (wealthy) taxpayers may be willing to pay a disproportionate amount of the public bill, in those cases where they also get disproportionate access. At the secondary level, however, rural benefits may be lower and costs per student higher than for primary and access not as income-biased as for the university level; hence the low demanders and high taxpayers may constitute a dominant coalition. At the same time, many urban middle and working class families are anxious to send their children to secondary school, even if they must pay themselves. By the above reasoning we would predict that the private sector will be relatively small at the primary level, much larger at the secondary level, and very variable in size at the university level in developing countries where excess demand is the moving force.

4. If the median voter prefers a larger public sector as incomes grow, because higher incomes lead to a higher valuation of b_i and $EXTB_i$, full enrollment capacity will be approached. Most modern industrial states do indeed guarantee a place for everyone in their public schools, particularly at the lower levels. Excess demand cannot be the motivation for the private sector in these societies. Instead, private education is a response to differentiated demand, a preference for a type of education different from that provided by the state, and I would expect it to be a positive function

of the cultural (linguistic and religious) heterogeneity in a society.

5. Desire for culturally homogeneous grouping is likely to be greatest at the primary level, for this is the age at which linguistic ability and religious identification develop, and values are formed. It is also true, however, that residential segregation in public systems may accomplish this purpose better at the primary than the secondary level, since the catchment area is often larger for the latter. The first of these forces leads to demand for private schooling at the primary level, the second force leads to demand for private schooling at the secondary level, so private sectors at the primary and secondary levels are hypothesized to be close in size in heterogeneous modern industrial societies where differentiated demand is the *raison d'être* for private education.

Quality and the Quantity-Quality Trade-Off

Another source of differentiated demand is the demand for superior quality. Our earlier discussion about the choice of public school capacity assumed that quality was fixed. Actually, quality is a variable which parents and students take into account in their choices and societies face a quantity-quality trade-off. I argue that this choice for the public system has different implications in modern and developing countries and also, ultimately, determines the quantity and quality of the private system.

Before we can explore this relationship, however, we must define "quality." School quality can be measured in at least five different ways:

1) Revealed preference of consumers. If we make the usual assumption that consumers have full information and choice, this is the most accurate measure; however, economists often argue that these assumptions are not satisfied for education.

2) Expenditures per student. This input-based measure of quality is

used when preferred output measures are not available. However, input and output may not be correlated if some inputs have a low marginal productivity, as evidence indicates is the case in education or if some inputs are priced below market as in religious schools.

3) Value (prior learning and ability) of student input. This measure recognizes that students are the major input into their own and their peers' educational production function and that the best predictor of the output of a school is the quality of its student input.

4) Gross output, i.e. indices such as academic achievement and/or earnings of the graduates of the school, without adjusting for its student input. Since a main determinant of gross output is student input, this obviously overestimates the contribution of the school.

5) Value added, i.e. gross output minus the value of its incoming student input. This is the measure of quality we would most like to have, but it is the most difficult to obtain and it is certainly not available for my sample of 50 countries.

Unfortunately, theory does not allow us to make any firm predictions about the relative value added in public and private schools. It does allow us to make some predictions about the other four quality measures, however, so I shall concentrate on them in the following pages.

Which is the Higher Quality Sector?

In both modern and developing countries, some people may choose private education because they believe it is better than public. However, the private sector is not invariably the preferred sector. In particular, in many developing societies where private schools accommodate the excess demand and where academic selection criteria are used in the public sector, government schools may be considered higher quality than most private

schools, using measures such as revealed preference of consumers, expenditures per student, selectivity of student input, and gross output.

On the other hand, in modern societies with open access public systems, private schools must be considered at least as good as public schools along some relevant dimension, by their clientele. Revealed preference indicates a perceived quality advantage for private schools where students are paying more than it would have cost to attend an available public school alternative. For some, the relevant quality dimension will be ideology, for others, academic superiority. In the latter case, student input and gross academic output will also be higher in the private sector. We would therefore expect to find systematic differences in the pecking order of public and private schools in modern and developing societies.

This difference may be analyzed more rigorously by assuming that each country has a total public educational budget, $EDBUDG$, which depends on the income, taxes and taste for education of its median voter or ruling group. Assume further that "quality" depends on expenditure per student (PSS) and characteristics of its student peers. Since $EDEUDG = Q \cdot PSS$, for any given $EDEUDG$ a country can choose to satisfy the entire zero-price demand publicly, allowing quality to fall to $EDEUDG/n$, possibly leaving some unsatisfied demand for quality; or it can choose to spend more on public quality (PSS), less on quantity (Q), leaving some unsatisfied demand for quantity (as discussed above). (As a third alternative, the country can raise its $EDEUDG$ and provide more quality as well as quantity.) These choices are depicted in Figure III.

Country A has chosen to limit the size of its public system. This allows it to spend more per student and, in addition, if academic rationing criteria are used it also secures a better student input. Both these

factors lead the public sector to become the superior sector, as measured by factor inputs, student input, gross output and, consequently, consumer preference. A large private sector may then develop serving as an "escape valve" and accommodating the excess demand. This pattern obtains for higher education in countries such as Brazil, the Philippines and Japan and for secondary education in Japan and Kenya.

Country B, on the other hand, has opted for high quantity which, for a given EDBUDG, implies a lower PSS. Both the lower PSS and the less selective student input imply lower gross output and lower ranking in consumer preferences. If excess demand still exists, some inferior private schools may spring up to absorb it, but we will also find superior selective private schools in this case, for those who are willing and able to pay for quality. The decision by this group (which presumably has high academic ability and motivation) to opt out of the public sector diminishes its quality still further. Thus, because of adverse selection in the absence of a public school monopoly, public quality declines even more than PSS, to a point such as E. Countries such as India and Brazil at the secondary level, Peru and Colombia at the higher level, probably fit this description. It is not uncommon to find that a country has chosen pattern B for its primary and secondary schools and pattern A for its higher education. In such a case, one incentive for paying for superior private secondary education is the access to free tuition superior public higher education.

Now, each of these patterns has very different implications for the distribution of educational benefits. Pattern B is likely to result in greater use of the public system by the working class; pattern A in greater relative use by the upper class, who have a higher probability of acceptance into a selective system due to their household human capital. The upper

classes increase their advantage still further if pattern B is adopted at the secondary level, A at the higher education level. The political power of and coalitions formed by different groups, then, determine the quantity-quality combination as well as the total EDBUDG chosen by each country (see James and Benjamin, 1987).

Until now we have been discussing the situation in developing countries. Modern industrial countries, in contrast, are always operating at quantity n (full enrollment), at least in their primary and secondary school systems. Different modern countries have chosen a different EDBUDG and therefore a different PSS, moving along line nCD . Again, people who are dissatisfied with public quality can opt out, and all those in the private system have voluntarily done so, despite the higher price they must pay. Thus, those private schools which exist are, by revealed preference, considered higher quality by their customers; while, as we have shown, in developing countries characterized by excess demand, the public schools may well be considered best.

Impact of Public Quality on Private Quantity

Along similar lines, a change in public school quality may have a very different impact on private sector size in modern and developing countries. Where there is no excess demand (public school capacity maintained at n), a higher PSS does not affect the supply of public school places, but necessarily implies a higher EDBUDG (e.g. a movement from point C to D), and hence should unambiguously reduce the demand for private education from those who have opted out seeking quality. In contrast, in excess demand countries, where there is no commitment to maintain public school capacity, two forces are at work: A higher PSS decreases the number who choose private schools for quality reasons; however, if EDBUDG is held constant,

greater public quality implies lower public quantity supplied, and this increases the excess demand for private education. Since people who are willing and able to pay for quality when a free public space is available probably constitute a small proportion of the population, and since selective "elite" schools are, by definition, in short supply, I postulate that quality-motivated private sectors will tend to be smaller in size (although possibly larger in socio-economic power) than excess-demand-driven private sectors.

Consequently, public quality will be positively related to private sector size when EDBUDG is held constant but public sector capacity is not (as could easily happen in developing countries), and negatively related under the opposite conditions (in most modern countries). In other words, higher quality in the public sector does not necessarily bring about a smaller private sector in developing countries, as we would expect in modern countries. I would also expect the private demand for quality to be greatest at the level where it will have the highest return, i.e., where it will most influence access to further education and desirable jobs. For this reason, in modern societies the negative impact of public PSS on private enrollments is likely to be larger at the secondary and higher levels than at the primary level.

Relative Costs: Quality versus Efficiency

One final note on quality: While the public and private sectors thus vary in relative quality as measured by consumer preferences, student input and gross output, depending on the capacity, funding and selection criteria of the public system, my research indicates that the private sector invariably costs less than the public, i.e. $P/n < \text{average } T_1$. In the countries which I have visited for case studies (Australia, Japan, Kenya, India,

Colombia, Holland, Sweden, as well as the U.S.) most private schools (except those which are heavily or fully subsidized by the government) spend less per student than the average for government schools in the area. This is true even for countries whose private sectors are considered "superior" (e.g., for costs of elite Latin American private universities see Levy 1986, p. 282).

How do we explain this phenomenon? My research shows that we can decompose this cost difference into three parts: the first part due to a cheaper product mix (e.g. fewer laboratory courses are taught); the second part due to a lower input output ratio (e.g. larger classes); and the third part due to donated capital, volunteer labor and lower salaries (e.g. more extensive hiring of women and part-timers) which subsidize the consumers of private schools. To the extent that the lower PSS indicates greater donated services or efficiency in achieving desired outputs, the model in Part I would use this as a rationale for private sector growth. To the degree that it indicates unobservable lower quality, however, it would have the opposite effect. Until we can adequately measure student input, hence value added, we cannot make this distinction. My detailed study for the case of Japan (James and Benjamin .7) suggests that both greater efficiency and lower quality may be involved.

We can, however, predict that, if inputs are used as a proxy for quality by consumers, private schools in modern countries with open access systems will be forced by competition to keep their PSS closer to that of public schools, than will their counterparts in developing countries with excess demand. Also, if labor market imperfections are less pronounced in modern countries, this too will diminish the potential wage advantage of their private schools. Hence, by the factor input measure, too, low quality

private schools are predicted to be associated with developing more than with modern industrial societies.

Part II. Empirical Results -- Large Country Set

Methodological Problems

My object was to explain the percentage of enrollments that are private (%PVT) in different countries and to explore whether different forces are at work in modern and developing states. My sample consisted of 50 countries-- 12 modern and 38 developing--the largest number for which I could get data on most essential variables. For some regressions, this was increased to 14 modern and 48 developing countries. The analysis was conducted separately for primary and secondary education; data from a sufficiently large sample at the higher level was not available.

The first problem we encounter is that the definition of "public" and "private" is by no means an unambiguous concept in a situation where many "private" schools are heavily funded and regulated by the state. State subsidies can cover as much as 95% of total expenses, particularly in modern countries, and government control over hiring and firing of teachers, salaries and student admissions criteria often accompany these subsidies. Thus, we really have a continuum of public and private funding and control, with different countries representing different points on this continuum.³ In my statistical work "private" is taken to mean those situations where some elements of non-state funding and control remain, even though varying amounts of government subsidy and regulation may also be present.

The second problem we encounter is that data gaps make it impossible to include all of the important variables. For example, the model presented in Part I suggests that we need information on quantity and quality of

education demanded; the degree of cultural heterogeneity within the population including the intensity of their religious and linguistic preferences; the quantity and quality of public schools as well as their religious and linguistic identification; the availability of educational (ideological) entrepreneurs; the relative costs of public and private education; and the degree of government subsidy of private schools. In practice, this data is exceedingly difficult to obtain and the accuracy of some of the data obtained is open to question. In particular, cost and quality measures are not generally available. I ended up, therefore, with a kind of simplified reduced form equation that undoubtedly omits some important variables. These omissions will be noted below in my interpretation of the results.

Data gaps also led to my small sample of countries, which poses obvious problems, such as the difficulty in obtaining significance and the probability that an outlier can strongly influence results. My modern country sample is particularly small in absolute terms, although it constitutes a high proportion of such countries.

Another problem concerns our inability to model public sector behavior, including the response to increased demand stemming from higher per capita income. I could model this for particular countries based on my knowledge of their public finance system (see James 1986b), but not in a general way. This makes it difficult to predict excess demand and to distinguish empirically between excess demand and differentiated demand countries.

Nevertheless, despite all these problems, some conclusions do emerge.

Independent Variables

The main independent variables included were: per capita income and degree of urbanization as demand-related variables; recent change in per capita income and urbanization as possible indicators of (temporary) excess

demand; indicators of religious and linguistic heterogeneity as proxies for differentiated demand and private supply; and dummies for different regions, intended to capture historical or other country-specific effects. Other variables that were available for smaller subsets of countries will be noted below.

I had my strongest prior about the positive impact of the religious variable, based on the theory described in Part I, my case studies and my previous statistical analyses of cross-sectional differences in %PVT within countries (James, 1986a). Five alternative religious variables were used:

1). REL, an index of religious heterogeneity developed by Theill (1972) and used by Hansmann and Quigley (1982).⁴ Specifically, $REL = \sum P_i \ln(1/P_i)$, where P_i = proportion of the population constituted by religion i . If everyone in a country belongs to the same religion, $P_i = 1$ and $REL = 0$. As the number of religions grows, so too does REL, as an index of religious heterogeneity. The index is highest when the population is equally divided among a large number of religions. Obviously, this index is sensitive to the fineness with which one disaggregates various religions. I used all the sub-categories found in my data source which constituted more than .1% of the population. My expectation was that the greater the index of religious heterogeneity the greater the competition among them for market shares, with schools as their major instrument, and hence the higher the %PVT. This combines both demand-side and supply-side effects.

2). My second and third religious variables were % Christian (CHR) and % Catholic (CATH). I expected these, too, to have a positive impact, since Christianity is one of the main proselytizing religions in the world (Islam being the other) and the Catholic Church has its own educational system in many countries.

3). My fourth and fifth religious variables were NCHR and NCATH, where

NCHR = CHR or (1 - CHR), whichever is smaller, and similarly for NCATH. These two variables are an attempt to measure the competitive position of Christianity and Catholicism, the idea being that Christians (or Catholics) will have larger private sectors if they are a large minority or a small majority. If a country is predominantly Christian (or Catholic) there is no need for them to have a large private sector for proselytizing purposes; in fact, they often control the public schools in such cases.

These five religious variables were tested separately, because of multicollinearity between them. I expected REL, NCHR and NCATH to be more significant than CHR or CATH, because they better capture religious competition, although I predicted that all these religious variables would have a positive sign. Furthermore, I expected these demand-side and supply-side effects to hold in both modern and developing states.⁵

Linguistic heterogeneity, LANG, was measured parallel to REL, as $\sum P_i \ln 1/P_i$, where P_i = proportion of the population speaking language i . This was expected to be positive, particularly in modern countries, where cultural heterogeneity was postulated to be the demand-side basis for private schools. For some subsets of countries, REL + LANG were added together into a single index of cultural heterogeneity, RELANG, and this was expected to have a strongly positive effect.

In contrast, I could not a priori predict the signs on per capita income (PCI) or urbanization (URB). Ceteris paribus, one might expect that PCI and URB would serve as indicators of gross demand for education in developing countries and ability to pay for differentiated or higher quality education in modern countries, both implying a positive relationship between PCI or URB and %PVT. This would hold under the assumption that the public sector does not respond to the differentiated tastes or greater demand of its

wealthier inhabitants. In cross-country comparisons, however, this key assumption may not hold. Instead, the political forces within wealthier and more urbanized countries may lead them to provide more and higher quality education collectively, through their public schools, thereby leaving a smaller role for their private schools. Thus, until we can model public sector behavior with greater precision, we cannot predict whether PCI and URB will be positively or negatively related to %PVT in international comparisons. In fact, the empirical results can be interpreted as telling us how the public as well as the private sector responds. The same reasoning applies to the effect of changes in PCI and URB ($dPCI$ and $dURB$). However, the private rate of return to education, which was available for 16 developing countries, was unambiguously expected to have a positive sign.

I also wanted data on degree of government funding of private schools, a practice which, as noted above, is quite common. Impressionistic evidence indicates that substantial government subsidies are usually found in countries with large private sectors, so this variable cannot be ignored. Unfortunately, data on educational subsidies are not readily available for large sets of countries. However, for the modern countries I was able to differentiate between those which offer almost full subsidies versus those which offer little or no subsidies and I included a dummy variable NS, for the latter. It is, of course, predicted to have a negative effect. While I treat NS as an independent variable determining private sector size, an argument could be made for the reverse causation, or both could be a response to a more basic set of factors such as political pressures from private suppliers and their customers.

Ethnic diversity (ETH), defined analogously to LANG, and the GINI coefficient were also tested as heterogeneity indicators but these variables

were not available for all countries and were generally not significant in regressions for smaller subsets, so they are not reported in the section on empirical results given below.

Regional dummies were included to account for historical or other country-specific effects. Only two of these proved to be significant: a dummy for modern countries (MD) and one for Latin American countries (LAD) and these will be discussed below.

The most important omitted variables concern cost and quality in the public and private sectors. As discussed in Part II, I expected to find concern about the "low quality" of private schools and the low quantity of public school places in many developing countries (i.e. those which have followed pattern A with a limited public system), while modern countries will be concerned about their "low quality" public schools and the high numbers who opt out to private schools. One has only to peruse the popular press in both modern and developing countries (e.g. the U.S., U.K., Australia, Kenya, Philippines, India) to find supporting evidence, but unfortunately, the available data does not allow me to test this hypothesis rigorously.

I also expected public PSS to have a negative sign in differentiated demand (modern) countries and a positive sign in excess demand (developing) countries, especially at the secondary level. I did, indeed, get negative results in intra-country comparisons for secondary education in the U.S. (differentiated demand) and positive results for Japan (which is actually an excess demand country, albeit a modern one; see James 1986b, James & Benjamin 1987). I am now attempting to get data on PSS and EDBUDG for a large set of countries, which would allow me to test this hypothesis across countries. As noted below, its omission may help to explain the sign on

some of the included variables, such as PCI and URB.

Results

Primary and secondary levels compared. What did I find? My main results are presented in Tables 2-6. First of all, the fact that the proportion of variance explained is much higher for modern than for developing countries suggests that different forces are at work in these two subsets and is consistent with my stated difficulties in modelling excess demand. Second, %PVT was indeed higher at the secondary than the primary level overall, and particularly for the developing country sub-group, as expected. %PVTPRI and %PVTSEC were closer to each other and more highly correlated for modern industrial countries, as expected. Specifically, for the 12 modern industrial societies, the median %PVTPRI = 12.5, %PVTSEC = 13.5, the ratio (%PVTSEC/%PVTPRI) of the median country = 1.25 and the R^2 between them = .88. For the 38 developing countries, median %PVTPRI = 11, %PVTSEC = 27.5, the median ratio = 1.85 and R^2 = .25. The means are much higher--24.8 and 26, respectively, for modern countries, 16.1 and 31.2, respectively, for developing countries--because of a few countries with very large private sectors. However, the predominance of private education at the secondary level as compared to the primary level in developing countries, and their similarity in advanced industrial states remains, regardless of which measure is used.⁶

The high correlation between %PVTPRI and %PVTSEC and their similar explanatory structures in modern countries meant that I could combine the two, using "percentage of enrollments in primary and secondary schools that are private" (%PRVPRI+SEC) as my dependent variable, which allowed me to increase my modern sample to 14 for some regressions.

Religion. Most striking is the consistent significance of the

religious variable--whether one is talking about the developing countries, the modern countries, or all 50. This is consistent with my hypothesis that differentiated demand stems heavily from religious identification and religious entrepreneurship is serving as an important supply-side variable in all cases. It is also consistent with my earlier analyses of intra-country differences in %PVT where variables such as CATH played a key role (James 1986a and 1986b).

My five religious variables were used as alternatives and were usually significant or close to significance. The "best" religious variable, in terms of significance and percentage of variance explained, depends on country subset and level of education. However, NCHR or NCATH generally yield the highest R^2 , and REL has the highest elasticity of response, evaluated at the means. This lends credence to my argument that we are observing a supply-side as well as a demand-side phenomenon, that competing religious groups are using the schools as an instrument for increasing their market share of believers, and that religious competition may also stimulate intensity of preferences among consumers.

