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Higher Education in Sub-Saharan Africa

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HIGHER EDUCATION IN SUB-SAHARAN AFRICA

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ABSTRACT

This paper examines the higher education sector in sub-Saharan African countries. It begins by describing the growth and structure of the sector, the amount of resources used and the original rationale for its development. This is followed by analyses of the labor markets faced by higher education graduates using a wide range of data including rates of return, wage structures and trends, recorded vacancies, levels of expatriate employment and government employment policies. From these, labor market assessments are constructed for 15 countries.

These assessments indicate that although several countries continue to experience scarcities of some types of graduate manpower, it is becoming increasingly difficult for graduates in most countries to find employment, particularly those trained in the humanities. While additional graduates could be usefully employed in teaching and in parts of the public service, the ability of governments to finance additional employment is decreasing and the private sector's demand is generally low. At the same time, social pressures to expand higher education enrollments continue to be very strong.

The constraints to expanding public expenditure are currently severe throughout Africa. Reductions in the unit costs of higher education and/or greater user charges are required particularly if governments are to respond to pressures to further expand enrollments. Unit costs are documented in detail for higher education institutions in 24 countries. These are shown to be very high in absolute values compared to those in countries in other developing regions and are particularly high when comparisons are made relative to per capita incomes. Case studies of the components of unit costs show that the costs of non-teaching items are considerable and that substantial savings could be made. The high student wastage rates which are described for several institutions, however, indicate that in any cost reducing exercises care is needed to ensure that teaching quality does not fall.

Apart from reducing unit costs, savings in public expenditure on higher education could be made through larger student contributions. Existing financing arrangements are described for 24 countries and it is concluded that increased contributions are both justified and feasible. Whether these simply take the form of increased charges or also involve loan schemes needs to partly depend on the existing and planned pattern of wage differentials.

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SUMMARY AND CONCLUSIONS

Enrollments and expenditures in higher education in sub-Saharan African countries have expanded at a rapid rate over the past 20 years. Today, all but the most sparsely populated countries have at least one of the region's 50 universities. Considerable successes have been achieved and while the proportions of graduates in the total labor force remain small compared to other developing regions, most senior positions are now filled by trained Africans. With the establishment and consolidation of the higher education sector largely complete it is now an appropriate time to take stock of the situation.

Currently, the higher education sector is being criticised on a number of levels including its general role in the development of poor societies, the quality and use which can be made of its graduates and the costs. Much of the criticism has been based on very scattered and partial evidence and on the presumption that experiences in less developed countries in other parts of the world can be generalized to Africa. This paper attempts to rectify this situation by bringing together a wide range of materials related to higher education in Africa, focussing particularly on the labor market for higher education graduates, the level and composition of unit costs and the feasibility of increasing non-government contributions.

Outline of the Paper

While the higher education sector in Africa has grown rapidly and consumes large amounts of government revenue there is a limited amount of detailed knowledge of its outcomes and expenditures. While some documentation has been located for almost every country, the extent is uneven. As a result, the treatment in this paper is not encyclopaedic and data for every African country is not included in each area of analysis. In most major areas, however, the data and case studies are sufficient to point clearly in particular directions.

The paper is divided into four sections. The first documents the development of higher education in sub-Saharan African countries since the early 1960's, presents the criticisms currently directed at the sector and briefly discusses the economic and budgetary environment within which it is allocated funds.

Section II analyses the labor market for African higher education graduates. The initial discussion centers on the problems of interpreting various measures of this market. Using a wide range of information including rate of return studies, recent wage trends and various employment indicators labor market summaries are constructed for 15 countries. Future developments in graduate labor markets are then discussed. The implications of the findings for the higher education sector in terms of enrollment policy and the need for much greater continuous assessment of the labor market are presented.

Section III concentrates on the internal efficiency of higher education institutions. The unit costs of universities in 24 countries are presented followed by case-studies of staff:student ratios, levels of expatriate employment, non-academic expenditures and utilisation rates of physical facilities. These are followed by a discussion of student wastage rates which have been assembled for a number of countries. The second part of this section concentrates on the feasibility of reducing unit costs and student wastage and examples are given of the impact on costs of particular policy changes.

Section IV discusses the possibilities of reducing government expenditure on higher education through increasing students' contributions. The current constraints on government expenditure in Africa and the existence of excess social demand for higher education are the starting points for this section. Current arrangements for student financing are then documented for 24 countries. Finally arguments in favor of increased student contributions through charges and/or loans are presented and their feasibility and effect on government finance demonstrated through case studies.