These results hold generally for the 50 country sample and the developing country subset. Given the very small size of my modern country sample (12) it is hard to get significance, although REL comes close. When the sample is increased to 14, however, REL is usually significant, and equations with REL yield the highest R^2 .⁷

While this religious competition effect thus holds for both modern and developing countries, there is an important difference between the two. In modern countries the supply-side influence came from indigenous sources who were competing with each other for clients, while in developing countries much of the original entrepreneurship came from abroad--foreign missionaries,

who were exporting Western values through their control of the schools.

Language. The impact of LANG is more uneven. Although almost always positive, it is highly significant only for the modern countries (primary level and primary plus secondary combined), mostly insignificant for the 38 developing countries, sometimes significant for the 50 country sample. This is consistent with my expectation that linguistic heterogeneity plays a more important role in modern countries, especially at the primary level, where culturally differentiated demand is postulated to be the *raison d'être* for the private sector. If we add REL and LANG into a single RELANG index of cultural heterogeneity, RELANG is significant for the modern countries and the 50 country set. Indeed, for the 14 modern countries, those above the median for RELANG were also above the median for %PVT, with only one exception.

The insignificance of LANG for developing countries is interesting in view of their great cultural diversity, stemming from tribal and ethnic differences. The average LANG index is twice as large in developing as in modern countries but it has very little effect on %PVT. This may reflect the fact that many of these are new countries trying to establish their national unity by suppressing tribal and linguistic differences, and governments might actively discourage private schools that kept these differences alive (just as the U.S. discouraged the development of private schools and favored the "common school" to serve as a great melting pot for immigrants in the later nineteenth, early twentieth centuries). The unimportance of LANG did, however, allow me to increase my sample to 48 developing countries, including 10 African countries for which I had all other data except LANG. The results for the 48 country sample were similar to those for the 38 country sample, evidence that they are likely to remain robust as

new countries are included.⁸

PCI and URB. These were run together as well as separately, to take account of the multicollinearity between them. Since the results were similar, only equations with both PCI and URB are presented. In contrast to the positive effect of religious and linguistic diversity, PCI and URB are generally negative but only URB is often significant. This suggests that, as income and urbanization increase, a collective decision is made to increase the EDBUDG, hence the quantity and/or quality of the public educational systems, thereby leaving a smaller role for the private sector. The negative effect of URB appears particularly for developing countries at the secondary level, consistent with our hypothesis that excess demand is initially concentrated there and eventually declines with economic growth. When I substituted dPCI and dURB for PCI and URB I obtained very similar results in terms of R^2 (slightly higher), coefficients and pattern of significance, except that the negative impact of dURB was even more marked than that of URB. For simplicity, only the results with PCI and URB are presented in my Tables.

These results contrast with my earlier analyses of geographic differences in %PVT within a given country, where I found that income and urbanization had a positive effect. The implication is that, within a given country, wealthy urbanized localities are often constrained by central decisions and are unable to respond through the public sector to the higher demands for education of their wealthier constituents, who therefore turn to the private sector, while across countries this constraint does not hold. That is, entire countries can adjust their public supply while local communities cannot. The U.S. is a counter-example of a country with great local control, which should diminish the role of the private sector; how-

ever, this is the exception rather than the rule.

Modern Dummy. In the 50 country sample, the positive "modern dummy" (MD) offsets the negative effect of PCI and URB. For example, in equation (5) evaluated at the mean values of PCI and URB for modern countries, the negative effect of URB and PCI is $22.5 < 25$ (MD) at the primary level, $37.7 > 26.8$ (MD) at the secondary level. This is consistent with the observation that the average %PVTPRI is greater in modern countries while the average %PVTSEC is greater in developing countries. (When MD is taken out of the equation, the coefficient on PCI becomes positive.) The positive MD may reflect the fact that, for the modern countries, differentiated demand for private education is playing a larger role (e.g. LANG has a much larger coefficient). Also, for historical reasons, high spending wealthy countries may subsidize their differentiated private schools, thereby helping them to stay alive. Developing countries may or may not follow a similar path in the future, as their incomes grow.

Rate of Return. I also hypothesize that private sector demand in developing countries might be a positive function of the private rate of return. A high rate of return indicates a high private benefit to education which has not been depressed by a large supply of public school places. Data on the private rate of return to secondary education (RRSEC) was available for a subset of 16 developing countries upon which I tried to test this hypothesis. In bivariate and multivariate regressions, the private rate of return was significant at the 10% level, and %PVTSEC goes up one point for every percentage point increase in RRSEC. Given the small sample size, this may be taken as moderate evidence of the excess demand motive for private education.

NS. For the modern country sample I was able to include NS, a dummy

variable indicating countries that offered little or no subsidies to their private schools. This had the expected negative sign, next to LANG had the highest simple correlation with %PVT ($R^2 = .19$) and was sometimes significant. Among the top half of the 14 countries in %PVT only one, the U.S., had NS, and its implicit tax subsidies are arguably quite large. The simple correlation between %PVT and NS combined with the lack of significance when other variables are added is consistent with our observation that the subsidy itself may be endogenous, a response to the same factors that explain %PVT (e.g. political pressure from religious groups), so it is an "effect" as well as a "cause."⁹

Country Specific Effects. I also tested for country or region-specific (historical) effects in several ways. I added regional dummies (e.g. Africa, Asia, Middle East, Latin America, Modern Countries) to my equations for the 38 country and 50 country samples and I ran separate regressions for some of these regions. The fact that the R^2 was much higher for regional groupings than overall is some evidence for the existence of historical effects or other region-correlated variables or interaction terms that I did not include in my larger samples.

I have already noted the impact of the modern dummy. The only other regional dummy that was generally significant in my 50 or 38 country samples was the one for Latin American (LAD). This is interesting because Latin America is also the only developing region which is heavily Christian and Catholic. For the other developing countries, REL is positively correlated with CATH and CHR, but for Latin America they are negatively correlated. Thus, these variables will give very different predictions for Latin America; the signs and significance of LAD and some of the religious variables interact.

Specifically, Latin America has a smaller private primary sector than one would predict on the basis of its high CHR, and a larger private secondary sector than one would predict on the basis of its low REL. The latter is possibly due to the fact that many Latin American countries do not have legal proscriptions against profit-making schools, and many profitable proprietary secondary schools have been established. The former suggests that CHR exerts a strong positive influence on the supply of private education in the rest of the developing world, where CHR is a minority, but does not exert that influence in Latin America, where it already dominates. Perhaps for a similar reason, CATH had a significantly negative impact on %PVTSEC in separate regressions for the 17 Latin American countries: There is less religious competition, hence less need for a large separate Catholic school system, in a country where Catholic influence is already extremely strong. Both these results are consistent with my hypothesis that NCHR and NCATH generally explain %PVT better than CHR and CATH, with the empirical observation that NCHR and NCATH are always significant whether or not LAD is in the regression, and with my interpretation that we are dealing with a supply-side as well as a demand-side phenomenon.

To further test my results and to investigate, in particular, the existence of country-specific (historical or policy) effects, I ran my regressions for 34 of the 38 developing countries for which I had data on %PVT for 1965. I then calculated the residuals for each country and reran my regressions for 1975 with the residual as an additional variable. Not surprisingly, the R^2 was much higher than before, especially at the primary level, and the residual was always highly significant; the religious variable was more significant as well. In my earlier analysis of differences within countries I also found evidence of historical legacies. This

suggests that special forces which are relatively invariant to time are at work in each country, affecting %PVT. For example, in some countries the private sector may remain from an earlier period and/or may be actively encouraged by government subsidies and other public policies; but these do not eliminate the separate explanatory power of the variables we have already discussed. The fact that the residual is carried over from 1965 to 1975 with a coefficient of .9 and "explains" much of the variance in %PVT 1975 at the primary level, but less so at the secondary level, is consistent with the hypothesis that excess demand is operating and changing (in ways that we have not fully captured) for the latter. These results are presented in Tables 6A and 6B.

Summary

The equations which best sum up these results are:

For 50 Country Sample:

$$\begin{aligned} \%PVTPRI = & 8.7 - 2.3 PCI - 10 URB + 61 NCATH + 10 LANG + 25MD - 2 LAD & R^2 = .23 \\ & (.87) \quad (1.06) \quad (.62) \quad (2.36)** \quad (1.33)^+ \quad (1.61) \quad (.23) \end{aligned}$$

$$\begin{aligned} \%PVTSEC = & 24.3 - 2.0 PCI - 49 URB + 53 NCATH + 11 LANG + 26.8 MD + 16.4 LAD & R^2 = .36 \\ & (2.54)** \quad (.96) \quad (3.0)* \quad (2.14)** \quad (1.46)^+ \quad (1.8) \quad (1.96) \end{aligned}$$

$$\begin{aligned} \%PVTSEC = & 5.8 + 0.0 PCI - 57 URB + 27 REL + 11 LANG + 24.9 MD + 29.9 LAD & R^2 = .4 \\ & (.48) \quad (.004) \quad (3.67)* \quad (2.84)* \quad (1.5)^+ \quad (1.73)^+ \quad (3.44)* \end{aligned}$$

For 38 Developing Countries:

$$\begin{aligned} \%PVTPRI = & 2.6 + .3 PCI + 10 URB + 98 NCATH + 8 LANG - 8.3 LAD & R^2 = .34 \\ & (.29) \quad (.11) \quad (.57) \quad (3.67)* \quad (1.19) \quad (1.16) \end{aligned}$$

$$\begin{aligned} \%PVTSEC = & 23.9 - 2.1 PCI - 40 URB + 71 NCATH + 8 LANG + 12.8 LAD & R^2 = .38 \\ & (2.14)*** \quad (.59) \quad (1.94)^+ \quad (2.21)** \quad (1.03) \quad (1.47) \end{aligned}$$

$$\begin{aligned} \%PVTSEC = & -5.1 - 2.2 PCI - 104 URB + 38 REL + 9 LANG + 31.2 LAD & R^2 = .44 \\ & (.31) \quad (.55) \quad (2.47)** \quad (2.98)* \quad (1.16) \quad (3.24)* \end{aligned}$$

For 12 Modern Countries:

$$\begin{aligned} \%PVTPRI+SEC = 67.4 - 3.8 PCI - 104 URB + 40 REL + 45 LANG - 13.5 NS \\ (1.87) \quad (1.61) \quad (2.27)^+ \quad (1.87)^{***} \quad (2.37)^{**} \quad (1.13) \end{aligned} \quad R^2 = .7$$

For 34 Developing Countries (with residuals--RES):

$$\begin{aligned} \%PVTPRI = 3.2 + 0 PCI + 7 URB + 98 NCATH + 8 LANG - 8.2 LAD + .9 RES \\ (.63) \quad (0) \quad (.76) \quad (7.24)^* \quad (1.71)^{***} \quad (2.18)^{**} \quad (10)^* \end{aligned} \quad R^2 = .86$$

$$\begin{aligned} \%PVTSEC = -5 + 1.7 PCI - 37 URB + 38 REL + 5 LANG + 28.1 LAD + .6 RES \\ (.36) \quad (.54) \quad (2.36)^{***} \quad (3.52)^* \quad (.59) \quad (3.46)^* \quad (4.08)^* \end{aligned} \quad R^2 = .65$$

For 16 Developing Countries (with RRSEC):

$$\begin{aligned} \%PVTSEC = 27 - 18.6 PCI - 14 URB + 57 NCATH + .9 RRSEC \\ (2.05)^+ \quad (1.81)^+ \quad (.36) \quad (1.66)^+ \quad (1.69)^+ \end{aligned} \quad R^2 = .57$$

where:

* = significant at 1% level

** = significant at 2.5% level

*** = significant at 5% level

+ = significant at 10% level

2-tailed tests were used for PCI, URB, MD, LAD

1-tailed tests were used for REL, CHR, NCHR, CATH, NCATH, LANG, NS

In summary, I have presented a theory which explains the size of the private sector in education as depending on three variables: 1) excess demand, stemming from a political coalition which limits government production below full enrollment levels; 2) differentiated demand, arising from deep-seated religious or linguistic diversity, in the face of a relatively uniform government product; and 3) the supply of nonprofit entrepreneurship, often religious, to start the private schools. I hypothesize that excess demand leads to private education in developing countries, especially at the secondary and higher levels, while differentiated demand leads to private education in modern industrial countries, especially at the primary and secondary levels. The availability of religious entrepreneurship plays an

important supply-side role in both cases; schools are a mechanism for transmitting culture and shaping beliefs, rather than simply for maximizing profits or academic skills. Quality orderings between the public and private sectors are also predicted to differ between modern and developing countries, with "low quality" private schools (in terms of consumer preference, student input, expenditures per student and gross output of academic achievement or earning capacity) found primarily in the latter, where many consumers do not have a public alternative.

To test this model, regression analyses were conducted across a sample of 38 (48) developing and 12 (14) modern countries. For developing countries, the role of private education is much greater at the secondary than the primary level, as predicted. The significance of religious competition was strongly confirmed for both groups. Linguistic heterogeneity played an important role in the modern group, consistent with our differentiated demand model. The private rate of return has a positive effect in developing countries, consistent with our excess demand model. The negative effect of PCI and URB, especially in developing countries at the secondary level, suggests that public sector capacity increases, hence excess demand decreases, with growth. However, the "modern dummy" was positive in my 50 country sample, offsetting this negative effect, especially at the primary level. I could not test my hypotheses regarding quality because of lack of available data, but impressionistic evidence as well as evidence from intra-country regressions is supportive.

The following story is consistent with these observations. With the process of economic development and urbanization the total demand for education grows. As the demand for education becomes more widespread and/or political power shifts to those who will benefit more (and receive a redis-

tribution in kind) from public education (e.g. the urban working and middle class), public supply also grows. The private sector, too, may grow initially, if total demand rises faster than government supply and educational entrepreneurs are available. But as the public system approaches full enrollment capacity, this necessarily implies a declining excess demand for private education. In particular, we would expect that the private schools which are perceived as being lowest in quality will lose their clientele, so the average quality of the remaining schools will rise.

However, wealthier countries can better afford to accommodate their taste for differentiated education. Thus, while the excess demand motive may eventually decline with development, the heterogeneous demand motive may increase in countries with cultural diversity, particularly at the primary level. Moreover, the very expansion of the public sector may lead to a downgrading of perceived quality, which leads some people to opt out. In addition, some of the increased public spending on education may take the form of subsidies to the private sector, if this has already established a strong political base (e.g. of teachers, parents, religious or ethnic leaders, banker-lenders, etc.). This will mitigate the decline in and change the nature of the private sector. Region-specific historical legacies also seem to play a role.

The private schools that remain will be considered different and superior academically, ideologically or by some other criterion that large groups of consumers value. Thus, the impact of development on the public-private division of responsibility for education is likely to be quite different for different countries, depending on their linguistic heterogeneity and religious competition. It is also likely to be quite different in the short and long run, and the long run may be very long.

Part III. Excess Demand and Private Education in Kenya

Kenya is a particularly interesting case study because it exhibits the classic characteristics of excess demand driven private sectors in developing countries: low cost, high fees and rapidly growing numbers of students. In the quantity-quality trade-off, the government has opted for quality at the secondary level, leaving quantity to the private sector. The public secondary schools are selective, high cost, high achieving and preferred by students. As a result, a large private educational sector, low in cost and often in quality, has emerged at the secondary level, because of the limited supply of public school places. Similar relationships have held between the public sector and the excess demand driven private sector in many other African countries during the last two decades.

Adding a historical perspective, we observe how different collective choices about the public system were made by the colonial and indigenous ruling groups, leading to corresponding differences in the private system. And we observe also the critical role of religious nonprofit entrepreneurs in founding and managing private schools. Finally, Kenya typifies other developing countries in terms of the public policy issues regarding education that it faces today.

In the following pages I start with a brief historical summary and hypothesize why the private sector has played such a limited role at the primary and higher education levels. I then go on to a detailed analysis of secondary education, where 60% of the enrollments are private. Data are presented on relative inputs, outputs, value added and efficiency in the public and private sectors. The conclusion raises a number of policy issues. Has the growth of the private sector been a desirable phenomenon in

Kenya? Does education consume too much or too little of the country's resources? Should the government subsidize the private sector to improve its quality or restrict the establishment of new schools on grounds that too many exist (or both)? Finally, what changes should we expect in the pattern of public-private relationship in the future, as the average level of income and education grows?

History: Kenyan Education Before and After Independence¹⁰

What kind of educational policy would we expect in a colonial country where the income of white settlers far exceeds that of the natives? The white settlers would demand and be willing to support a European style education for their children. The native population would be unable to support that for themselves, nor would the colonial government be willing to heavily subsidize it for them. In that case, we would expect a multi-tiered educational system to develop, with well-funded schools for the white settlers, more meager schools for the indigenous population, each largely supported by their own tax payments and private fees. That is exactly what we found in pre-independence Kenya: separate self-supporting school systems for the European settlers, the Asian traders, and the Africans. While the separation had an economic basis in the very different incomes of these groups, it was reinforced by racial distinctions which did not permit mixing of similar socio-economic classes until shortly before independence.

The European system was a public-private mixture, compulsory for the eligible age group, and often endowed with lavish boarding facilities, swimming pools and ample staff. The Indians (who had a strong political lobby in London) also had a mixture of public and private schools, many of them started by religious communities (the Ismaelis, the Arya Samaj, the Muslims), with partial government support; funding was modest and education

compulsory for boys in urban areas. In contrast, virtually all of the African system was private, primary level, run by missionaries, on a voluntary basis for both consumer and producer, with small grants from the government (see Tables 7 and 8). Average per student expenditures by the central and local governments in public and private aided schools shortly before independence were £3.9 for African schools, £20.7 for Asians and £65.4 for Europeans.¹¹

The private schools designed for Africans did not charge high fees and were not set up to earn profits; the low income and consequently low effective demand among Africans would not have permitted this. Instead, they were established by a variety of religious groups with the object of converting the Africans to Christianity and Western values. The Church of England, the Seventh Day Adventists, the Methodists, and a variety of Catholic orders were all competing for new believers, and they used the schools as their battleground. In fact, initially they actually paid the pupils to come -- implying that the perceived benefit was greater to the missionaries than to the Africans. But quickly the Kenyans learned the economic value of education, as the colonial government hired literate Africans as clerks, interpreters, and other cash-paying jobs. Local communities then began supplying land and buildings to the mission schools (Anderson 1970). Government grants were very limited in the early part of the twentieth century, but they increased after World War I (mostly coming from local authorities out of tax revenues raised in the colony), as the demand for education and independence both grew.

Toward the end of the colonial period, indigenous groups also started their own schools, in a competitive struggle for the survival of African culture. Most important was the formation of the Kikuyu Independent School

Association in 1929, as a reaction against the missions' prohibition of female circumcision. Thus, another "private" school system developed, with its own syllabus and teacher training program, this one tied to indigenous tribal communities, political movements and independent African religious groups. The government tried to gain control over these schools, by offering them grants-in-aid in exchange for regulation of facilities and curriculum. But, as these groups became increasingly militant, some of them rejected the aid and the controls that went with it. The government responded by closing these schools during the Emergency of 1952.

Thus, on the eve of independence, private schools played a major role in the Kenyan educational system, and Western religious organizations managed the entire African part. These schools were supplied in large numbers at the primary level, particularly lower primary. There were places for only a handful of Africans (10,590 in 1963) at the secondary level. And Africans had been, for decades, kept out of the higher quality (public and private) European and Asian schools.

After independence the ruling coalition shifted from British to African. How did this change the nature of the educational system?

First of all, the new rulers wanted to make sure they had a country to rule, and that meant fostering a sense of national unity among many disparate tribes. The schools were a mechanism of socialization for them, just as for the missionaries. For example, they considered a common language necessary for national unity. Hence, a decision was made to use English as the medium of instruction and to teach Kiswahili in all schools. As we shall see, this had important consequences for public-private relationships, especially in primary education.

Secondly, the system of racial segregation ended, which meant that

Africans had access to and quickly came to dominate the former European and Asian schools as well. In fact, these became the "elite" public schools, which meant that elite private schools were not needed.

Third, many of the mission schools were taken over by the government; this permitted a rapid expansion of the public system, especially at the primary level, with little outlay of capital or entrepreneurship by the government. Religious groups were given the choice between complete autonomy on the one hand or the agreement that the government would provide subsidies but would also assign teachers and students, on the other. In the latter case, the religious groups had the right to remain as "sponsors," to teach their religious ideology, and to participate in the choice of a headmaster, but they had little other authority. In other words, together with subsidy went a high level of control, after independence. Believing they would be unable to operate without the subsidy, except for a few flagship schools, most religious groups acceded and became part of the public system.

In addition, many new public primary schools were started. Compulsory fees were abolished in the 1970's; but in the absence of sufficient government funds, "voluntary" fees for buildings, labs, food, uniforms, and activities quickly replaced them. The net effect of all these actions, taken together with the high Kenyan birth rate, was a vast increase in primary enrollments, which grew from less than one million in 1963 to almost 4 million in 1981. By 1981 90% of the 6-12 year old age group was attending primary school, and all but a few of these were in public schools.¹²

At the secondary and higher levels, however, the new ruling coalition favored a more selective system. Thus, through the 1960's and 1970's, only 13% of primary school graduates could be accommodated in public secondary schools.¹³ The secondary schools were, moreover, differentiated and

competitive, with a small number (15 academic and 11 technical) of prestigious national boarding schools and a larger number of provincial schools serving a more limited catchment area. This system would clearly be in the interest of the ruling group, if their children could gain access to the best schools.

Thus, the characteristics of the public educational system chosen by Kenya and many other newly independent developing countries were: a vast expansion in the number of primary schools serving most of the eligible population; limited, selective and differentiated secondary schooling with space for only a small fraction of primary school graduates; and even more restriction at the university level. In such a situation, as explained in Part I, I would expect the growth of a large excess demand driven private sector at the secondary level and possibly at the higher education level as well. What actually happened in Kenya?

There is an inherent conflict between an expanded primary and a limited secondary system. As more children poured out of the primary schools many of them wanted to continue, but they had no place in the public system to go. Yet, with such a small supply of secondary school graduates, the private rate of return was very high. According to a study by Carnoy and Thias (1971), based on cross-sectional age-earnings data, the private return to secondary school was 36.1% unadjusted, 28.5% when adjusted for socio-economic background and ability. Whether Kenyan families perceived the adjusted or unadjusted rate, either was very high compared with the return of 9-17% on most feasible alternative investments (Carnoy and Thias 1971, p. 95). In fact, the actual rate might have been considerably lower since newer secondary school graduates do not have access to the same jobs as older cohorts, who came on to the market at a point when such degrees were

much scarcer. Nevertheless, Kenyan families, just as economists, probably could not make this adjustment, and acted on the basis of these high rates of return. Hence private secondary enrollments exploded. Between 1963 and 1979 public schools increased fourfold from 119 to 485, but private schools increased 40 times, from 32 to 1255! They now constitute 60% of all secondary enrollments in Kenya (see Tables 9 and 10).

The private sector in Kenya, as in other developing countries, is the mirror image of the public sector. Public schools are selective so most private schools are nonselective. Public schools are high cost (in terms of expenditure per student); private schools are low cost. Does this mean they are lower quality (lower value added) or more efficient (a higher benefit-cost ratio)? This important question will be discussed at length in a later section.

The large attendance at private schools has set up increased pressure, from both consumers and producers, for them to be subsidized (one of the possible reasons for restricting their growth, ex ante). And with the subsidies have come controls, usually over teacher qualifications and student selection, which may eventually reduce the distinction between public and private education. Thus, the historical development of Kenyan education illustrates public-private relationships that are found in other African countries and in much of the developing world. For example, the private sector in Ghana and the forces which stimulated and followed from its growth sound very much like the Kenyan situation (Bibby and Peil 1974). Similarly, educational development in Southern Nigeria has many parallels, including the historical reliance on religious voluntary agencies to provide schooling, at lower cost to the government, the establishment of numerous "low quality" private schools in response to excess demand and the

pressure from teachers and students for government subsidies to improve quality, which had the perverse effect of inducing further private sector growth (Abernethy 1969).

Primary and Higher Education: Where Is the Private Sector?

To understand why and where private sectors grow, we also need to understand why and where they do not grow. Therefore, before proceeding to discuss, in detail, the explosion of private secondary education, it is well to discuss briefly the virtual absence of a private sector at the primary and university levels.

In 1981, only 44 out of 10,817 primary schools were classified as private, many of them catering to the large expatriate population in Nairobi and Mombassa. It is clear why an excess demand-driven private primary sector did not develop: the government provided a vastly expanded public system. This is consistent with the theoretical framework I presented in Part I, which predicted excess demand at the secondary but not the primary level. It is less immediately obvious why more elite private primary schools did not develop, as they did in other Third World countries such as India and Brazil. I believe there are two main reasons.

First, a key decision was made to use English as the medium of instruction in all urban schools. (The vernacular language is still used in the early grades in rural schools, but a shift to English occurs at grade 4). This reduced the scarcity value of English and meant that, by attending a public urban primary school, you were not foreclosing your opportunity to pass the entrance exam to selective English medium public secondary schools, later on. As discussed in Part I, language is often a key determinant of private sector growth; a key reason why people attend private primary schools in India and parts of Latin America is to acquire facility in

English. This belief that English is essential for economic success, coupled with the government position opposing tribalism and stressing national unity, also explains why primary schools using tribal or regional languages (i.e. a response to cultural heterogeneity) have not sprung up in Nairobi or other urban centers, as they have in India.

Second, and perhaps more important, the public primary schools were themselves differentiated and competitive, a condition which, as discussed in Part I, dampens the exit to the private sector. These differences emerged from the fact that some were initially European high cost schools with superior facilities and another few were Asian medium cost schools.

A decision was made by the new ruling group, after independence, to maintain these superior facilities, as part of the public system, with a higher rate of government subsidy as well as a higher fee structure. These schools, now open to and heavily populated by Africans, continue to be much sought after, with entry competitive, as the best line of access to the selective secondary system. Many parents even enroll their children in costly pre-primary schools, where English language is stressed, to increase their chance of entry. Two-thirds of the children in these high cost schools come from managerial or professional families; only 8% come from clerical or manual families (Somerset 1983). Thus, those who were willing and able to pay high fees for high quality education could do so in the public sector and had no need to flee to the unsubsidized private sector.

The superiority of the high cost public schools in selecting and educating their students is evidenced in Table 11, which displays the average scores of different school types on the Certificate of Primary Education (CPE) exam taken at the end of primary school. The Nairobi high cost

schools are seen to score comparably with the private sector, while the low-cost public schools do much worse.¹⁴ Consequently, 89% of the high cost students in Nairobi gained entrance to the selective public secondary schools, compared with only 22% of the low cost students (Kinyanjui 1981). In such a setting, the private primary school became a small expensive enclave for children of expatriates as well as those wealthy Africans who did not gain entry to the better public schools. (This enclave may, however, grow in the future, if places do not increase in superior public primary schools.)

At the opposite end of the spectrum is the limited role played by privatization in higher education, where the public University of Nairobi and its constituent college, Kenyatta University college dominate. The Seventh Day Adventists run a teacher training school and a college, an American organization runs a small (300 student) "university" specializing in business and a few "harambee" institutes of technology have developed in recent years. However, these institutions, all together, enroll less than 2000 students. Why is this the case, given the fact that 7000-8000 applicants are regularly turned down by the University of Nairobi?

The leakage of large numbers of Kenyans from the domestic system is one reason why greater demand for private education has not developed: half the Kenyans who receive university education are educated abroad, most of them in the U.S. or U.K.¹⁵ This option is facilitated by their English language competence. Kenyans who could afford high university fees probably prefer to pay them overseas, so the demand left over for a private university is uncertain.

Second, a pre-university screening occurs at the end of the fourth year of secondary school, which substantially cuts down the demand for university

education. Only 12-14% of Form IV graduates are admitted to Forms V and VI, which are required for admission to the university. As a result, 20% of the eligible group (Form VI graduates) are admitted to the University of Nairobi.¹⁶ Thus, the greatest bottleneck is at the secondary, not the higher educational level -- consistent with my hypothesis in Part I that the upper classes will be willing to fund the university through taxes, knowing that they will also be the chief beneficiaries.

If Forms V and VI are abolished, as is currently planned, one consequence will be vastly increased pressure for access to university and other post-secondary programs of study. Indeed, several religious groups are now considering the possibility of establishing higher educational institutions, including teacher training colleges and universities, but fear opposition from the government. If a large excess demand develops, the government will probably accede to political pressure and permit these institutions to grow.

Anatomy of the Private Secondary Sector in Kenya

The private sector, which enrolls 60% of secondary students in Kenya, consists of several different kinds of institutions. There are, first of all, the remnants of the mission schools. As discussed above, most of these were absorbed into the public sector after independence; a small number are considered "government-assisted," rather than government owned and maintained, and the church group retains some representation on the Board of Governors of the school. However, since their fee structure is set and their students and teachers assigned by the government, I treat them as public rather than private in this paper.¹⁷ (Interestingly, at least one religious group recently asked the government to "denationalize," i.e. to

stop subsidizing and controlling its "assisted" school, and was told "no.")

A few church schools, however, did retain their autonomy. These include some "flagship" schools retained by religious orders, and some new schools started in order to cater to a particular religious community (e.g. the Ismaelis) after the old ones were taken over by the government. As shown in Table 12, these constitute about 5% of the private sector.

Another category of private schools are for-profit proprietorships. As expected, these are concentrated in urban areas, particularly Nairobi and Mombassa. Some of them cater to an elite clientele, often European, but most cater to the masses who are left out of the public schools. They constitute 25% of the private sector, a rapidly growing group.

However, by far the most important form of non-governmental secondary schools are the "harambee" schools. These are set up by rural communities, on a voluntary basis, to provide the schooling which the government is not willing or able to provide. In Kenya these harambee schools, resulting from informal group action, would not be considered "private." However, for our purposes they are part of the private sector, both because most of the funding comes from private fees and because most of the decision-making is outside the formal governmental structure. These characteristics remain despite the small subsidies which harambee schools have begun to receive in recent years. The harambee share of secondary schools and enrollments has grown dramatically through time; they now constitute two-thirds of the private sector, and 40% of the public-private total.

A vast literature exists on the harambee movement. I briefly summarize this literature and proceed to discuss how harambee schools operate in Kenya.

Harambee Schools

In Kenya, "harambee" (meaning pull together or self help through group action) is a traditional response to an unmet community need. The relevant community may be a tribe, a village or a group bound together by religious ties. Between 1967 and 1973 harambee efforts contributed 10% as much as the government toward overall national development expenditures, 30% as much for rural capital formation, and 60% as much toward educational development (Mbithi and Rasmusson 1977, pp. 14-15).

When a community needs a cattle dip, a health facility, or a school, the local leaders assemble, agree on a method of assessment (both money and labor) and exert social pressure on people to comply. The "leaders" are likely to include a government official, a clergyman, a farmer, a businessman and perhaps a teacher. Large fundraising meetings, attended by top politicians, with contributions highly publicized, are standard procedure. Additionally, pressure may consist of moral suasion, reciprocity (I will contribute if you do too), political patronage, threats to individuals and business firms that access to public facilities will be cut off otherwise, confiscation of personal goods, and agreement by labor unions to accept a payroll deduction (Thomas 1979). For example, one of the many newspaper articles reporting on harambee drives, this one intended to set up a secondary school in Kajaibo, listed the "voluntary" assessments that were imposed on the community:

...traders would contribute between £5 and £250, depending on the size of their business. Small scale industries and lodgings would contribute £250 each, while the Magadi Soda Company, the Kenya Meat Commission and the Athi River Portland Cement Co. would contribute between £500 and £1500 each. Women's groups would contribute £25 each. Each man would contribute £5. Senior

chiefs, chiefs and assistant chiefs would each contribute £100, £50 and £30 respectively before the end of the month. In addition, £480 was collected from the 960 secondary teachers in the district by the teachers' union and £15,500 was expected from the 31,000 primary teachers.¹⁸

The harambee movement has been criticized for accentuating regional inequalities and not serving the poorest areas; for creating duplicative, competitive projects which are wasteful of resources and may not be viable; for failure to account for funds, fraud and misappropriation (Thomas 1979, Gachuki 1982, Geist 1984). However, it is also a very useful alternative tax mechanism. Local governments in Kenya have very limited taxing authority. Moreover, formal taxes would be relatively easy to evade in an agricultural, partially subsistence, economy. Harambee fundraising drives may therefore be thought of as a kind of informal tax, where social pressure substitutes for (and is perhaps more effective than) legal pressure and enables the provision of labor-intensive community goods such as schools and hospitals.

This was the main method used to generate capital to expand secondary schools in Kenya. Through such semi-voluntary payments the money and labor was assembled to construct a school building and teachers' houses. Operating costs, primarily the teachers' salaries, were then covered by user charges (tuition and fees). This method can be used for quasi-public goods from which consumers can be excluded for nonpayment. It is a less effective device for the provision of pure public goods (e.g. national defense) from which exclusion is not possible and harambee has not been used for such purposes. Informal social

pressure works best in rural areas, where secrets and anonymity are difficult to retain. Thus, harambee schools are largely a rural phenomenon, unlike the private sectors in other countries that are started by entrepreneurs rather than informal collective action.

What are the characteristics of these schools? Are they efficient or inefficient? Equitable or inequitable? Do they make the educational scene in Kenya better or worse?

The harambee schools illustrate several classic characteristics of excess-demand-driven private sectors. They spend little per student, compared with the preferred government schools. This shows up in higher student-faculty ratios, large class size and low teacher salaries. The teachers, in this sense, help to subsidize the schools -- although, being there voluntarily, this is presumably the best job they could get. Laboratories, libraries, and other equipment are usually lacking, buildings are minimal.

As noted above, their capital facilities are financed by semi-voluntary contributors and their recurrent costs out of tuition revenues. Thus, they typically charge more than government schools, which are heavily subsidized, but offer less service. The fact that most funding is private probably explains the low expenditure per student: this is the only sustainable price-cost combination, given the ability to pay of their clientele. For similar reasons they specialize in low cost subjects, such as liberal arts, eschewing expensive fields such as science. While small quality driven private sectors may charge high fees and offer high cost education for the elite (and Kenya has a few of these) large excess-demand-driven sectors serve a low cost quantity-oriented market and invariably exhibit these characteristics.

Interestingly, although the harambee schools are started by a local community, they may be managed by a church group or clergyman at the request of the local community. Managerial skills in education (as in other industries) are scarce in Kenya and organized religion, one of the sources of this scarce skill, still plays an important role, even in the "secular" harambee schools.

They also generate pressure for government subsidies. In Kenya the harambee schools were started because of the lack of government funds, but they immediately began pressing for government support. Indeed, some see this as their *raison d'être*; they are sustained by the hope that one day government will take them over. The strongest consumer argument is, of course, the "low quality" of the education which will otherwise be provided. A reinforcing argument of producers is the low salary received by teachers; in many countries the teachers' union is the strongest proponent of subsidies. In fact, by the mid-1970's the Kenyan government started providing resources to the best of the harambee schools, by supplying and paying 1 or 2 qualified teachers per school -- an example of the common observation that successful nonprofit projects are often taken over by the public sector. Of course, when the government subsidizes to improve quality it also provides an incentive for other low quality schools to start. This is the dilemma faced in Kenya and many other countries with large private sectors.

In the following pages, I discuss each of these points in greater depth, culminating in an assessment of the value added and cost-benefit ratio of public versus private schools in Kenya.

Cost of Labor: Teachers in Public and Private Schools

Together with the growth of private schools and enrollments came the growth of their teachers. However, as noted in the previous section, large private sectors survive by economizing on costs and one of the major ways to accomplish this is to save on teacher costs. Thus, we would expect to find that the private sector has a higher student-teacher ratio, larger class size and hires teachers who command a lower salary in the marketplace. In Kenya, where salaries are closely tied to credentials, this means hiring teachers who have less education and experience.

Table 13 displays the growth of teachers in public and private secondary schools, between 1961 and 1979. Both, of course, have risen, the former five-fold, the latter by a multiple of 62, corresponding to the much greater enrollment expansion that has taken place in the private sector. As expected, the student-faculty ratio was higher in the private sector, but this disparity has been getting smaller as the government was pressured to accommodate larger numbers of students, but could not afford a commensurately increased budget. At the same time, the harambee schools, having grown so much in size, had enough political power to pressure the government to supply qualified teachers to them in the mid-1970's. Therefore, the student-faculty ratio in the two sectors converged by 1979.

The sectors did not converge, however, with respect to teacher qualifications. Most teachers in public schools have "qualified" as teachers, having undergone some training beyond secondary school, and many are university graduates. Public schools can attract better teachers because they offer higher pay, more status and job security, and superior students. While the proportion of graduates and trained teachers declined during the 1970's, again to accommodate rapidly increasing numbers, in 1979 almost half

of the public school teachers were university graduates and 85% were credentialled as qualified teachers.

In contrast, 90% of the private school teachers lacked a university degree and 70% lacked any kind of teacher certification. Moreover, 25% had no further education beyond Form IV; they were basically teaching at the grade level that they had barely passed.¹⁹

A similar structure emerges with respect to teacher experience (see Table 14). In 1979, one-third of all teachers in private schools had only one year's experience and almost two-thirds had 3 years or less. Within the private sector, the harambee schools were even worse; the church and proprietary schools slightly better. In contrast, only 14% of public school teachers were "new" and 60% had been teaching for more than three years.

Using government pay scales as a cost indicator, we note that the best salary an untrained teacher could get in 1981 was £690 annually, compared with £1170 for a trained secondary teacher.²⁰ Thus, private schools save 40% on each untrained teacher, a saving of 22% on total teacher costs, compared with public schools (given that 70% of private and 15% of public school teachers are untrained). The cost disparity would be even greater if experience differentials were taken into account. Since teachers are, by far, the largest component of operating costs, this accounts for most of the cost differential between the public and private sectors.

The educational effect of teacher quality is suggested by its correlation with student examination scores. As shown in Table 15, the pass rate on the East African Certificate Exam (EACE), a national exam taken at the end of Form IV, is over 90% for schools in which most of the teachers are qualified, and only 60% for those in which a large majority are not. Of course, the former are predominantly public schools which also draw a

selective student clientele whereas the latter are unaided nonselective harambee schools, complicating the calculation of value added by the teacher. We will return to this issue in a later section.

Capital Facilities

In addition to having less qualified, less experienced teachers, the private sector is also characterized by less ample capital facilities. Encountering the free rider problem in their attempts to raise capital (despite the social sanctions they invoke), harambee schools are typically left without laboratories, libraries and electricity.

The Kenyan Ministry of Education regularly grades all schools according to their facilities and these grades for 1981 are presented in Table 16. More than half of the public schools were graded A or B, and only 7% were D or "unclassified" (the latter means they are new and poor in facilities), while for harambee schools only 3% were graded A or B, 94% D or "unclassified." The private church and proprietary schools, again, fall in between these two extremes.

The 1979 school census presents us with more detailed information along these lines (Table 17). Public schools are likely to have piped water, electricity, telephones, a library, laboratories and even a motor vehicle, while the harambee schools are unlikely to have any of these. Note that mission schools are, once again, in between, as their capital facilities may, at some point, have been subsidized by their church organizations overseas. And, by this measure, the proprietary schools are almost as good as the public sector; apparently good facilities are in their profit-maximizing interest.

Significantly, Table 18 indicates that the failure rate on exams is correlated with the availability of facilities; however, once again the high

facility schools are also selective public schools, with good teachers and students, while the low facility schools are harambee schools with unqualified teachers and an unselective student body, making it difficult to separate out these effects.

The fact that harambee schools do not have labs does, however, have a direct effect on the kind of education that can go on in them: they are at a distinct disadvantage in teaching science. Typically, only 10% of students taking the EACE in biology and physics come from the private sector.²¹ And of those unaided schools which offer Forms V and VI, a heavy emphasis on the arts is required; the few offering science are well-endowed church or expensive proprietary schools (see Table 19). Thus, as in other countries with large excess demand-driven private sectors, specialization occurs in the cheaper labor-intensive subjects and education in the private sector also closes off a wide range of career options to the student.²²

Expenditure Per Student and Fees in Public and Private Schools

How do these differences in teacher quality and facilities affect the average cost per student in public and private schools? And how are these costs shared between parents and government?

Unfortunately, data on expenditures per student are not readily available, especially for the private sector. We are forced, therefore, to reconstruct them from data on government expenditures and fees paid by parents in different types of schools. Even these data are very rough estimates. In particular, schools do not like to reveal the numerous fees they charge for laboratories, buildings, uniforms, activities and development. For example, the numbers given by schools in the 1979 School Census are clearly too inaccurate to use. Therefore, the expenditure data given in Table 20 should all be taken with a grain of salt and the parental contribu-

tion is probably an underestimate. Certain clear tendencies nevertheless emerge.