Findings and Conclusions

With a growth rate of over 11 percent a year since 1960, higher education enrollments in African countries average around one percent of the relevant age group. As a proportion of the total population, they are less than one quarter of those in Asian countries. Despite its small size, however, expenditure on the higher education sector averages one fifth of total educational expenditure which in turn accounts for one fifth of all central government expenditures. This level of finance has been provided for a higher education sector based on the central argument that its graduates are required for rapid self reliant economic

development. As a result of the recent severe decline in economic growth and, consequently, in government revenues to virtually stationary levels, the sector is currently being critically reassessed in terms of both the capability of the labor market to absorb graduates and the costs of their education.

Comprehensive assessments of the graduate labor market require a range and quality of data which is generally unavailable in African countries. Rates of return to investment in higher education have been calculated for only a small number of countries and while the results imply that returns are generally below those to other levels of education, the data used have often been inadequate in their coverage and many of the studies are already out of date. Recent surveys of government wage structure and the changes in these over time provide additional information. These indicate that while wage differentials resulting from higher education remain wide, graduates' earnings in many countries have fallen quite dramatically over the last 20 years in relation to both per capita income and the earnings of secondary school leavers. While this is partly due to government wage policies aimed at increasing income equality, it has also occurred in countries where greater equality is not a conscious government policy and therefore is an indication that the scarcities of higher education graduates experienced in the 1960's have been substantially reduced.

The existing surveys of wage data, however, are again limited in the information they offer regarding the state of the labor market for higher education graduates. For more detailed assessments, indicators such as reported vacancies, levels of expatriate employment, manpower surveys, unemployment rates and government hiring practices have also been used. Information of this type has been collected from a wide range of sources for fifteen countries. In some, such as Botswana, Ethiopia and Nigeria overall shortages of higher education graduates still appear to exist while in others, such as Zaire, Guinea and Mali there are severe problems in absorbing all graduates into the labor force and unemployment is reportedly widespread. In the majority of countries, however, the situation is more complex with a tight labor market for humanities graduates together with continuing shortages of graduates with a science-based education.

Despite its generally low quality, all the available information on the current state of the graduate labor market indicate that

employment is becoming increasingly difficult to find in most fields of specialisation. For those occupations in which there are vacancies and significant numbers of expatriates are employed, the cause appears to be more a lack of qualified entrants to the required courses rather than a lack of course places. In the immediate future, the expected slow growth of government expenditure and public service employment suggest a further tightening of the labor market. There would, then, appear to be little case for any substantial across-the-board expansion of higher education in most African countries.

In the meantime, increased efforts are required to both monitor the immediate experiences of graduates and to develop indicators which will provide signals of imminent changes in the labor market facing them. Added attention needs also to be given to analysing the performance of graduates in the workforce. Once a more detailed knowledge of the workings of the labor market has been developed, policies relating to both wage structures and the private costs of education can be developed to influence total demand, and its structure, for higher education.

Emphasis also needs to be directed towards reducing costs. Measured in absolute values, unit costs of higher education in African countries are, on average, similar to those in the developed countries, twice those in Latin America and almost ten times those in Asia. They are particularly high relative to the costs of other education levels and per capita incomes compared to countries in other regions of the world. The high unit costs result largely from the way in which teaching is organised and the level of subsidies. In general, staff:student ratios are low (averaging 1:7 compared to 1:15 in the United States), levels of expatriate staff high (for example, 37 percent in Tanzania), non-academic expenditures high (for example, 66 percent of the total in Lesotho) and expenditures on student support high (for example, equal to 81 percent of the total primary school budget in Burkina Faso). Conversely, in many institutions facilities are inadequate and there is substantial overcrowding of libraries and laboratories. The high unit costs are not resulting in low student wastage rates. In a sample of universities in seven countries, these range between one third and two thirds. Since financial pressures on students are minimal the causes are not economic. High wastage would appear to result from low quality teaching, particularly in secondary education.

The measures recommended to reduce the unit costs of higher education borne by the state include increasing staff:student ratios through the setting of minimum enrollment targets for courses and increasing the flexibility of faculty; reducing student wastage by reviewing admission procedures, the content of first year courses and regulations for promotion and graduation; reducing non-teaching expenditures by limiting the provision of subsidised services and by increasing a range of charges to staff and students; and increasing utilisation rates through the introduction of four term years. In addition, greater efforts are required to improve universities' planning and budgeting systems. Case studies of two universities suggest that unit costs could be decreased by around 20 percent by such a set of measures which would have minimal effects on teaching quality.