First of all, we observe a wide disparity in per student expenditure within the public sector, with day schools costing only half as much as high cost boarding schools.²³ Probably the actual disparity is even greater, since the high cost schools also get the teachers with the best credentials and experience, hence higher salaries, whereas we have assumed equal teacher costs in all public schools in these calculations. The cost differential between boarding and day schools led a government committee on the financing of education to recommend a shift in emphasis from the former to the latter. However, they recommended retaining the high cost boarding schools, national schools that draw their student body from throughout the country. Indeed, it is the existence of these high cost schools that keeps the elite in the public sector. If they were eliminated, we would expect to find the growth of high quality preferred schools in the private sector.

Second, we observe that private schools spend much less per student than public schools, even less than the low cost public schools. On average, private schools spend only 60% as much as publics. We have already seen how these savings are achieved -- primarily by the hiring of untrained inexperienced teachers.

On the other hand, public schools charge only 60% as much as privates overall and public day schools charge only 20% as much as harambees. This is consistent with the finding of the 1979 School Census that the highest fees were charged by schools with the poorest facilities -- these were the harambee schools.

Output Measures: Graduation Rates, Examination Scores and Further Education

So far we have been evaluating quality only in terms of input measures

-- teachers, facilities and expenditures per student. Gross output measures, such as academic achievement as measured by graduation rates, examination scores and university acceptance, present a similar picture.

First of all, many students who enter Form I at a harambee school do not remain to completion of Form IV. The drop-out rate between Forms I and IV is close to zero in public schools, over one-third in private schools.²⁴ This effect is also reflected in Table 19, which shows how private enrollments decline from 71% of the total in Form I to 46% in Form IV. The high drop-out rate in private schools is due to three factors which are difficult to disentangle: having low incoming academic achievement, students find it difficult to learn and drop out; this effect is enhanced by the poor teaching and facilities there; facing a consequently limited group of enrollees for Forms III and IV, many harambee schools simply do not offer these grades. These factors combine to produce a low graduation rate from private schools. If benefits are tied to graduation and not merely to annual school attendance, one-third of the students (who do not complete) have "wasted" their time.

At the end of Form IV all students take a national exam (previously called the East African Certificate Exam, now called the Kenya Certificate Exam--KCE) in a variety of subjects. The average score in selected subjects for 1982 is given in Table 21. Public schools consistently do better than harambee schools, with church and proprietary schools, as usual, in-between.

Similar results for 1979 are displayed in greater detail in Table 22. High scores, which enable continuation to Form V and, eventually, to the university, were heavily concentrated in the public sector, while low division 4 pass and failure rates (of well over 60%) were heavily concentrated in the private sector. Once again, the church and proprietary schools were in-between,

the better ones securing high scores and the worst ones failures.

I obtained a list of secondary schools, ranked according to their overall exam scores. Among the top 100, only 5 were private, and these were run by religious groups. On the other hand, among the bottom 100 there were no pure public schools; 15 received partial government support and the rest were purely private.

Exam scores are important because they determine who can go on for further education and because they are positively correlated with future earnings. In a sample of urban workers drawn in 1980, those receiving a division 1 or 2 on the EACE earned twice as much as those receiving a division 4 or failure (Hazlewood 1985). Division 1 or 2 students are also more likely to be admitted to the University of Nairobi.

Data supplied to me by the University of Nairobi showed that almost all (95%) of its entrants were drawn from public schools. In fact, one-third of the university entrants came from the 13 top public schools, mainly the high cost national schools located in Nairobi and Central Province. The few remaining students accepted came from church or proprietary schools. I could identify only one entrant from an unaided harambee school. Several others whose schools could not be identified probably came from harambee schools and still others may have started out in harambee schools and transferred at the end of Form II or IV; very few harambees continue past Form IV. Nevertheless, the fact remains that the opportunities for such transfers are very limited and the best route to the University is through the top-ranked public schools.

The labor market reflects the superiority of public school graduates in several ways, as demonstrated in an analysis of the Nairobi workers sample mentioned above (Armitage and Sabot 1985). First of all, the initial job

search time was twice as long for harambee leavers as for public school leavers (9.5 months for public secondary leavers, 18 for harambee leavers and 32 months for primary leavers). Second, the predicted wage for public school graduates was one-third higher than that of harambee graduates. As a result of these greater benefits and lower fees, the private rate of return to secondary education was twice as high for public school as for harambee leavers (21% versus 11.5%). The social rate of return, too, appeared higher in the public sector, despite the higher costs there (17% versus 11.5%). These figures, however, do not adjust for the differential academic achievement which these groups had upon entering secondary school, an issue which I explore at length in the following section.

Value Added and Efficiency

As we have seen, by most input and output measures the harambee schools, like excess demand driven private sectors in other countries, are low in quality. Teacher credentials and salaries, student faculty ratios, capital facilities and expenditures per student are all lower in private than public schools in Kenya. The output measures of private schools are also inferior. They feature high dropout rates and failure rates on the national exit examination, lower continuation rates to post-secondary training and lower future wage streams.

These lower measures of gross output do not, however, necessarily imply that private schools have done a worse job, because their student input is also inferior. Harambee schools typically get the "rejects" of the government schools, students with lower incoming examination scores and less learned in primary school. To measure the value added by secondary school, we must ascertain the difference between gross output and student input, both of which are lower in the private sector. To measure the relative

efficiency of the two sectors we must compare their benefit-cost ratio, i.e. their relative value added compared with their relative costs.

If value added and value added per £ of expenditure is lower in the private sector, this implies it is indeed lower quality and also less efficient. If, on the other hand, value added is greater there, this implies not only higher quality but also higher efficiency; i.e., with less real inputs private schools achieve a greater educational increment than higher cost public schools. In between is the case where value added per student is less in the private sector but its value added per £ is greater than in the public sector. Private schools would then be lower in quality but higher in efficiency than public schools.

To assess value added, we need to know the incoming (CPE) score of students at each secondary school, as well as their outgoing (AECE or KCE) scores. Unfortunately, this data is not readily available. While we know the average KCE score for each school, we do not know its incoming CPE scores. This is a common problem encountered when trying to measure value added.

We do, however, have an alternative data set, which can be used to make this computation. In the 1980 survey of urban workers, detailed data was obtained on cognitive achievement and wages of a group of primary and secondary school leavers (i.e., those who exactly completed primary school and exactly completed secondary school). Cognition was measured by an achievement test given to all workers in the sample (henceforth called the BKS test) which was based partly on the CPE exam. These data are summarized in Table 23 and show large cognitive achievement and earnings differences between primary and secondary leavers (Boissiere, Knight and Sabot 1985). If there were no selectivity bias (i.e. if the entire difference in

cognitive score were due to secondary education and not to pre-secondary differences in achievement) the value added by secondary school would be 13.2 cognitive points, which in turn would account for most of the £524 wage differential between the two cohorts.

However, the previous sections of this paper have demonstrated that there are large ex ante cognitive differences between those who continue beyond primary school and those who don't and also between those who continue in public versus private schools. Only 13% of primary school graduates are admitted to public secondary schools, although many more apply, and the main criterion for selection is the CPE. Those who score well on the CPE have learned more in (attended a higher quality) primary school; their higher post-secondary cognition should not all be considered value added by secondary, since much of it was acquired at earlier levels. Unfortunately, the reported data do not include ex ante CPE scores nor do they report differences among public and private secondary school leavers in ex post cognitive ability. In this section I utilize the data given in Table 23 to impute these ex ante scores and ex post differences which will then permit us to estimate the value added of public and private schools.

Cognitive Input. Let us call those students who were admitted to and eventually completed governmental secondary schools Group G, and compare them to primary school leavers, i.e. those who stopped their education at the end of primary school. If we make the conservative assumption that Group G students came from the top 40-50% of their primary graduating class in terms of cognitive achievement -- which is roughly equivalent to assuming they are comparable to the top third of primary leavers -- extrapolation from Table 23 suggests that their average score on the BKS test would have been 45, if they had not gone on to secondary school.

This calculation of the cognitive value of student input plays a crucial role in the following discussion and hence it is worth exploring whether my assumption is reasonable. Since the BKS test and the national school continuation examination test similar skills, it would be surprising if many students did extremely well on the latter but very poorly on the former. Some students who did well on the national test, of course, did not continue to secondary school for economic reasons. However, most parents are willing to pay the opportunity cost of their foregone wages, since this is perceived as an excellent investment. In fact, we have seen that many parents are willing to send their children to high fee-paying private schools, which are considered inferior, if admission to public school is not gained. Thus one could easily argue that public secondary school students come from a still higher percentile in BKS, which would make my case about high valued student input even stronger. On the other hand, the BKS sample excludes those secondary graduates who went on to further education. Over this period, for example, 13% of all secondary graduates (i.e., 3% of all primary graduates) went on to Form V for pre-university preparation.²⁵ These high ranking graduates, who may also have been the top CPE scorers, are excluded from the BKS sample. This effect is not large, however, and does not obviate the likelihood that secondary leavers come from the top half of their primary graduating cohort. Other counter-arguments stemming from labor market selection bias will be discussed below.

By 1968, when the "average" primary school leaver in the survey entered the labor market, almost half of those continuing their education (or 12% of the primary graduating class) were going to a private school, most likely a harambee school, and the proportion is now far greater than half. Selection and self-selection to private schools was primarily according to

ability to pay, secondarily proximity. This would suggest that these students might have been drawn randomly from the primary school distribution, with respect to cognitive achievement. However, several qualifications are needed.

First of all, parents may have been more willing to invest in children who had demonstrated some above-average academic ability. Second, some (10-15%) of the private schools were elite and highly selective according to academic criteria. Third and most important, the drop-out rate in private schools is very high. For example, of those who entered in 1974, only 60% were still in school four years later. (In contrast, almost all public school students stayed on for the full four years.)²⁶ Only those who completed secondary school are included in the sample. The high dropout rate for unaided students may have been partly due to the poor quality of these schools but was also undoubtedly due to the lower cognitive skills of incoming students. We may assume that those who stayed on till graduation (and hence, are included in the sample) were, to a large extent, those with superior cognitive achievement upon entry. I call these students who graduated from nongovernmental secondary schools Group NG.

Because of the uncertainty regarding the actual distribution of incoming scores for this group, and because of the importance of this number in arriving at value added, I present two different sets of calculations corresponding to two different assumptions about the student input to Group NG. Case I assumes that graduates of private schools were only a slightly selective group and were drawn from the top and middle third of primary leavers in a 1:1 ratio (i.e. representatives from the bottom third are assumed to have dropped out). Case II explores the consequences of greater selectivity and uses a 2:1 ratio. For Case I the cognitive skills of Group

NG would have been 38.1, for Case II 40.4 if they had not gone to secondary school.

Cognitive Output and Value Added. By 1974, when the "average" secondary leaver in the sample was entering the labor market, the ratio of public to private school graduates was about 2:1. Thus, the "average" cognitive score of these secondary leavers (Groups G + NG) if they had not gone on to secondary school, would have been about 43. This may be compared with the average for all secondary leavers, after secondary school, of 45.7, a net gain of less than 3. These data are summarized in column (3) of Table 24.

My calculation of value added is much less than the gross gain of 13.2 in Table 23, which did not control for selection bias. Contrary to the implication of Table 23, once one adjusts for selectivity it appears that secondary leavers did better than primary leavers on the BKS test not because of what they learned in secondary school but because of their superior cognitive skills which got them into secondary school in the first place. The "value added" by secondary school is a much smaller number than its gross output, unadjusted for student input, which Table 23 presents. This is consistent with the well-known observations in the U.S. that gross output of schools depends mainly on student inputs, not school inputs, and that the best predictor of future academic achievement of students is their past academic achievement.

I should add that secondary school students may have acquired much specific information, about subjects such as science and history, to which primary leavers never had access. These academic subjects were not tested by BKS and they may or may not have job-related value. However, the basic cognitive (literacy, numeracy) skills of these students which were covered

by the BKS test seemed to be in place and superior by the end of their primary years.

Public Versus Private Schools. As we saw earlier in this paper, the national (KCE) examination given at the end of secondary school demonstrates that public school students tend to remain on top of the distribution. Data on examination results show that government school students were distributed in approximately the following proportions: 40% top third, 35% middle third, 25% bottom third, while private school students were distributed 15%, 35%, and 50%, respectively.²⁷ If we apply these percentages to the average scores of the top, middle and bottom thirds on the BKS test for secondary leavers, we find that Group G (public school leavers) would have gotten an average score of 47.1 on the BKS test, while Group NG would have an average score of 42.7. That is, public school leavers gained 2.1 points (47.1 - 45) as a result of going to secondary school while students from private schools gained 2.3 - 4.6 points, depending on assumption about incoming distribution. Columns (1) and (2) of Table 24 present these data.

In view of our lack of firm knowledge about incoming scores, one cannot be sure that students in private schools gained much more than public school students; however, according to these data it is unlikely that those who stayed the full 4 years gained less, on average. According to this calculation, the entire G advantage is due to the selection of superior student inputs by public schools, not to their superior value added. These results are especially remarkable in view of the fact that private schools spend per student only about 60% as much as government schools and are frequently criticized for the low quality of their teaching staffs and facilities. (Note, however, that expenditures per graduate are approximately the same in the two sectors because of the high dropout rate

in the former. Also, other skills such as scientific knowledge may have been acquired in public schools, but these were not tested by BKS.)

Comparisons With Other Studies. While my results (of a low cognitive value added by secondary school, particularly by high cost public secondary schools) may seem surprising at first, they are consistent with some other empirical findings. For example, in a study of the social and private rates of return to secondary education in the urban labor force in Kenya, Carnoy and Thias (1971) try to control for student input by omitting primary leavers who did not qualify in the national examination given at the end of primary school. (Many students do not qualify.) Thus, they compare the earnings of primary leavers who qualify on this exam with earnings of those who continue for two or four years of secondary education. They find this crude adjustment for prior student achievement eliminates almost two-thirds of the rate of return to two years of secondary schooling and one-quarter of the return to secondary school completion.

On the possibility of a higher return to low cost schools: it has been noted that in Japan, the social rate of return is higher at low cost private universities and in the U.S. higher expenditures per student seem to have little impact on learning (James and Benjamin 1984; and Hanushek 1981). Moreover, recent analyses of the High School and Beyond longitudinal data in the U.S. found that students in (lower cost) private schools learned slightly more than public school students between grades 10 and 12, but drop-outs learned almost as much. The magnitude of the cognitive gain for all three groups was approximately the same as the value added in Table 24.^{28,29}

One may also infer from the latter study that current cognitive achievement by students who left primary school some years ago probably

exceeds their cognition upon leaving school (slightly), since cognitive learning has gone on during working as well as schooling years. Consequently, the figures given above probably understate the value added by secondary school (slightly). The value added calculations above only measure the extra cognition imparted by school over what would have been imparted by work during the same period. Nevertheless, the cognitive value added is very small, for all groups.

Wage Increment Added by Secondary School. We get a very different picture, however, when we look at the wage increment received by Group G, Group NG, and secondary versus primary leavers as a whole. Given the assumed distributions of incoming and outgoing cognitive scores, and the empirical relationship between cognition and wages given in Table 23, the mean predicted wage for members of Group G if they had not gone on to secondary school is £978, with secondary school it is £1348, a monetary value added of £370 or 38%. For Group NG these numbers are £864 or £901 (without secondary school) and £1218 (with), a value added of £354 or £317, about 37%. These results are summarized in the bottom panel of Table 24.

Although the cognitive gain may have been larger for Group NG, the absolute value of the monetary gain is larger for Group G. However, the most important observation is that both groups earn much more with secondary school than primary leavers earn, including primary leavers with very high cognitive scores. For example, a top-third primary leaver with cognitive score of 45 earns less than a bottom third secondary leaver with cognitive score of 36. My adjustment for student input affects monetary value added much less than it affects cognitive value added. Thus, even though the average gain in cognitive achievement is very small (5-7%) and work experience is actually reduced, the average gain in wages from

attending and completing secondary school is very large (37-39%). This large wage gain, in the face of a small cognitive gain and decreased work experience, lends credence to the notion of schooling as a credentialling device, a mechanism for signalling higher cognitive skills and other job-related personal traits, and helps explain the strong demand for secondary education in Kenya.

A Qualification: Selection Through the Urban Labor Market. Now, it is possible that the urban labor market, from which this sample was drawn, is itself highly selective, and more so for primary and harambee leavers than for public secondary leavers (e.g. only the best primary and harambee leavers, but a random group of public secondary leavers, may have access). If this labor market selection cancels out the selection effects operating through the educational system, my adjustment for student input is unnecessary and the analysis of value added in Table 23 would be correct as it stands. On the other hand, if the urban labor market is equally biased for all levels, my adjustment for the incoming cognitive skills of secondary students, especially those in public schools, would seem to be in order, if one wishes to measure the value added by the schools. (Note that the Carnoy and Thias finding, mentioned above, also covered the urban labor force and is consistent with mine.) The truth may lie somewhere in between.

At this stage, despite all the cries of "low quality," there is no convincing evidence that academic value added is less in the private than the public sector, and the case is even weaker with regard to efficiency. If social productivity comes from higher cognitive skill, the cheapest way to raise cognition may be through low cost private schools. Value added in terms of future wages, however, is clearly higher in the public sector. This may mean that academic and personal qualities other than cognition are

imparted by these schools and enhance productivity, or it may be evidence for the screening and signalling theories of educational returns.

Religious Entrepreneurship and Excess Demand

I return now to a close examination of the demand and supply forces causing the private sector to grow. In Part I I argued that excess demand determines the size of the private educational sector in developing countries, cultural heterogeneity is a major factor in advanced industrial states, and the availability of religious (nonprofit) entrepreneurship is an important supply-side factor in both cases. How crucial are these variables in Kenya?

As we have seen, the role of religious entrepreneurs was particularly critical during the pre-independence period, when missionaries and other religious organizations ran most of the schools, especially for Africans. After independence many church schools were taken over by the government and became public schools; however, some retained their autonomy and still play a significant role. More important, the greatest growth of the harambee schools has come in areas of earlier missionary activity; clergymen often participate in the formation of a harambee school and are asked by the community to sponsor it or take over its management. Thus, the entrepreneurial and managerial role of religious organizations in the private sector remains important, even though most Kenyan private schools are now secular.

As for cultural heterogeneity: Kenya, like many African countries, is characterized by tribal and linguistic differences. However, these do not seem to play an important role in the private sector, consistent with the results of our statistical analysis in Part II. Knowledgeable people with whom I discussed this issue felt that schools set up to promulgate tribal

and/or linguistic differences would be frowned upon in the current political climate, where national unity is a sought after but not yet achieved goal. Some Kikuyu, feeling threats of exclusion from public secondary schools and university with the recent establishment of a quota system, have contemplated starting their own institutions; and the large fundraising drives needed to start the new harambee institutes of technology may be facilitated by a sense of tribal belonging among the initiators. Nevertheless, as in other developing countries still struggling for a national identity, it does not appear that society would encourage culturally divisive private schools at this time.

As a further test of the excess demand hypothesis, I disaggregated my data by province. There are seven provinces in Kenya, plus Nairobi which is also treated as a separate province, and the percentage of enrollments that are private varies greatly among them. The province is the catchment area for most public schools, which often maintain boarding facilities. I therefore predicted that the percentage of enrollments that are private (%PVT) would be a positive function of excess demand, by province.

With only eight provinces, I could not, of course, do a formal statistical analysis, so what follows is suggestive, rather than rigorous. The "index of opportunity" is the percentage of primary school graduates who can be accommodated in public secondary schools; 1 minus the index of opportunity is then the potential "excess demand." This number depends on the supply of public secondary school places, which is determined by central government policy, and the primary school enrollment and graduation rates, which vary by province, depending on their income and taste for education. Unless the central government responds systematically to these provincial differences, we would expect the resulting index of opportunity, and hence

the excess demand for secondary education, to vary by province, and indeed it does. These data are presented, in rank order, in Column (1) of Table 25.

I expected to find a higher rate of private sector growth and, eventually, a higher percentage of private enrollments (%PVT) in provinces with a high excess demand. These data are presented in Columns (3) and (4) of Table 25. The growth may well take place over a number of years and the correlation between excess demand and %PVT may well occur with a lag, given the volatile situation in Kenya. Hence, the index of opportunity is given for 1974, the private growth rate for 1968-76 and %PVT for 1977. As can be seen from Table 25, my expectations were fulfilled.

With respect to the index of opportunity, provinces fell into three categories in 1974: Eastern, Western and Nyanza were below average; Central and Rift Valley were average; Coast, Nairobi and Northeast above average. (Ironically, Nairobi was above average because of its wealth and political power, which led to the placement of a large number of national schools there, hence a large public supply; Northeast was above average because its poverty led to a low graduation rate from primary school, hence a low potential demand for secondary education.) The "low index" provinces indeed had high private growth rates, the high index provinces had low growth rates, and %PVT 1977 was positively correlated with excess demand ($r^2 = .63$). Central, with a larger %PVT than we would have predicted on the basis of demand, also had the greatest historical concentration of missionary schools, hence supply of private educational entrepreneurs, in the country.

Private Education in Kenya: An Evaluation

Some Third World countries (e.g. Pakistan and Tanzania, until recently) have chosen to restrict the growth of their private educational sectors.

Others, such as Kenya, have allowed unfettered growth. Which policy is better? Was the rapid growth of private secondary education in Kenya good or bad for the country? In this section, I approach these questions by analyzing the impact of privatization on educational quantity, quality and distribution.

In Part I I pointed out that private provision of education has two dimensions: private funding and private control. Nonsubsidized private schools must support themselves by charging tuition; public schools, on the other hand, often face strong political opposition to fees and hence are dependent on tax revenues. This may constrain expenditures on education below the optimal amount.

The second aspect of private education deals with entrepreneurship and management. The government bureaucracy may have a scarcity of these skills. Hence, even if private fees could be charged the public sector may not start schools as rapidly as private initiative and may not place the schools where the greatest demand exists.

The private provision of secondary education in Kenya obviously permitted a vast mobilization of resources and entrepreneurship, in response to the huge excess demand. Resources and managerial skills were diverted away from other forms of investment (or consumption activities) toward education. During the 1970's, for example, parental spending in private secondary schools (tuition and fees times the number of students) equalled the aggregate recurrent government spending in public secondary schools (see Tables 10 and 20). Much of the capital formation came from private sources in both sectors. The fact that the number of private schools grew much faster than public, albeit in a much more modest style, suggests that aggregate capital formation, too, may have been approximately the same in

the two sectors.

Does the high private rate of return, which stimulated this inflow of private funds and entrepreneurship, also reflect a high social rate of return, so that the allocation of resources toward education was socially desirable? Social rate of return calculations generally use lifetime wages as their basis, and are predicated on the assumption that higher wages stem from higher productivity. By this measure, education is a highly profitable investment, for society as well as for the individual. Social rate of return estimates range from 11 (Armitage and Sabot 1985) to 21 (Carnoy and Thias 1971), unadjusted for student selectivity.

According to the data in Table 23, the higher wages and productivity of secondary graduates may be related to the greater cognitive skills they have acquired at school. When we made our adjustment for student selectivity in Table 24, we discovered that most of the apparent cognitive gain vanished. The wage gain, however, remained. Does this imply that productivity is higher because of non-cognitive skills and personal traits acquired in secondary schools (e.g., the mastery of specific subjects, habits of discipline and punctuality, etc.) or does it imply that schooling is actually being used as a mechanism to signal academic achievement and personal qualities that the individual possessed ex ante? If the latter is true, this means that the social value added by education is less than the wage streams would indicate, and the investment resources devoted to education might better be used in other (e.g. industrial, job-creating) sectors of the economy. (A counteracting externality is the benefit education provides in making people better citizens, encouraging a lower birth rate, etc.).

Even if education as a whole is socially worthwhile, the rapid growth

of secondary probably occurred, in part, at the expense of primary education. Qualified teachers were lured away from their jobs at public primary schools to become headmasters at private secondary schools, where they received higher wages. But if the social return to secondary education is less than the private return (for reasons discussed above), the higher salary paid to the secondary headmaster may also overstate his social productivity. The qualified teacher at the primary level may be replaced by an unqualified one; currently almost one-third of all primary teachers are unqualified, because of a shortage of trained teachers as enrollments grew faster than teacher training through the 1970's and 1980's.³⁰ Which has the greatest social value added: a headmaster at a new secondary school or a better quality teacher at a primary school? We really don't know the answer to that question. The fear of overexpansion has led government planning committees to recommend limitations on the growth of harambee schools -- but all to no avail. The number of harambee schools opened has always far exceeded the number projected and authorized in the development plan.

The growth of private secondary schools diverts resources away from primary education in other ways as well. Harambee fundraising drives are directed toward construction of a secondary building rather than toward equipping a primary library. Pressure on the government to support harambee schools may lead it to spend less per student at the primary level. Again, the relative valuation of secondary quantity versus primary quality is the relevant information we need -- but don't yet have. My own belief is that the benefit from more secondary education exceeds the opportunity cost in terms of primary education or other investments foregone, but that belief stems from faith, not scholarship.

The growth of private secondary schools has not only affected the allocation of resources in general, it has influenced the allocation of government

spending in particular. As we have seen, a large private sector generates a coalition of producers (teachers) and consumers (students) which is often strong enough to demand and obtain government subsidy. Although a major reason for privatization initially is to conserve government budgets, substituting private for public funding, in the long run successful privatization often sets up political pressures that erode this advantage. In the statistical analysis presented in Part II, government subsidy was highly correlated with private sector size in 12 modern countries and this relationship seems to hold in Kenya as well.

Thus, the "Harambee Package" contained in the 1974-78 Development Plan committed the government to supplying one or two qualified teachers to a selected number of harambee schools, ostensibly to improve their quality. The teachers, however, went to those schools that had the best quality to begin with (e.g. the best buildings and facilities) and to schools that agreed to buy the Science Package from the Ministry of Education. In other words, the package was a matching grant, designed to encourage rather than substitute for private spending, and was therefore destined to be most useful to the wealthiest districts. By 1979 over 300 harambee schools, or one-third of the total, were receiving assistance. In return, these schools turned over their decision-making authority over student selection to the government.

One important question: Will the government subsidies achieve their objective of raising quality, or, by encouraging the growth of additional new harambee schools, will they have the perverse effect of lowering average quality? In the latter case, will the government begin to exert more control over the founding of schools? In Japan, which also instituted subsidies to the private sector in the 1970's, the subsidies were accompanied by an implicit understanding that the sector size would be

stabilized. Such an understanding might be more difficult to implement in Kenya. Based on the experience of other countries I would expect both subsidies and controls to grow, in response to the political demands of numerous students and teachers in the schools.

The money for the harambee schools probably meant that less was spent on public secondary schools, thereby lowering their quality. On the other hand, it may also be argued that, for the given public budget, the availability of private education took the pressure off the government to provide a greater quantity of secondary education, and therefore permitted it to maintain a small high quality public sector. Kenya has thus far avoided the problems faced by high quantity low quality public institutions in several Latin American countries. However, if funds continue to be shifted from public to harambee schools, this will represent a movement toward quantity and uniformity. Some wealthy families may then exit from the public sector and create their own elite private institutions.

Finally, I move to a brief discussion of the distributional issue. Although we in the U.S. expect that wealthier parents will send their children to private schools, this is not necessarily the case in countries where the private sector is driven by excess demand. For example, the family background of students attending public and private universities in Japan is almost identical; apparently the academic barriers keep the poor out of the public universities and the price barriers keep them out of the privates to an equal extent (James and Benjamin 1984).

In Kenya, students at the preferred public secondary schools are somewhat more likely to have educated parents, which presumably helped them to acquire the academic skills that got them admitted. However, that difference is not very great, since most parents have had little or no

education. For example, in the 1980 survey of urban wage earners in Nairobi mentioned above, 38% of those who had attended public secondary school had parents with no education; the corresponding number for harambee graduates was 49%. In only 37% and 24% of the cases, respectively, did both parents have at least a primary education. Among children with parents who were farmers, those with greater acreage were more likely to attend public school (Armitage and Sabot 1985). Thus, the wealthy seem to have greater access to the public schools, as is often the case when public schools are high quality, low quantity and selective. This system does, however provide upward mobility to the poor who are fortunate enough to get in -- to a greater extent than a high quantity low quality public system would (see James and Benjamin 1984).

If a geographic or tribal quota system is seriously implemented, as planned, in order to equalize education among different groups, this will make the public sector less selective by academic criteria, hence less attractive and available to the upper classes. We might then expect to see the development of more elite private secondary schools and a relative downgrading of public schools. The upper classes, who could better pass both the price and academic barriers posed by an elite private system, would have a strong advantage in the educational market and, subsequently, in the labor market.

The desire to employ nonacademic admissions criteria and a nonacademic curriculum in secondary schools in Tanzania, for egalitarian reasons, was coupled with prohibitions on private sector development, in order to prevent such an outflow from and downgrading of the public sector (Court 1976). If a private sector is available, it allows the rich to exit to their own preferred schools and thereby places limits on the degree of redistribution

that can be achieved through the public educational system. Thus one could easily argue for higher fees in the public sector from those who can afford to pay, for scholarships for those who cannot, and for compensatory education for disadvantaged groups; none of these would change public-private relationships in a basic way. However, the use of nonacademic admissions criteria (such as quotas), while equitable in intent, may change the basic nature of the public system, with serious nonegalitarian consequences, once private sector response is taken into account. The politics of tribalism in Kenya will determine whether this problem develops over the next decade.

Part IV: Some Policy Issues

This section deals in a more general way with four important policy issues on which international experience can throw some light: the impact of privatization on aggregate enrollments and their distribution; the likelihood that a large private sector will diminish support for the public schools and create elite private institutions available only to the upper classes, hence reduce equality of opportunity; the possible growth of many low quality educational institutions; and the desirability of government subsidies to the private sector.

Impact on Enrollment Rate

Which system will lead to a greater production and consumption of education--pure public production, pure private production, or a mixture of the two? Does privatization (i.e., encouragement of a large private sector) lead to higher enrollment rates for the upper classes, lower enrollment rates for the lower classes? These two questions are related because, if

private management implies (some reliance on) private funding and if rationing by price is more income-biased than rationing by other selection criteria, then the answer to the second question is necessarily "yes" unless a mixed system is larger than a pure public system.

Which type of system, then, is likely to have greater capacity? To answer this question I use the demand and supply framework developed in Part I. I assume that public (private) management is synonymous with public (private) funding, and I compare the results under a pure public, pure private, and mixed public-private system.

Referring to Figures I and II, which depict the benefits and costs of additional public educational places to representative individuals, we see that if the public and private sectors have the same supply curves ($T_i = P$), we cannot say, in general, whether a pure public system will be larger or smaller than a pure private system. In the former case, the size of the system will be a collective decision determined by the preferences of the median voter or ruling coalition, taking into account private plus external benefits versus tax cost, while in the latter case it will be a decentralized decision determined by the number of people whose private benefit exceeds tuition, providing price rationing is used. For example, in Figure I public provision will be n , full enrollment capacity, which would exceed the size of a pure private system, while in Figure II public provision exceeds pure private provision if and only if $E^* > 2$.

However, when tax shares are uniform and equal private tuition, we can say that a mixed system will generally produce more enrollments (mobilize more resources for education) than a pure public or pure private system. The public sector may enroll some people whose private benefit is less than tuition, such as Kenyan students from poor families who could not afford

harambee fees (e.g. persons 1, 2, or 3 in Figure II), while the private sector includes all those whose private benefit exceeds tuition and who haven't gained entry to public schools (all those now attending harambee and other non-elite private schools in Kenya, such as persons 4 or 5).

When tax shares vary, it is possible that the existence of the private alternative will lead some (wealthy) high-tax high-benefit people to vote for a smaller public system than they would have if private education were prohibited, at least partially counteracting this result. If this indirect negative effect is very strong, outweighing the direct positive impact of the private system, the capacity of a mixed system might actually be smaller than a pure public system. However, the likelihood of this outcome is reduced by two forces.

First of all, the upper classes will probably have a relatively high probability of gaining entry into a selective school, which may lead them to vote for a small public system even if no private alternative is available. Second, even if a domestic private system is ruled out, the upper classes always have the possibility of "exporting" their children to a foreign country if they don't get into the domestic system. This is quite common in many developing countries. In Kenya, for example, where private higher education is negligible, and public higher education very selective, the number of students studying at overseas universities is approximately the same as the number in domestic colleges and universities. The introduction of a private domestic alternative in this case is unlikely to diminish the size of the public sector but would probably increase the amount of higher education over-all.

The above discussion has assumed that cost curves and adjustment speeds are the same in the public and private sectors. However, as I have noted

elsewhere, costs and entrepreneurship may differ in the two sectors. If costs are higher in public than private schools, as is often the case, the higher public costs exert a negative impact on equilibrium capacity and the availability of a cheaper private alternative increases the numbers who can afford to pay the price.

Also of importance, in any given time period, are the speed of decisions about entry and capital expansion in the two sectors. The (untested) presumption in U.S. higher education in the 1960's seemed to be that public intervention was needed for expansion, that the supply response would be slow, with quality chosen over quantity, in the private sector. This was a major argument for increased public provision of higher education. This may well be true in a country where educated labor is fully employed, prestigious universities must engage in high cost activities such as graduate training and research, and accreditation "cartels" play an important role. In contrast, in many developing countries including Kenya the experience of the last two decades has been that the private sector responds more rapidly than the public to excess demand at the secondary and higher levels. This may be the case where (even) educated labor is under-employed, prestige is derived from any association with education, graduate training and research are minimal. Under these circumstances, religious non-profit or secular profit-making entrepreneurs may quickly respond to excess demand in education. Then, the real choice has been, not between public and private production of the same magnitude, but rather between a larger educational system with some private management and funding versus a smaller system fully operated and funded by the government. Those desiring educational expansion, therefore, should favor encouraging the private sector, at least in the short run, while those who believe the educational

system has overexpanded should favor restrictions on private sector activity.

Now, the poor would be kept out of a large privatized system by tuition barriers. They will also be kept out of a smaller public system by more stringent selection criteria (examinations, access to tutors, personal contacts) in which the rich usually have an advantage. Therefore, it is not clear a priori which system leads to a more equal representation of classes. Indeed, in Japan, where we find a large privately funded university sector coexisting with a small free highly selective public sector, over-all enrollment rates are high and the income distribution of students is very similar in the two, suggesting that these (price and non-price) barriers roughly offset each other (James and Benjamin 1984). In other words, educational expansion through private effort is not necessarily more income-biased than educational restriction through public responsibility and that is often the real choice, in an international context, especially for developing countries. I explore the issue of income bias further in the next section.

Class Segregation and Elite Private Schools

Many people fear that a more privatized system will lead to greater segregation by socio-economic class than a public system would, with the rich having access to higher quality education than the poor. Relatedly, the upper and middle classes might vote for low cost, low quality public schools, thereby saving on taxes, and would send their own children to high quality private schools. This, too, would perpetuate class differences. Has this occurred in most countries with large private sectors?

It is clear from international experience that the private sector need not contain the elite prestigious institutions, as we in the U.S. tend to

assume. Indeed, in Kenya, Japan and most other countries characterized by excess demand, the opposite seems to be true: a few public schools are on top of the hierarchy, with numerous private institutions at the bottom. Similarly, the private sector need not be an enclave for the rich. In at least two cases I have studied for which good data is available--Dutch elementary and secondary schools and Japanese universities--the various socio-economic classes are equally represented in the public and private sectors (James 1984; James and Benjamin 1984).

In the case of Holland this is partly due to specific restrictions imposed by the government on schools which accept its subsidy. For example, such schools are greatly limited in their ability to charge tuition, to attract better teachers by paying higher wages, or to exclude students who do not pay. Moreover, private school subsidies are tied directly to public school budgets, thereby undermining the possible tendency to cut the latter. Such government policies clearly constrain some of the potential class divisive effects of privatization.

However, a more fundamental explanation for the absence of elite private schools exists in many countries. Most importantly, the public sector is likely to remain on top of the hierarchy if it is differentiated and competitive, if students can choose among public schools and schools can choose among students. Given their price advantage, if public schools and universities can select and exclude, they usually can compete effectively with private institutions for the best students and acquire at least equivalent reputations. This is true in Sweden, where choice of study lines and residential segregation permit differentiation within the public sector; to a much greater extent in Holland, which features a "streaming" system that determines at an early age the small group of students who will pursue

the pre-university route; and even more so in Kenya, where the small group of selective public secondary schools are the preferred alternative. It is very true in Japan, where the public secondary schools and universities are considered the elite ones--except for Tokyo high schools where students are assigned on a more random basis. More generally, since stringent selectivity is characteristic of educational systems with excess demand, the public schools are especially likely to be the elite schools in these cases; large mass private sectors develop to accommodate the left-overs. Where the existence of the private sector is based on culturally differentiated demand the two sectors are more likely to have equivalent status, if both have the same rights to select and exclude.

The concepts of differentiation and selectivity, of course, run counter to the American ideal of open access public schools, at the primary and secondary levels. Hence, private schools are considered elite here and attract higher income students. Selectivity is, however, consistent with magnet schools that are developing in some cities, specialized high schools (such as Bronx Science or Stuyvesant) which have long had excellent reputations, wealthy suburban high schools that segregate by residence, and hierarchical public university systems such as that in California, which certainly have maintained a high position in the national pecking order.

In other words, if a society desires it, "choice" can exist in the public as well as the private sectors, but we may face a trade-off between quality and equality in the public sector; also between equality in the public sector and equality over-all. When differentiation and selectivity are permitted in the public schools, those with greater income and taste for education probably have better access to the "top" public schools, and therefore satisfy their preferences within the public system, as in Kenya.

This helps to maintain its status and political support. While the rich can now benefit from the "elite" schools without paying privately, the poor also benefit because they have access to the top schools. When the public schools are homogenized, those with greater incomes and taste for education are likely to flee to the private sector, which now becomes elite. The public system is more equal (i.e. all public schools are more alike, with the poor having greater access), but it is also perceived as being lower quality. Since the poor are now excluded from the elite schools by economic as well as social barriers, it is not clear that equality for society as a whole has increased. These are important trade-offs and social choice issues for us to consider, as we evaluate policies that would lead to greater privatization of education in our own country or abroad.

Lower Cost: Does This Mean Lower Quality or Higher Efficiency?

As noted earlier, private schools usually operate at lower cost than public schools, unless they are heavily subsidized by the government. Indeed, their lower costs are a major factor enabling them to compete with public schools and constitute an important rationale for the government to delegate production responsibilities to private educational organizations.

Should the lower cost incurred by private institutions be interpreted as evidence of lower quality or higher efficiency as compared with public institutions? This is one of the questions we would most like answered and, as we saw in Part III, it is most difficult to ascertain. The former interpretation assumes that efficiency is the same in the two sectors, so lower valued inputs must mean less value added. Selective public schools then choose the best students and add the most value to them; both gross and net output are high as a result. The latter interpretation assumes that value added by the two sectors is the same (e.g. the same course credits and

degrees are issued), so lower costs imply greater efficiency in processing inputs, usually ascribed to more skillful management and better incentives in the private system. Families are said to choose private schools partially because of their efficiency, which keeps fees low and competitive with (free) government schools.

A definitive examination of this question requires an accurate measure of value added, a task which is greatly complicated by differences among schools in their student inputs as well as ambiguities concerning the appropriate measure of output. The output of education has been variously interpreted as amount earned (i.e. incremental lifetime earnings), amount learned (e.g. incremental scores on achievement tests) or willingness to pay (i.e. the consumer's subjective evaluation of all the investment and consumption benefits of education); these three measures may give different gross outputs. To ascribe differential output effects to a school-type requires us, furthermore, to control for student input, so that we are measuring "net value added" by the school itself, independent of the value of the incoming student or peer group effect. Unfortunately, this data is generally not available, as we saw in the case of Kenya. The most careful study of this issue, based on a longitudinal survey of high school sophomores and seniors, concluded that private schools were more effective in the U.S., but this finding has been vigorously attacked by many critics. Thus, even when excellent data are available and supposedly objective econometric techniques are used, it turns out that the results are highly sensitive to choice of statistical methodologies with different underlying assumptions, hence the definitive answer continues to elude.

In other countries we simply do not have the data for sophisticated econometric analyses. I have, however, approached this issue in another

way in several countries, conducting a careful examination of how private schools coexist with public schools and trying to evaluate whether, when costs are lower, the sources of cost-saving and the consumer response thereto imply lower quality or greater efficiency.