While the economic arguments for substantial increases in enrollments in higher education may not at present be strong in a majority of African countries, the social pressures to expand are increasing. Secondary school enrollments have been growing by over 13 percent a year since 1970 and data for Kenya, Nigeria and Somalia indicate substantial levels of excess demand for higher education. One of the reasons for this level of demand is the large discrepancy between the resulting earnings benefits and the costs to the students. If governments wish to reduce the demand or simply to limit their own expenditures, then a system of increased student contribution is one option. A survey of student financing arrangements in 24 African countries shows that in all cases tuition is free and that in nearly all accommodation costs are covered and additional allowances provided. In the extreme case of Zaire allowances are equivalent to eight times per capita income. On the grounds of both economic efficiency and equity there is little justification for such levels of subsidisation. Simulation exercises indicate that student loan schemes could significantly contribute to higher education financing in those countries where earnings differentials remain significant. In others, charges for accommodation may be feasible if coupled with a severely restricted grant system covering the poorest students.

SECTION I

THE DEVELOPMENT OF HIGHER EDUCATION IN SUB SAHARAN AFRICA

Introduction

Over the past 25 years enrollments in education in sub Saharan African countries have increased substantially. Between 1960 and 1970 enrollments grew at annual average rates of 5.4, 11.4 and 11.7 percent for primary, secondary and higher education respectively and for the period 1970 to 1980 at 7.3, 13.4 and 11.5 percent. Because of high population growth the increases in enrollment ratios have been less dramatic. Between 1960 and 1980, the average primary enrollment ratio rose from 30 percent to 80 per cent, secondary from 3 percent to 14 percent and higher from almost zero to 1.4 percent. These averages hide wide variations between countries. Table 1 presents current enrollment ratios for selected countries.

Table 1

Enrollment Ratios in Selected African Countries (per cent)

Country	Primary	Secondary	Higher
Tanzania	98	3	0.3
Swaziland	93	29	3.0
Cameroon	74	14	1.3
Somalia	22	12	1.0
Mali	20	1	0.9
Niger	17	2	0.2

Source: World Bank, 1985.

High growth rates of enrollments have necessitated large increases in expenditure. For much of the period under review public expenditure on education has grown faster than both aggregate government expenditure and gross national product. Appendix Table A2 illustrates

these points for selected countries between 1970 and 1980. By 1980, for sub Saharan countries as a whole the average percentage of total central government expenditure spent on education was 18.9, ranging from - percent in Mauritius to 43 percent in the Ivory Coast. (Appendix Table A1)

Within these overall increases of public expenditure, the shares between educational levels have changed over time reflecting both differences in enrollment growth and different rates of increase in unit costs. Examples of changing shares between 1970 and 1980 are documented in Table 2. In all cases illustrated, the share of higher education has risen considerably. Appendix Table A1 presents the current distribution for each country.

Table 2

Distribution of Educational Expenditure by Level (percent)

Country		Primary	Secondary	Higher
Botswana	1970	60	31	9
	1980	55	31	14
Congo	1970	52	38	10
	1980	41	32	27
Malawi	1980	47	26	27
	1979	49	19	32
Zambia	1970	51	34	15
	1980	51	29	20
Upper Volta	1975	46	28	26
	1980	38	23	39

Source: UNESCO, 1983

One final point which needs to be made in this introductory section before focussing directly on higher education is the differences in unit costs between the various levels. On average a year of secondary schooling is four times as expensive as a year of primary schooling. Higher education is forty times as expensive. As is shown later in this paper, these differences are much greater in African countries than in countries in other regions of the world.

The Higher Education Sector

The first students to graduate from an African higher education institution (in the Western tradition) did so in 1879 from Fourah Bay College in Sierra Leone. By 1960, however, there were still only six such institutions in sub-Saharan countries. Since then expansion has been rapid. Today with very few exceptions every sub Saharan African country boasts at least one of the region's fifty-seven universities. Enrollments in universities vary widely from around 1000 in Burundi, Mozambique, Swaziland, Chad and Niger, to over 10,000 in universities in the Ivory Coast, Ethiopia, Nigeria, Sudan and Zaire. (Association of African Universities, 1983). These are documented for 50 universities in Appendix table A3.

Enrollments in higher education in sub Saharan Africa grew by an average of around 11 percent a year over the last 25 years. Expansion, however, has been uneven across countries resulting in variations in enrollment ratios (i.e. enrollments as a proportion of the 20-24 years population) of between 0.03 percent in Burkina and 7.0 percent in Guinea (See Appendix Table A1). In 1970, higher education enrollments per 100,000 population averaged 53; by 1980 they had grown to 139. Again, the averages mask wide country variations. In 1980, this ratio was below 50 in 11 countries, between 51 and 100 in 8 countries, between 101 and 200 in 8 countries, between 201 and 300 in 3 countries, and over 300 in 5 countries. The rapid growth in higher education enrollments, however, still places the region as a whole well behind the position of other regions of the world. Enrollments per 100,000 population average around 650 in the Arab and Asian countries and 1250 in Latin America.