Consider, first, the converse case of Holland. Dutch public and private schools receive the same subsidy per student, and the private schools charge a small fee as well, so their cost per student is actually (slightly) higher than in public schools. Does this mean that their value added is also greater? The problem in analyzing this is that the student inputs are, by definition, differentiated along religious lines. For example, relatively few Catholics have historically gone on to the university; is this due to a Catholic school effect or an effect stemming from the student's cultural background?

We can, however, use a more direct market-based test to examine public-private differences in school quality and efficiency in the Netherlands. Since people have a choice, which is not biased by unequal subsidies, we can simply observe their actions to make inferences about perceived benefits and costs--the approach we generally use in economic analysis. The fact that 70% of all parents choose to send their children to private schools, which charge a small fee (despite the presence of free public schools nearby), suggests they believe they are getting more for their money there. Part of this preference, of course, comes from religious identification and from the desire for religious segmentation. However, since the proportion attending private schools has not declined with the increasing secularization of Dutch society, other forces must also be at work. Many people with whom I discussed this issue believe that the private schools are more personal and responsive to consumer wishes, more careful about how they spend their funds

than the public schools. Private schools are considered more flexible, less bureaucratic, and effectively overseen by a board of directors specifically concerned about the welfare of the school, rather than by a generalized municipal administration. While objective proof is not available, the majority of parents have revealed their preference for (belief in the greater efficiency of) the private schools (James 1984).

As a second case we consider Japan which, in many ways, is a polar opposite to Holland. In Japan, public high schools and universities are generally preferred by parents, both because their tuition is much lower due to generous subsidies, and their prestige is higher. Students at public institutions, on average, achieve higher test scores and lifetime earnings, suggesting that their "gross-output" is indeed greater. However, as in Kenya, the student input is also superior at these schools, which are highly selective, and employers may use them for their screening rather than their human capital-building function, making it unclear whether "social value added" is also greater there.

On average, the private sector in Japan operates at much lower cost per student than the public sector; in 1973, before substantial government subsidies were instituted, the private/public cost ratio was .72 for high schools, .38 for higher education (James and Benjamin, 1984, p. 131). Indeed, as we have seen, this is characteristic of most countries where the private sector has developed in response to excess demand (e.g. Philippines, Kenya, India and Brazil). To what can we attribute this cost differential?

I found that in Japan part of it stemmed from product mix differentials (e.g. more teaching and liberal arts, less science and research in the private sector); these are independent both of quality and efficiency implications. Part of the cost differential stemmed from lower input-output

ratios (e.g. more students per faculty member, larger class size), in private schools. American consumers tend to assess large classes and low student-faculty rates as "low quality" but the Japanese do not make the same subjective evaluation.

However, much of the cost differential before subsidization was due to lower wages paid to workers, especially teachers. As we saw in Part III, this was also the case in Kenya. The use of low paid teachers in Japan was facilitated by the presence of enclaves of underemployed workers who do not have full access to the labor market, namely, young women and retired men. The disproportionate presence of these groups in the private sector kept average wages low there, despite the fact that formal credentials of teachers are comparable to those in the public sector. Part-timers are also heavily employed in private universities; they are not paid fringe benefits, which they receive from their regular jobs, and the moonlighting wage rate tends to be lower as well. Lower wages are, in fact, a characteristic of unsubsidized private schools (except for a few elite ones) in most countries I have studied, e.g., Sweden, India, Kenya and even the U.S., where "volunteer" labor by priests and nuns kept Catholic schools financially solvent for many years.

Is this evidence of greater efficiency or lower quality? Do the lower wages available to these groups stem from their lower productivity, or simply from an artificial segmentation of the labor market, which arbitrarily makes different opportunities available to different kinds of people? By the former interpretation, the private sector is offering lower quality teaching. By the latter interpretation, the private sector is able to take advantage of these labor market imperfections and hire equivalent services at lower cost, while the public sector is proscribed by custom or

law from paying market-clearing wages.

In the absence of objective measures of value added and productivity, I leave it to the reader to draw his/her own conclusions about relative quality and efficiency. Perhaps a combination of lower quality and greater efficiency (i.e., poorer student inputs, possibly lower value added per pupil but higher value added per unit of expenditure) are provided by many private educational organizations.

Government Subsidy and Regulation

In most modern societies, large private educational sectors are heavily subsidized by the state. The groups that were powerful enough to start their own school system were also powerful enough to get state subsidies and this, in turn, enhanced their enrollment potential. In developing countries, where private education has arisen in response to excess demand caused by limited state resources, subsidies are much less, although usually present to some degree. Thus, private management does not necessarily mean private funding, just as public management does not necessarily public funding.

Subsidies sometimes cover capital costs (e.g. by providing the building or equipment) and sometimes they cover labor cost (e.g. payment of the salaries of some teachers). The former is used where the object is to get new schools started; the latter where the object is to upgrade the quality of teaching in existing schools beyond the point that parents are willing and able to pay for directly. The latter is clearly the *raison d'être* in Kenya. Subsidies can also take the form of low interest loans (as in Japan), low rent buildings (as in Sweden), a grant per student (as in Australia) or a variety of tax exemptions (as in the U.S.). An important policy question for developing countries is: to what degree should private education be subsidized and what is the best form for the subsidies to take?

The subsidies facilitate private sector growth but they also enable the government to extract concessions in return, in the form of regulations over inputs, outputs and other characteristics which satisfy diverse constituencies and rule out some of the undesirable consequences of privatization. While this development is not inevitable, it certainly is common.

First of all, regulations often cover teacher salaries and credentials. This is partly because teachers are politically powerful enough to secure wage protection and partly because this is seen as a way of monitoring quality standards. Of course, such regulations also have the effect of raising private school costs and thereby eliminating one advantage that private schools have over public.

Regulations may also set a price floor or ceiling. The former is designed to ensure that private financial resources are generated, but may mean that education is only available to the wealthy. The latter is designed to ensure that all socio-economic groups have access, but may come at the expense of private resource generation and quality. The government also regulates in other ways, for example by determining the selection of students (e.g. Kenya and Holland) and the decision-making structure at private institutions (e.g. Holland and Sweden). This allows some social control to be maintained, even in a decentralized structure.

Thus, the very factors that originally created the demand for a private sector also set in motion forces that make the private sector more like the public; as the private sector grows, with governmental funding and regulating, it becomes quasi-governmental. This process of subsidy, regulation, and convergence between the sectors is the topic I plan to study in my next paper.

Footnotes

¹Estelle James is Professor and Chair of Economics, SUNY, Stony Brook. I wish to thank the numerous people in the U.S. and abroad who helped me with the study that has been summarized in this paper. I especially appreciate the capable data analysis carried out by my research assistants, H.K. Lee and Li-Ching Wann. I gratefully acknowledge the financial support received for this work from the Agency for International Development. Other parts of this study were supported by the Exxon Education Foundation, the National Endowment for the Humanities, the Social Science Research Council, and the Program on Nonprofit Organizations at Yale University.

²This model is spelled out in greater detail in James 1986a and 1986b. To simplify the exposition I assume that everyone derives positive benefits from education that exceed foregone earnings and is willing to attend a free public school, hence full enrollment = n . If the majority of the population prefer a full enrollment public system because their marginal benefits $B_i = (EXTB_i + b_i/n) \geq T_i$, they are able to impose their will on the minority, since a system which accommodates n will then be built and used. This implies that B_i may $< T_i$ for some users of the public system while $B_i < P$ will never be true for users of the private system. Some people may vote for a large public system precisely because it may result in larger enrollments while others may do so because it is a cheaper way to finance their own children's education. Public production thus results from the presence of externalities, the desire for redistributive effects, and cost advantages in the public sector, while private production results from the opposite.

Note that if $EXTB_i$ or b_i/n were not downward sloping, each person

would have a horizontal benefit curve, hence would vote for either n or 0 public production (depending on whether his taxes \geq his benefits) and the private sector would be either 0 or 100% . An interior solution, therefore, requires a downward sloping benefit curve. The private benefit component may be declining if a family believes it has an above-average probability of access to a small selective public school system. $EXTB_1$ may decline because of a belief that, once a minimum core of educated people is available for key positions, education for the remainder is less important to society. If $EXTB_1$ is downward sloping, then the benefit of a marginal public school place depends (negatively) on whether a large private sector already exists; hence, decisions about the public sector could not be modelled independently of private sector decisions. An iterative reactive model showing this interdependence would then be appropriate. The greater the private response to a perceived demand for education, perhaps because of private supply factors discussed in this paper, the less the marginal benefits from another public school place, hence the smaller the public sector will be in equilibrium.

³For example, in Ireland the majority school system, attended by almost everyone, is funded by the government but managed by autonomous boards dominated by the Catholic Church; this system is called "private" in this analysis but has substantial "public" elements. In Italy, whose majority school system is called "public," the Catholic Church retains the right to teach its doctrine on a regular basis; the Church therefore has less need for its own "private" system. In Canada, "separate" church-run schools are government funded and considered part of the public system. As another example of a hybrid organization, consider the case of the Kenyan "harambee school," which is built with volunteer contributions of money and labor from local communities, often has a teacher whose salary is paid by the central

government, therefore faces regulations over criteria for admitting students, and is sometimes managed (at the request of the community) by a mission group, one of the few groups with educational managerial experience. I call this private but I predict that subsidies and regulations will grow, increasing public elements.

⁴For a discussion of the properties of this index see Theill 1972 and Allison 1978. For its use in an international comparative study of homicide see Hansmann and Quigley 1982. I am very grateful to Henry Hansmann for calling this index, and the data upon which it is based, to my attention. My index is slightly different from his since I included many non-Western religions (e.g. Sikhs, African Independents) in my index. I believe that failure to treat these as separate religions introduces a bias which incorrectly imputes greater heterogeneity to modern than developing societies. Unlike Hansmann, I also included "Other Religions" as a separate category, since it, too, may be viewed as a source of religious heterogeneity and competition.

⁵Unfortunately, none of these indices directly measure intensity of preference for religiously differentiated schools, on the demand side. For example, the Catholics and Calvinists strongly wanted their own privately controlled schools and made this their major political objective in late nineteenth century Holland, a country which is almost 100% Christian (see James, 1984); similarly, the very orthodox Jews currently want their own schools in Israel, a Jewish state. The subjectively felt heterogeneity in these cases probably exceeds our objective measures of heterogeneity, but we have no way of incorporating this systematically into our analysis.

⁶I prefer the median as a descriptive measure because these countries differ greatly in size, figures on total enrollment are not available, and a

small country with a high %PVT could heavily influence the mean.

⁷Interestingly, CATH had the highest simple correlation with %PVT ($R^2 = .34$) and was highly significant in a single-variable regression, but usually was not significant when other variables were in the equation. This may be due to the small sample problem or to the fact that the Catholic Church often exerts influence over the public system, hence may not need a large private system, when CATH is very large.

⁸Although linguistic heterogeneity is not important as a determinant of %PVT in developing countries, language does play an important role in another way. Where the medium of instruction in government schools is the domestic language, private schools often spring up using English as the teaching medium; some of these explicitly follow an American or English curriculum. Occasionally, too, we find private schools which teach in French or German and follow the French or German curriculum. These schools are used by nationals as well as by foreign residents. For the former group they are not a response to excess demand, or to indigenous cultural differences, but represent a demand for "quality" education, in situations where the public sector has opted for quantity in the quantity-quality trade-off. Fluency with a foreign language and culture is then a scarce skill, and schools imparting this skill are considered high quality by their clientele and probably by the labor market.

⁹I also tested the significance of a political variable, the effect of "left party power" (LPP) or "Catholic party power" (CPP) in modern countries, using Wilensky's definition and indices. LPP may inhibit subsidies to private schools, thereby directly discouraging their supply, but, conversely, the homogenization of public schools brought about by LPP may stimulate a demand for private schools, indirectly. Conversely, CPP may stimulate sub-

sidies but, at the same time, may lead to substantial Catholic influence in the public schools, hence less demand for private schools. It is therefore difficult to predict a priori the expected sign of LPP and CPP, since forces could operate in both directions and, indeed, empirical analysis showed them both to be insignificant (in a very small sample). See Wilensky 1981.

¹⁰For a more detailed historical discussion of education in nineteenth and early twentieth century Kenya, including the struggle among various religious and political groups for control of the schools, see Anderson 1970, Sheffield 1973, Kay 1979.

¹¹Calculated from Ministry of Education Triennial Survey, 61-63, Tables I and V.

¹²Report of the Working Party on Financing of Higher Education, 1982, pp. 6-9.

¹³Report of the National Committee on Educational Objectives and Policies, 1976, p. 49.

¹⁴Interestingly, the gap in performance between high and low cost schools increased as the CPE shifted to an emphasis on reasoning ability rather than memory through the 1970's; teaching quality makes a bigger difference where reasoning rather than rote is the objective. See Makau and Somerset, 1980.

¹⁵See the Report of the Working Party on Financing of Higher Education, 1982.

¹⁶Ibid.

¹⁷Another example of a public-private hybrid is the government school which has added a harambee stream. These schools charge high fees for their harambee streams, which permit the hiring of additional staff and supplies. Thus, ability to pay is an important criterion for entrance. Many parents, however, are willing to pay, in order to get access to the superior

facilities and prestige of these schools. The harambee streams are, consequently, a valuable source of flexible funds for these schools.

¹⁸Daily Nation, July 23, 1984, p. 3.

¹⁹Ministry of Education, Annual Report, 1979 and Central Bureau of Statistics, 1979 School Census.

²⁰Bertrand and Griffin 1984, p. 70.

²¹Central Bureau of Statistics, Educational Trends, 1973-77, pp. 54-5.

²²One interesting exception is the recent development of several "Harambee Institutes of Technology." These are expensive capital-intensive institutions, designed to provide high-level post-secondary vocational training. Contrary to what one usually observes in excess demand driven private sectors, these are capital-intensive and require a large initial investment. Significantly, although 17 Institutes were initially planned, a much smaller number have been successful. According to one detailed analysis, their success depends on their ability to raise capital from foreign nonprofit organizations and governments -- quite a departure from traditional domestic harambee fundraising drives. See Godfrey and Mutiso 1974.

²³Report of the Working Party on Financing of Higher Education, 1982.

²⁴Central Bureau of Statistics, Educational Trends 1973-77, pp. 72.

²⁵Ministry of Education, Annual Report, 1970, p. 62.

²⁶Central Bureau of Statistics, Educational Trends, 1973-77, pp. 72, 85; and Report of the National Committee on Educational Objectives and Policies, 1976, pp. 140-141.

²⁷Report..., Ibid.

²⁸A large literature analyzes the High School and Beyond data, with much dissent over how to treat the selectivity problem. The best source for

the above finding is Willms 1984.

²⁹As further evidence consistent with the expectation that student selectivity is a major factor in the relative scores of different schools, I offer the following information on exam scores of girls and boys. Interestingly, girls have a lower failure rate on the EACE than boys (28% versus 41% in 1976) despite the fact that many of them attend private schools. Girls are almost as numerous as boys in primary school, which tend to be coed, but for historical reasons there are only half as many female secondary places in public schools, which tend to be single sex. Hence, girls must seek places in private schools and selectivity is greater for females than for males. Both public and private schools get higher quality incoming females, who are consequently less likely to fail than boys, even though, on average, they attend poorer schools. See Central Bureau of Statistics, Educational Trends, 1973-77, p. 84.

³⁰Central Bureau of Statistics, Educational Trends, 1973-77, p. 99; Bertrand and Griffin, p. 34.

Table 1. Relative Role of the Private Sector in Education

<u>12 Modern Industrial Societies, 1980</u>	%Private Primary (1)	%Private Secondary (2)	%PVT Sec + %PVT Prim	%PVT Prim+Sec
Australia	20	26	1.3	22
Belgium	51	62	1.2	56
England and Wales	5	8	1.6	6
France	15	21	1.4	17
Germany	2	9	4.5	5
Ireland	98	68	.7	85
Italy	8	7	.9	8
Japan	1	15*	15.0	8
Netherlands	69	72	1.0	71
New Zealand	10	12	1.2	11
Sweden	1	2	2.0	1
U.S.	18	10	.6	14
Median	12.5	13.5	1.25	
Mean	24.8	26.0	2.62	
<u>38 Developing Countries, 1975</u>				
Kenya	1	49	49.0	
Lesotho	100	89	.9	
Sudan	2	13	6.5	
Cameroon	43	57	1.3	
Chad	10	6	.6	
Liberia	35	43	1.2	
Niger	5	14	2.8	

*Data include upper and lower secondary. Figure for upper secondary is 28%.

<u>Selected Developing Countries, 1975</u>	%Private Primary	%Private Secondary	%PVT Sec %PVT Prim
Nigeria	26	41	1.6
Togo	29	16	.6
Upper Volta	7	43	6.1
Algeria	1	1	1.0
Iran	8	17	2.1
Jordan	30	7	.2
Morocco	5	8	1.6
Saudi Arabia	3	2	.7
Syria	5	6	1.2
India	25	49	2.0
Indonesia	13	60	4.6
Philippines	5	38	7.6
Singapore	35	1	0
Thailand	11	32	2.9
Argentina	17	45	2.6
Bolivia	9	24	2.7
Brazil	13	25	1.9
Chile	18	23	1.3
Colombia	15	38	2.5
Costa Rica	4	6	1.5
Ecuador	17	30	1.8
El Salvador	6	47	7.8
Guatemala	14	43	3.1
Haiti	42	76	1.8
Honduras	5	51	10.2

<u>Selected Developing Countries, 1975</u>	%Private Primary	%Private Secondary	%PVT Sec ▽ %PVT Prim
Jamaica	5	76	15.2
Mexico	6	25	4.2
Panama	5	14	2.8
Paraguay	13	37	2.8
Peru	13	17	1.3
Venezuela	11	18	1.6
Median	11	27.5	1.05
Mean	16.1	31.2	4.2

Sources for Table 1

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U.S.: Digest of Educational Statistics (Washington, D.C.: National Center for Educational Statistics, U.S. Dept. of Education, 1982), p. 13.

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Table 2A
Entire 50 Country Set
Primary

#	R ²	C	PCI	URB	REL	CHR	NCHR	CATH	NCATH	LANG	MD	LAD
1.	.16	2.5 (.19)	-.9 (.4)	-17 (.97)	13 (1.22)					10 (1.24)	25.5 (1.58)	6.7 (.69)
2.	.23	11.2 (1.15)	-1.9 (.88)	-9 (.53)		34 (2.39)**				6 (.73)	2.8 (.15)	-25.9 (1.8)+
3.	.16	7.7 (.71)	-1.0 (.44)	-16 (.94)			40 (1.4)+			11 (1.39)+	24.8 (1.54)	2.1 (.24)
4.	.21	14.5 (1.48)	-1.4 (.67)	-8 (.45)				28 (2.13)**		5 (.58)	11.3 (.65)	-22.7 (1.57)
5.	.23	8.7 (.87)	-2.3 (1.06)	-10 (.62)					61 (2.36)**	10 (1.33)+	25 (1.61)	-2.0 (.23)
6.	.15	9.4 (1.01)	-1.3 (.59)	-14 (.84)	10 (1.03)					7 (1.04)	23.4 (1.48)	
7.	.17	5.7 (.6)	-1.3 (.61)	-16 (.94)		14 (1.56)+				13 (1.87)**	21.9 (1.41)	
8.	.16	9.4 (1.11)	-1.1 (.5)	-16 (.92)			40 (1.41)+			10 (1.56)+	23.9 (1.55)	
9.	.16	7.8 (.86)	-1.2 (.54)	-15 (.88)				12 (1.43)+		12 (1.76)***	24.6 (1.6)	
10.	.23	7.3 (.93)	-2.2 (1.05)	-11 (.69)					60 (2.39)**	11 (1.79)***	25.9 (1.76)+	
11.	.1	6.0 (.65)	1.5 (1.28)	-15 (.89)	13 (1.33)+					7 (1.01)		
12.	.12	6.7 (.8)	1.8 (1.55)	-17 (.98)			46 (1.59)+			11 (1.63)+		
13.	.17	5.1 (.65)	.9 (.79)	-12 (.73)					61 (2.37)**	12 (1.84)***		
14.	.15	3.1 (.23)	-.9 (.42)	-17 (.96)	11 ^a (1.73)***						26.1 (1.65)	6.7 (.7)
<u>Means:</u>												
%PVT =		18.2	2.68	.28	.66	.56	.11	.42	.12	.59	.24	.34

^aThis is the coefficient for RELANG = REL + LANG

Note: In this and the following tables, numbers in parentheses are absolute values of t-statistics. 2-tailed test used for PCI, URB, MD, LAD; 1-tailed test used for REL, CHR, NCHR, CATH, NCATH, LANG, NS.

- * = significant at 1% level
- ** = significant at 2.5% level
- *** = significant at 5% level
- + = significant at 10% level

Table 2B

Entire 50 Country Set

Secondary

#	R ²	C	PCI	URB	REL	CHR	NCHR	CATH	NCATH	LANG	MD	LAD
1.	.4	5.8 (.48)	0.0 (.004)	-57 (3.67)*	27 (2.84)*					11 (1.5) ⁺	24.9 (1.73) ⁺	29.9 (3.44)*
2.	.3	27.6 (2.82)*	-1.5 (.7)	-50 (2.95)*		14 (.97)				9 (1.11)	18.9 (1.02)	8.5 (.58)
3.	.42	17.1 (1.78) ⁺	-0.2 (.12)	-56 (3.66)*			80 (3.16)*			13 (1.87)***	23.8 (1.68) ⁺	20.2 (2.6)**
4.	.29	28.6 (2.9)*	-1.4 (.64)	-52 (3.02)*				1 (.08)		10 (1.26)	28.5 (1.63)	19 (1.31)
5.	.36	24.32 (2.54)**	-2.0 (.96)	-49 (3.0)*					53 (2.14)**	11 (1.46) ⁺	26.8 (1.8) ⁺	16.4 (1.96) ⁺
6.	.23	36 (3.88)*	-1.7 (.78)	-45 (2.66)**	14 (1.41) ⁺					-2 (.36)	15.4 (.9)	
7.	.3	29 (3.18)*	-1.7 (.8)	-48 (2.92)*		21 (2.46)*				6 (.95)	12.7 (.84)	
8.	.33	32.6 (4.1)*	-1.1 (.53)	-48 (3.01)*			79 (2.94)*			3 (.42)	14.5 (.99)	
9.	.26	34.2 (3.83)*	-1.6 (.74)	-46 (2.75)*				15 (1.87)***		4 (.62)	17.3 (1.13)	
10.	.3	35.6 (4.52)*	-2.8 (1.32)	-42 (2.56)**					63 (2.49)*	3 (.41)	19.1 (1.29)	
11.	.22	33.7 (3.75)*	0.1 (.1)	-46 (2.7)*	16 (1.64) ⁺					-3 (.37)		
12.	.32	31 (3.98)*	.7 (.61)	-49 (3.06)*			82 (3.08)*			3 (.49)		
13.	.27	34 (4.34)*	-.5 (.43)	-42 (2.59)**					63 (2.49)*	3 (.47)		
14.	.37	8.4 (.7)	-0.1 (.07)	-55 (3.51)*	17 ^a (2.84)*						27.9 (3.39)*	29.8 (1.94) ⁺
<u>Means:</u>												
%PVT =		30	2.68	.28	.66	.56	.11	.42	.12	.59	.24	.34

^aThis is the coefficient for RELANG = REL + LANG

Table 3A
38 Developing Countries
Primary

#	R ²	C	PCI	URB	REL	CHR	NCHR	CATH	NCATH	LANG	LAD
1.	.23	-15.7 (1.03)	2.4 (.66)	1 (.07)	31 (2.59)*					7 (.96)	8.5 (.93)
2.	.24	11.8 (1.28)	-1.6 (.51)	6 (.35)		40 (2.73)*				1 (.17)	-34.5 (2.56)**
3.	.17	7.7 (.74)	-1.1 (.33)	6 (.3)			52 (1.99)***			6 (.81)	-3.9 (.49)
4.	.1	15.9 (1.6)	-2.2 (.64)	7 (.35)				17 (1.04)		2 (.3)	-17.6 (1.15)
5.	.34	2.64 (.29)	0.3 (.11)	10 (.57)					98 (3.67)*	8 (1.19)	-8.3 (1.16)
6.	.21	-4.6 (.48)	0.6 (.2)	7 (.42)	25 (2.48)*					3 (.48)	
7.	.39	5.8 (.6)	-0.4 (.13)	-2 (.12)		9 (1.0)				10 (1.48) ⁺	
8.	.16	4.4 (.56)	-0.5 (.17)	3 (.14)			52 (2.02)**			8.6 (1.49) ⁺	
9.	.6	11.6 (1.25)	-1.4 (.42)	3 (.13)				1 (.15)		7 (1.04)	
10.	.32	-3.5 (.45)	.8 (.27)	3 (.18)					93 (3.52)*	13 (2.37)*	
<u>Means:</u>											
%PVT =		16.1	1.06	.23	.65	.48	.11	.42	.1	.68	.45

Table 38

38 Developing Countries

Secondary

#	R ²	C	PCI	URB	REL	CHR	NCHR	CATH	NCATH	LANG	LAD
1.	.44	-5.1 (.31)	2.2 (.55)	-49 (2.47)**	38 (2.98)*					9 (1.16)	31.2 (3.24)*
2.	.32	31.2 (2.86)*	-3.2 (.84)	-42 (1.97) ⁺		24 (1.38) ⁺				4 (.44)	-2.3 (.14)
3.	.45	20.3 (1.94) ⁺	+1.8 (.52)	-44 (2.27)***			84 (3.2)*			9 (1.15)	16.1 (2.01) ⁺
4.	.29	33.5 (3.05)*	-3.5 (.91)	-42 (1.92) ⁺				-11 (.58)		7 (.75)	24.1 (1.42)
5.	.38	23.9 (2.14)***	-2.1 (.59)	-40 (1.94) ⁺					71 (2.21)**	8 (1.03)	12.8 (1.47)
6.	.25	36 (3.14)*	-4.4 (1.17)	-26 (1.27)	16 (1.31) ⁺					-7 (.95)	
7.	.32	30.8 (2.97)*	-3.1 (.84)	-43 (2.06)***		22 (2.27)**				4 (.59)	
8.	.39	33.9 (4.05)*	-4.2 (1.25)	-30 (1.6)			83 (3.04)*			-1 (.17)	
9.	.24	39.5 (3.83)*	-4.5 (1.19)	-36 (1.65)				11 (1.12)		11 (.01)	
10.	.33	33.3 (3.57)*	-3.8 (1.09)	-29 (1.5)					79 (2.44)**	1 (.17)	
<u>Means:</u>											
%PVT =		31.2	1.06	.23	.65	.48	.11	.42	.10	.68	.45

Table 4
12 Modern Countries

Primary

#	R ²	C	PCI	URB	REL	CATH	NCATH	LANG	NS
1.	.71	78.6 (2.53)***	-4.5 (1.5)	-107 (1.94) ⁺	34 (1.16)			48 (1.96)***	-16 (1.04)
2.	.77	146.1 (3.1)**	-6.3 (2.1) ⁺	-118 (2.52)***		-68 (1.76)		95 (2.58)**	-35.4 (2.57)**
3.	.66	81.4 (2.37)***	-4.4 (1.22)	-64 (1.54)			23 (.39)	42 (1.62) ⁺	-21.9 (1.35)
4.	.66	74.3 (2.4)***	-4.6 (1.55)	-133 (2.71)***	49 (1.85) ⁺			53 (2.18)***	
5.	.51	92.4 (1.63)	-4.3 (1.1)	-93 (1.52)		-23 (.49)		66 (1.4)	
6.	.55	78.2 (2.16) ⁺	-5.1 (1.34)	-79 (1.88)			53 (.94)	46 (1.67) ⁺	
7.	.71	81.2 (2.85)***	-4.7 (1.69)	-119 (2.86)***	43 ^a (2.21)***				-14.4 (1.03)

Means:

%PVT =	24.8	7.82	.45	.67	.44	.18	.28	.42
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Secondary

#	R ²	C	PCI	URB	REL	CATH	NCATH	LANG	NS
1.	.66	59.7 (2.15) ⁺	-1.9 (.7)	-87 (1.76)	28 (1.07)			31 (1.41) ⁺	-17.9 (1.29)
2.	.68	105.8 (2.31) ⁺	3.0 (1.03)	-87 (1.92) ⁺		-46 (1.23)		62 (1.74) ⁺	-32.3 (2.41)**
3.	.6	60.2 (1.96) ⁺	-1.2 (.38)	-47 (1.27)			-1 (.02)	26 (1.12)	-24.9 (1.72) ⁺
4.	.57	54.9 (1.9) ⁺	-2.1 (.73)	-116 (2.54)**	44 (1.81) ⁺			36.4 (1.61) ⁺	
5.	.37	56.8 (1.06)	-1.2 (.32)	-65 (1.12)		-5 (.12)		36 (.8)	
6.	.4	56.5 (1.63)	-2.0 (.55)	-60 (1.6)			31 (.62)	31 (1.16)	
7.	.66	60.2 (2.39)***	-1.9 (.78)	-89 (2.41)	30 ^a (1.75) ⁺				-17.6 (1.42) ⁺

Means:

%PVT =	26	7.82	.45	.67	.44	.18	.28	.42
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^aThis is the coefficient for RELANG = REL + LANG

Table 5
14 Modern Countries
Primary and Secondary

#	R ²	C	PCI	URB	REL	CATH	NCATH	LANG	NS
1.	.7	67.4 (1.87)	-3.8 (1.61)	-104 (2.27) ⁺	40 (1.87)***			45 (2.37)**	-13.5 (1.13)
2.	.57	69.6 (1.64)	-3.9 (1.04)	-42 (1.04)		-6 (.19)		51 (1.34)	-21.6 (1.54) ⁺
3.	.6	69.6 (2.3)***	-4.4 (1.53)	-50 (1.39)			38 (.85)	42 (1.89)***	-18 (1.34)
4.	.65	64.8 (2.48)***	-3.6 (1.49)	-126 (3.0)**	48 (2.34)**			46 (2.38)**	
5.	.44	52.6 (1.19)	-2.7 (.79)	-48 (1.13)		7 (.2)		41 (1.0)	
6.	.51	67.3 (2.14) ⁺	-4.3 (1.43)	-68 (1.91) ⁺			53 (1.19)	42 (1.81) ⁺	
7.	.7	68.5 (2.89)***	3.9 (1.74)	-108 (3.07)**	43 ^a (3.21)*				-13 (1.18)
<u>Means:</u>									
%PVT =		22.3	8.14	.42	.59	.38	.15	.24	.35

^aThis is the coefficient for RELANG = REL + LANG

Table 6A

34 Developing Countries (With Residuals)

Primary

#	R ²	C	PCI	URB	REL	CHR	NCHR	CATH	NCATH	LANG	LAD	RES
1.	.85	-12.4 (1.55)	.8 (.43)	.7 (.08)	32 (5.09)*					5 (1.19)	8.7 (1.87) ⁺	.9 (10.5)*
2.	.79	10.6 (1.85) ⁺	-1.3 (.71)	-19 (1.72) ⁺		45 (4.85)*				-2 (.33)	-43.5 (4.89)*	.8 (8.35)*
3.	.85	6.13 (1.19)	-.3 (.17)	1 (.13)			82 (5.66)*			4 (.9)	-2.9 (.75)	.9 (10.44)*
4.	.85	14.3 (2.92)*	-.2 (.11)	-4 (.46)				24 (2.34)**		3 (.65)	-21.8 (2.27)**	.9 (11.56)*
5.	.86	3.16 (.63)	0 (.0)	7 (.76)				98 (7.24)*		8 (1.71)***	-8.2 (2.18)**	.9 (10.0)*
6.	.85	-1.8 (.39)	-.2 (.1)	5 (.6)	26 (5.18)*					.68 (.19)		.9 (10.88)*
7.	.84	6.7 (1.43)	-.4 (.28)	-6.6 (.75)		9 (2.18)**				11 (2.78)*		.9 (11.44)*
8.	.84	4.2 (1.12)	-.5 (.32)	.3 (.04)			81 (5.64)*			6 (1.7)***		.9 (10.54)*
9.	.84	11.4 (2.5)**	-.5 (.31)	-3.7 (.43)				2 (.38)		9 (2.16)**		.9 (11.9)*
10.	.85	1.7 (.41)	.1 (.1)	2.5 (.32)					90 (6.73)*	12 (3.59)*		.9 (10.22)*
<u>Means:</u>												
	%PVT	16	1.12	.24	.63	.52	.11	.46	.11	.6	.47	

Table 6B

34 Developing Countries (With Residuals)

Secondary

#	R ²	C	PCI	URB	REL	CHR	NCHR	CATH	NCATH	LANG	LAD	RES
1.	.65	-5 (.36)	1.7 (.54)	-37 (2.36)***	38 (3.52)*					5 (.59)	28.1 (3.46)*	.6 (4.08)*
2.	.61	27.8 (3.05)*	-.4 (.13)	-86 (3.51)*		47 (3.25)*				-3 (.33)	-25.3 (1.8)*	.4 (2.89)*
3.	.65	19.5 (2.16)***	-.1 (.04)	-36 (2.32)***			86 (3.41)*			3 (.36)	13.9 (2.09)***	.6 (4.13)*
4.	.65	26.6 (3.07)*	1.2 (.39)	-73 (4.14)*				33 (1.88)***		3 (.31)	-12.3 (.74)	.7 (4.74)*
5.	.65	80 (4.65)*	0 (.01)	-30 (1.97)*					32 (1.15)	6 (.78)	8.2 (1.22)	.6 (3.81)*
6.	.61	28.6 (3.38)*	-1.3 (.49)	21 (1.43)	20 (2.18)**					-10 (1.61)		.7 (4.96)*
7.	.61	23.2 (2.8)*	-1.1 (.39)	-40 (2.59)**		26 (3.59)*				4 (.58)		.5 (3.8)*
8.	.62	31 (4.58)*	-1.4 (.54)	-25 (1.75)*			87 (3.41)*			-7 (1.16)		.6 (4.78)*
9.	.6	27.6 (3.31)*	-1.1 (.39)	-55 (3.4)*				19 (2.59)*		3 (.48)		.6 (4.34)*
10.	.63	24.3 (3.28)*	-1.3 (.48)	-23 (1.59)					101 (4.24)*	0 (0)		.6 (3.73)*
<u>Means:</u>												
	%PVT	28.3	1.12	.24	.63	.52	.11	.46	.11	.6	.47	

Table 7

Public and Private Schools in Kenya, 1963,
Before Independence

	<u>Public</u>	<u>Private</u>		<u>Total</u>	<u>%PVT</u>
		<u>Aided</u>	<u>Unaided</u>		
<u>Primary</u>					
European	16	11	11	38	57.9%
Asian & Arab	40	85	1	126	68.3%
African*	18	5736	140	5894	99.7%
<u>Secondary</u>					
European	-	7	7	14	100 %
Asian & Arab	14	15	12	41	66.0%
African	1	81	13	95	98.9%

Source: Ministry of Education, Triennial Survey, 1961-63, Table 1.

*These numbers include primary and intermediate schools for Africans, which were equivalent to the primary level for Europeans and Asians.

Table 8
Public and Private Enrollments in Kenya, 1963,
Before Independence

	<u>Public</u>	<u>Private</u>		<u>Total</u>	<u>%PVT</u>
		<u>Aided</u>	<u>Unaided</u>		
<u>Primary</u>					
European	3,660	979	2,000	6,639	44.9%
Asian & Arab	23,666	21,532	39	44,237	48.8%
African*	2,317	828,862	9,496	840,677	99.7%
<u>Secondary</u>					
European	--	2,549	716	3,265	100 %
Asian & Arab	7,095	3,373	3186	13,654	48.0%
African	30	9,566	994	10,590	99.7%

Source: Ministry of Education, Triennial Survey, 1961-63, Table 1.

Table 9

Public and Private Secondary Schools in Kenya,
1960-1979

	<u>Public</u>		<u>Private</u>			<u>Total</u>
	<u>Government</u>	<u>Assisted</u>	<u>Harambee</u>	<u>Church</u>	<u>Prop.</u>	
<u>Numbers</u>	⎵		⎵			
1960	65		26			91
1963	119		32			151
1966	178	21	201			400
1970	281	19	483			783
1974	362	37	467	58	105	1029
1977	437	7	825	74	143	1486
1979	418	64	996	67	192	1737
<u>Percentages</u>						
1960	71%		29%			100%
1963	79		21			100
1966	45%	5%	50%			100
1979	36	2	62			100
1974	35	4	45%	6	10%	100
1977	29	1	56	5	10	100
1979	24	4	57	4	11	100

Sources:

1960-1966: Ministry of Education, Triennial Survey, 1964-66, and Annual Report, 1966, p. 40.

1970: Ministry of Education, Annual Report, 1970, p. 53.

1974-77: Central Bureau of Statistics, Educational Trends, 1973-77, Tables 43 and 44, p. 71.

1979: Ministry of Education, Annual Report, 1979, p. 46, and 1979 School Census, Table 10.

Table 10

Public and Private Secondary Enrollments in Kenya,
1961-81 (in thousands)

	<u>Forms I - IV</u>			<u>Forms V - VI</u>			<u>Total</u>			
	<u>Public</u>	<u>Private</u>	<u>%PVT</u>	<u>Public</u>	<u>Private</u>	<u>%PVT</u>	<u>Public</u>	<u>Private</u>	<u>Total</u>	<u>%PVT</u>
1961	17.7	3.6	17%	.7	.1	14%	18.4	3.7	22.2	17%
1963	22.2	6.9	24	1.0	.1	10	23.2	7.0	30.1	23
1965	31.8	14.3	31	1.8	.1	5	33.6	14.4	48.0	30
1970	70.1	52.2	43	4.5	.1	2	74.6	52.3	126.9	41
1975	98.1	110.6	53	8.2	.5	6	116.3	111.1	217.4	51
1977	118.7	190.9	62	9.3	1.1	11	128.0	192.0	320.0	60
1979	145.3	223.0	61	13.9	2.2	14	159.2	225.2	384.4	59
1981	151.4	239.3	61	17.3	2.4	12	168.8	241.8	410.6	59

Sources:

1961-75: Report of the National Committee on Educational Objectives and Policies (Nairobi: Govt. of Kenya, 1976), p. 70. (Taken from various Annual Reports of the Ministry of Education.)

1977: Central Bureau of Statistics, Educational Trends, 1973-77, p. 72.

1979: Ministry of Education, Annual Report, 1979, pp. 47-60.

1981: Central Bureau of Statistics, Economic Survey, 1983, p. 217.

Table 11
CPE Results, 1983

<u>Subject</u>	<u>Rural Low Cost</u>	<u>Nairobi Low Cost</u>	<u>Nairobi High Cost</u>	<u>Church & Proprietary</u>
Science	19.0	18.6	24.8	26.9
English	29.9	31.5	39.1	41.3
Geography	11.9	11.2	14.8	15.3
Math	24.8	23.8	34.4	37.1

Source: Data supplied by the Kenya National Examinations Council.

Table 12
Detailed Breakdowns for 1979

	Number of Schools							Total	%PVT
	Public			Private					
	Public	Pub.& Har.	Ass.	Aided	Unaided	Church	Prop.		
< Form IV	3	9	12	70	404	23	51	572	96%
Form I-IV	101	171	52	256	261	39	126	1006	68
> Form IV	98	36	--	3	2	5	15	159	16
Total	202	216	64	329	667	67	192	1737	72

Enrollments (in thousands)

	Public			Private				Total	%PVT
	Public	Pub.& Har.	Ass.	Aided	Unaided	Church	Prop.		
	Male	57.3	50.6	8.7	34.4	36.9	6.6		
Female	25.9	25.5	6.9	35.9	32.4	5.6	24.6	156.7	63
Total	83.1	76.1	15.6	70.2	69.3	12.2	57.8	384.4	55

Source: Central Bureau of Statistics, computer data from 1979 School Census, Tables 8 and 19. The discrepancy between Table 12 and Table 10 stems from the fact that "assisted" schools are grouped with the private sector for 1979 in Table 10; this should not affect the data for other years.

Table 13

Public and Private Secondary Teachers in Kenya:
Their Numbers and Qualifications, 1961-79

	<u>Qualified</u>		<u>Unqualified</u>		<u>Total</u>	<u>Student/Faculty Ratio</u>
	<u>Graduate</u>	<u>Nongrad.</u>	<u>Number</u>	<u>Percent</u>		
<u>Public</u>						
1961	840	300	50	4%	1190	15
1963	910	380	90	7	1380	17
1965	1080	590	120	8	1570	19
1970	1890	1430	210	6	3530	21
1975	1920	2150	410	9	4480	24
1979	2813	2312	947	15	6072	26
<u>Private</u>						
1961	90	50	10	7%	150	25
1963	170	40	20	9	230	30
1965	290	210	210	30	710	20
1970	640	500	1210	51	2350	22
1975	770	510	2290	64	3570	31
1979	1140	1643	6449	70	9232	25

Sources:

1961-75: Report of the National Committee on Educational Objectives and Policy, pp. 118-119. Taken from Ministry of Education Annual Reports.

1979: Ministry of Education, Annual Report, 1979, pp. 71-80; and Central Bureau of Statistics, 1979 School Census.

Table 14

Years of Teacher Experience, 1979

	<u>Public</u>	<u>Private</u>			<u>Total</u>
		<u>Aided Harambee</u>	<u>Unaided Harambee</u>	<u>Unaided Church & Prop.</u>	
1 or less	840	965	1,376	681	3,862
2 - 3	1,647	870	1,031	736	4,284
4 - 6	1,436	636	499	600	3,171
7 - 9	943	416	177	240	1,776
10 - 12	495	172	60	138	865
13 - 15	273	113	32	82	500
15 +	438	166	44	198	846
Total	6,072	3,338	3,219	2,675	15,304

Source: Data supplied by the Central Bureau of Statistics from the 1979 School Census, Table 39.

Table 15

EACE Results and Teacher Qualifications, 1979

<u>Percent Students Pass</u>	<u>Percent Teachers Qualified</u>							
	<u>90-100</u>	<u>80-89</u>	<u>70-79</u>	<u>60-69</u>	<u>50-59</u>	<u>40-49</u>	<u>30-39</u>	<u>< 30</u>
1st division pass	14%	13%	7%	6%	5%	2%	1%	1%
2nd division pass	27	28	20	14	12	11	6	6
3rd division pass	34	34	32	30	25	27	19	19
4th division pass	18	17	27	31	32	33	36	35
Fail	7	8	15	20	26	28	38	40
	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>

Source: Data supplied by the Central Bureau of Statistics from the 1979 School Census, Table 31.

Table 16

Grades of Secondary School Facilities, 1981

	Public		Private						Total	
	#	%	Aided Harambee		Unaided Harambee		Church & Proprietary		#	%
			#	%	#	%	#	%		
A	111	26%	6	2%	4	1%	5	2%	126	7%
B	122	29	4	1	17	2	23	11	166	10
C	160	38	77	26	23	3	31	14	291	17
D	25	6	197	67	499	64	117	55	838	49
Unqual.	3	1	9	3	234	30	38	18	284	17
Total	421		293		777		214		1705	

Source: My calculations from a list of schools supplied to me by the Ministry of Education. Note that a small number of schools may have been omitted from this list, so 1705 should not be taken as the total number of Kenyan secondary schools in 1981.

Table 17

Percentages of Schools with
Various Capital Facilities

	<u>Public</u>	<u>Private</u>				<u>Total</u>
		<u>Aided Harambee</u>	<u>Unaided Harambee</u>	<u>Church</u>	<u>Prop.</u>	
Piped water	65	28	17	42	68	34
Electricity	59	14	3	31	51	22
Telephone	74	22	7	39	57	31
Library	66	32	22	55	66	38
Teachers' houses	91	83	60	72	47	72
Labs	88	44	11	51	48	43
Motor Vehicle	64	5	2	25	35	17
TV Sets	36	5	1	13	21	11
Dorms	80	61	29	55	59	51

Source: Data supplied by the Central Bureau of Statistics from the 1979 School Census, Tables 21-22.

Table 18

EACE Results and Capital Facilities, 1979

	<u>All Facilities</u>	<u>Some Facilities</u>	<u>No Facilities</u>
1st division pass	12%	4%	0%
2nd division pass	22	13	6
3rd division pass	30	26	21
4th division pass	22	30	36
Fail	14	27	37

Source: Data supplied by the Central Bureau of Statistics from the 1979 School Census, Table 25.

Table 19

Proportion Enrollment in Private Sector,
by Form, 1977

Form I	71%
Form II	66
Form III	51
Form IV	46
Form V Arts	18
Form VI Arts	15
Form V Science	6
Form VI Science	6

Source: Central Bureau of Statistics, Educational Trends, 1973-77, Table 47, p. 72.

Table 20

Fees and Expenditures Per Student
in Public and Private Schools, 1981

School Type	Source of Funds (in Kenyan £)			% Private Funding
	Government	Parents	Total Expenditure Per Student	
Public				
Low cost boarding	156*	67	223	30%
High cost boarding	208*	113	321	35%
Day school	136*	23	159	14%
Average	151	65	216	30%
Private				
Aided Harambee	53	97**	150**	65%
Unaided Harambee	0	123**	123**	100%
Average Harambee	20	113	133	85%
Church & Proprietary	--	98 ⁺	98 ⁺	100%

Source: Government of Kenya, Report of the Working Party on Financing of Higher Education, 1982, pp. 45-52.

*The difference between these 3 school types stems from a difference in grants-in-aid to cover non-teaching variable costs: 100, 40 and 28, respectively. Average cost of teachers are assumed to be the same in these calculations.

**The Working Party Report did not distinguish between fees paid at aided and unaided harambee schools, but only gave the average of £113. I imputed the difference between aided and unaided schools, according to two criteria: I expected the government subsidy to be a partial substitute for parental fees and I wanted the new revenue total (given enrollments in aided and unaided schools) to be the same as that calculated on the basis of the average fee for all students. The figures given imply that half the subsidy was used to lower fees and half was used to improve teacher salaries and other facilities, but this is only an estimate. Other fee differences between aided and unaided schools would also have satisfied these constraints.

⁺The Working Party Report did not give an estimate of fees or expenditures at church and proprietary schools. My imputation was obtained by taking the ratio between average church and proprietary fees versus unaided harambee fees as given in the 1979 School Census (.8) and multiplying it by the average unaided harambee fees given in this table. These figures do not include church subsidies (in money or voluntary staff), which would probably raise their expenditure per student above the harambee level. The proprietary group probably has the widest variance, since it includes expensive elite schools and low cost schools which are the urban substitute for the rural harambee schools.

Table 21

Average KCE Exam Scores, 1982

	<u>Public</u>	<u>Private</u>		
		<u>Aided Harambee</u>	<u>Unaided Harambee</u>	<u>Church & Proprietary</u>
English	32.4	24.4	24.2	30.4
History	39.5	29.1	27.4	30.0
Biology	51.3	41.1	37.6	42.5
Math	48.1	23.2	22.7	27.1

Source: B. Masua, An Analysis of Factors Influencing Exam Performance, M.Sc. dissertation, University of Southampton, 1982.

Table 22

EACE Results, 1979

	<u>Public</u>	<u>Private</u>			<u>Total</u>
		<u>Aided Harambee</u>	<u>Unaided Harambee</u>	<u>Church & Proprietary</u>	
1st division pass	11.8	1.1	0.9	3.3	6.9
2nd division pass	24.7	7.3	5.9	8.2	16.1
3rd division pass	34.1	21.0	21.7	18.6	27.3
4th division pass	20.4	35.1	34.6	33.5	27.3
Fail	8.9	35.5	36.9	36.4	22.3

Source: Data supplied by the Central Bureau of Statistics from the 1979 School Census, Table 30.

Table 23

The Wage-Cognition Relationship in Kenya

	\bar{H} (1)	\bar{W} (2)
<u>Primary Leavers*</u>		
Bottom 10%	13.1	532
Bottom 1/3	21.4	623
Middle 1/3	31.2	751
Top 1/3	45.0	978
Top 10%	51.6	1109
All Primary Leavers	32.5	784
<u>Secondary Leavers**</u>		
Bottom 10%	28.1	864
Bottom 1/3	36.1	1036
Middle 1/3	47.2	1333
Top 1/3	54.0	1556
Top 10%	55.9	1624
All Secondary Leavers	45.7	1308

\bar{H} = mean cognitive score for each group

\bar{W} = mean wage for each group

* This is the group that completed primary school and did not go on to secondary school.

** This is the group that completed secondary school and did not go on for further education.

Source: M. Boissiere, J.B. Knight and R.H. Sabot, "Earnings, Schooling, Ability and Cognitive Skills." American Economic Review, Dec. 1985, 75, 1016-1030.

Table 24

Cognitive and Pecuniary Value Added by Secondary School

	(1) Government Secondary School Leavers (Group G)	(2) Unaided Secondary School Leavers (Group NG)		(3) All Secondary School Leavers (G + NG)	
		I	II	I	II
<u>Cognitive Score</u>					
If they had not gone on to secondary school	45	38.1	40.4	42.7	43.5
After secondary school	47.1	42.7		45.7	
Value added*	2.1	4.6	2.3	3.0	2.2
	5%	12%	6%	7%	5%
<u>Wages</u>					
If they had not gone on to secondary school	978	864	901	940	952
After secondary school	1348	1218		1308	
Value added*	370	354	317	368	356
	38%	41%	35%	39%	37%

* Net gain compared with result that would have been obtained without secondary school.

Source: My calculations, as described in text.

Table 25

Excess Demand and Private Sector Growth

	(1) <u>Public Index of Opportunity, 1974</u>	(2) <u>Exc. Demand: 1 - PIO</u>	(3) <u>Private Growth Rate, 1968-76</u>	(4) <u>%PVT, 1977</u>
Nyanza	.1	.9	352%	.57
Eastern	.11	.89	473	.67
Western	.11	.89	589	.65
Rift Valley	.13	.87	256	.58
Central	.14	.86	263	.64
Coast	.21	.79	111	.49
Northeast	.33	.67	0	0
Nairobi	.36	.66	23	.45
Total	.13	.87	261	.6

Source: Index of opportunity and %PVT from Central Bureau of Statistics, Educational Trends, 1973-77, pp. 76-81. Private growth rate from D. Court and K. Kinyanjui, "Development Policy and Educational Opportunity: The Experience of Kenya and Tanzania," Working Paper, Institute of Development Studies, University of Nairobi.

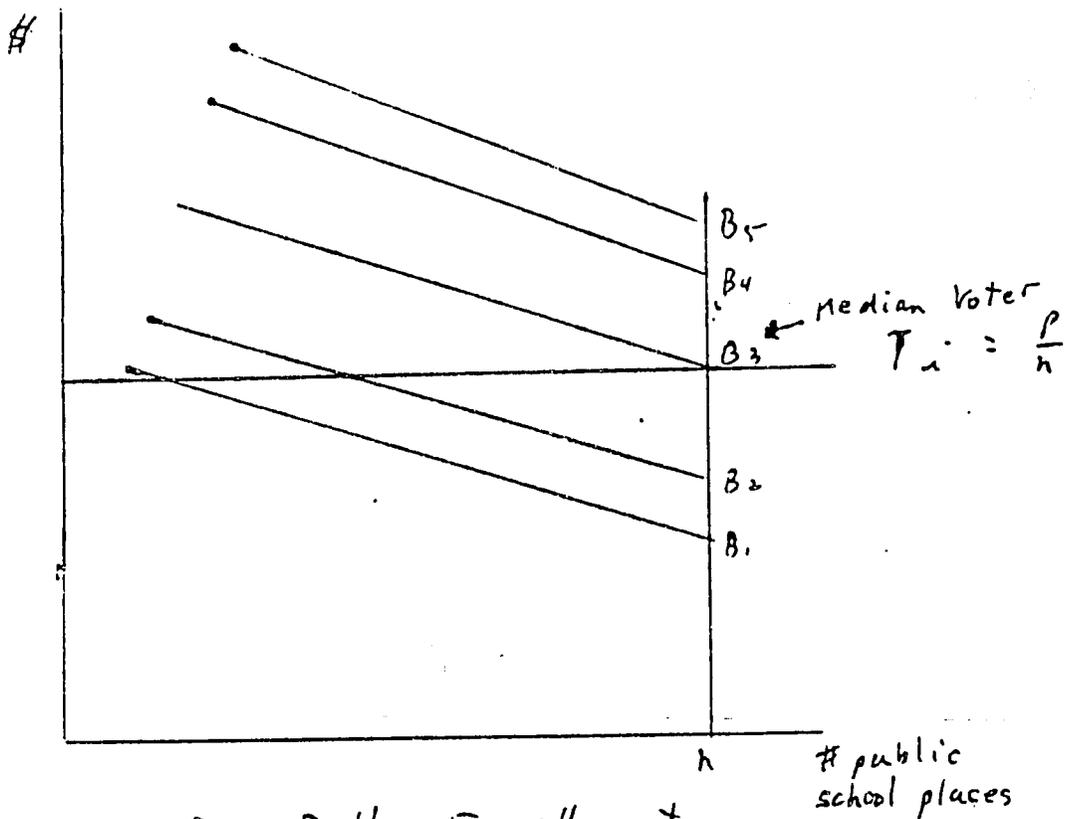


Figure I. Full Enrollment Public System

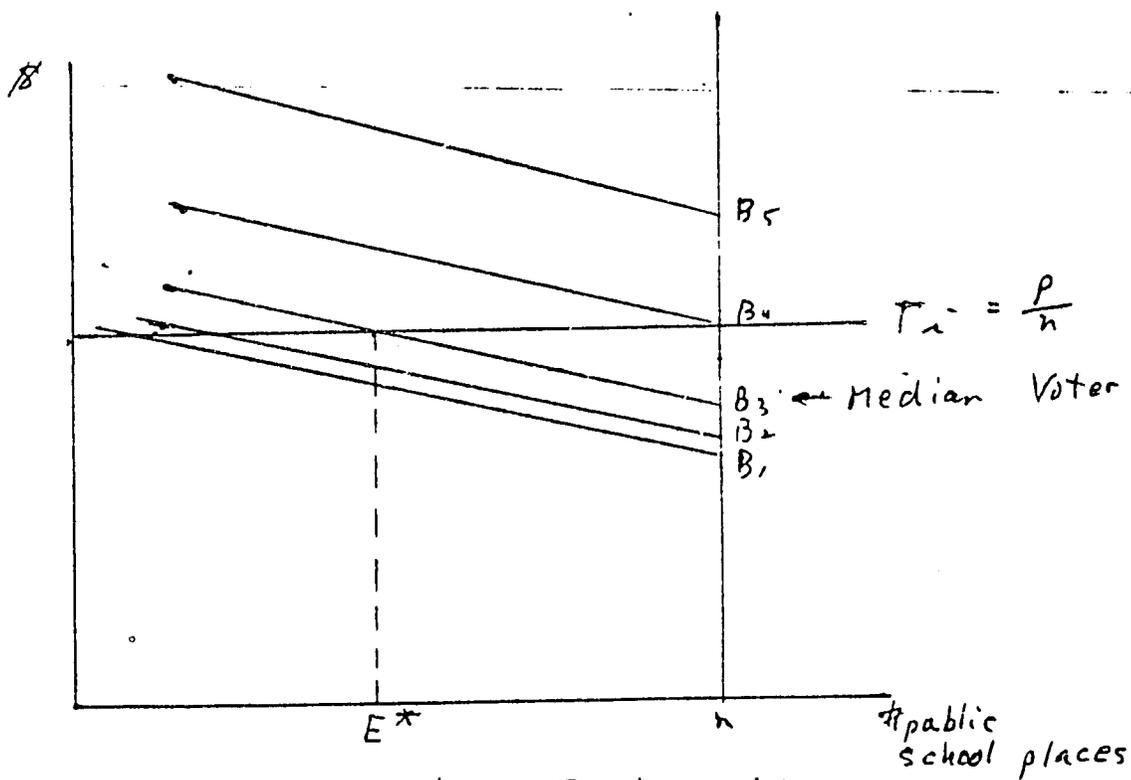


Figure II. Public System With Excess Demand for Private System

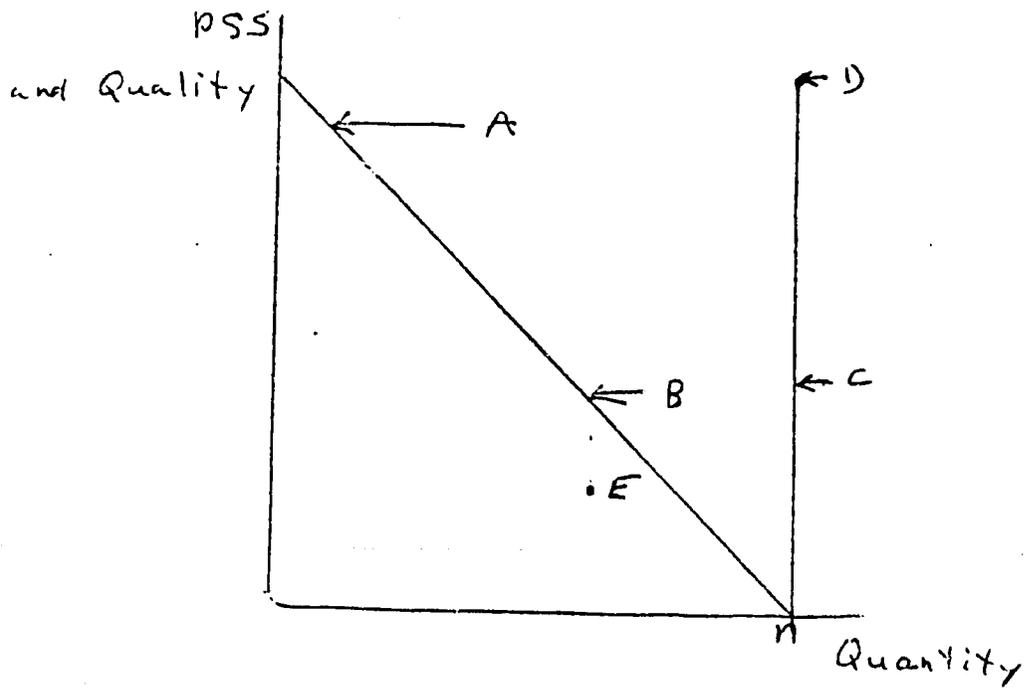


Figure III
The Quantity - Quality Choice

Appendix A: List of Symbols

%PVT	= % of total enrollments that are in private schools in 1975 (developing countries) or 1980 (modern countries)
PCI	= per capita income (in U.S. dollars, thousands), 1978
URB	= percent of population living in urban areas, 1970
dPCI	= PCI (1978) - PCI (1965)
dURB	= URB (1970) - URB (1960)
PSS	= per student spending
CHR	= percent of population that is Christian
CATH	= percent of population that is Catholic
NCHR	= CHR or (1-CHR), whichever is smaller
NCATH	= CATH or (1-CATH), whichever is smaller
EDBUDG	= total spending in public schools
REL	= an index of religious heterogeneity = $\sum P_i \ln 1/P_i$, where P_i = proportion of population constituted by religion i
LANG	= an index of linguistic heterogeneity = $\sum P_i \ln 1/P_i$, where P_i = proportion of population whose main language is i
ETH	= an index of ethnic heterogeneity = $\sum P_i \ln 1/P_i$
NS	= dummy variable for countries offering little or no subsidy to private schools
RRSEC	= private rate of return to secondary education, 1970's
MD	= dummy variable for modern countries
LAD	= dummy variable for Latin American countries
C	= constant term

Note: Percentages are expressed as decimals.

Appendix B: Data Sources for Regression Analysis

%PVT, 1975 and 1980: See Table I.

NS, Neave, op. cit.; and Mason, op. cit. (See sources for Table I).

PCI, 1965 and 1978, Charles L. Taylor and David A. Jodice, World Handbook of Political and Social Indicators (New Haven: Yale University Press, 3rd ed., 1983).

URB, 1960 and 1970, Ibid.

GINI, 1960 and 1970, Ibid.

GROWTH, 1960-75, Ibid.

REL, Calculated from data in Charles L. Taylor and Michael C. Hudson, Cross-National Aggregate Data for World Handbook of Political and Social Indicators (MRDF) (Ann Arbor: Center for Political Studies, University of Michigan, ICPSR, 1971); and H.W. Coxill and K. Grubb, World Christian Handbook (Nashville, NY: Abingden Press, 1968).

CATH and NCATH, Ibid.

CHR and NCHR, Ibid.

LANG, Calculated from Charles L. Taylor and Michael C. Hudson, World Handbook of Political and Social Indicators II, Section V, Raw Data File: Fractionalization and Concentration Measures and Inequality Indices (Ann Arbor: University of Michigan, ICPSR, 1970).

ETH, Ibid.

RRSEC, George Psacharopoulos, "Returns to Education: A Further International Update and Implications," Journal of Human Resources, 20:583-604, 1985.

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