The enrollment figures used above refer to all types of post secondary education and are not always strictly comparable between countries. Table 3 presents some country examples of the division of enrollments between university and equivalent institutions and those of a lower status for 1970 and 1980.

Table 3

Enrollments by Type of Higher Education Institution.

Selected Countries, 1970 and 1980

Country	Year	Enrollments	
		University and Equivalent	Other
Kenya	1970	2786	5009
	1980	8966	3831
Nigeria	1970	14,310	1050
	1980	70,395	79,677
Swaziland	1970	139	68
	1980	1009	1289
Uganda	1970	2953	1279
	1980	3913	2279
Cameroon	1970	2128	562
	1980	9806	2008
Tanzania	1970	1823	204
	1980	3240	291
Zambia	1970	1231	202
	1980	3376	3964

Source: UNESCO, 1983

Despite the high rates of growth, as a proportion of all enrollments those in higher education remain less than 1.0 percent across the region as a whole. This contrasts strongly to the sector's share of the total education budget which averages around 19 percent. In table 4, countries are categorised according to the current share of educational expenditure allocated to higher education.

Table -

Distribution of sub Saharan African Countries By Share of Total Education Expenditure for Higher Education

	Percent of Total Recurrent Educational Expenditure on Higher Education			
	0-10	11-20	21-30	31-
Number of Countries	8	13	10	1

Source: World Bank (1985)

Lowest shares are for Mauritius, Zimbabwe, Benin, Niger and Gambia (7 percent and under) and highest for Upper Volta, Burundi, Guinea, Lesotho, Malawi, Zaire and Mauritania (25 percent and over).

High shares of educational expenditure relative to enrollments suggest that the unit costs of higher education are large in relation to those for other levels of education. In most African countries they are also large in absolute terms compared to countries in other regions of the world. Further, since per capita incomes in the region are mostly among the lowest in the world, the cost of a higher education in Africa is particularly high relative to overall resources. These points are illustrated comprehensively country-by-country in section III. In table 5 below, some of the relevant summary statistics are presented.

Table 5

Unit Costs of Public Education by Level as a Percentage of Per Capita GNP

Region/Country Group	Primary	Secondary	Higher
Sub Saharan Africa			
Francophone	29	143	804
Anglophone	18	50	920
Asia			
South East Asia & Pacific	11	20	118
South Asia	8	18	119
Latin America	9	26	88
All Developing Countries	14	41	370

Source: Mingat and Psacharapoulos (1984) p.12

As a final introductory comment on the scale of the higher education sector in sub Saharan Africa it is important to mention the place of overseas study. Before 1960, the majority of African university graduates had been trained overseas. For instance, in Nigeria in 1960, 182 students graduated from Ibadan while around four times that number graduated from overseas institutions. The rapid growth of higher education in Africa has not led to any absolute reduction in overseas students. In fact between 1972 and 1980, the numbers increased from 59,000 to 178,000. These figures compare with 218,000 and 407,000 Asian students overseas in those two years. Appendix table A4 shows the growth in overseas enrollments for selected African countries over this period. The bias towards professional, scientific and technological studies in the placing of students abroad is very strong. For example, British Council statistics on overseas students for 1977/78 show almost three quarters of them in these fields (Oxenham, 1981, p.154).

The Rationale for Expansion

Although the higher education sector, and particularly the universities, is at present the subject of a great deal of criticism on a wide range of fronts, the high growth rates of enrollments and expenditures over the past 25 years in Africa indicate the large priority which it has received.

Institutions of higher education were very few in Africa prior to 1960. Major expansion occurred in the following decade for a variety of economic and political reasons. The most important of these was to produce highly trained manpower capable of replacing expatriates and to be available for the new demands generated by expected high rates of economic growth. The scope for replacing expatriates at this time was demonstrated by Jolly and Colclough (1972) who showed that for a sample of eleven African countries, expatriates on average filled over 60 percent of jobs requiring post secondary education.

Although manpower development was, and remains, the major role foreseen for the higher education sector in Africa, others were also initially described and have been added over time. In addition to manpower development, the sector has been said to:

- generate and disseminate knowledge and innovation
- act as intellectual and educational leader for the whole education system
- provide a view on social issues independent of political authorities
- provide a vehicle for service to the local community in analysing and solving problems
- support the conservation and careful adaptation of local traditions and values
- act as a symbol of national prestige.

Whatever the merits of these claims, the argument used most strongly to justify the large amounts of resources directed towards higher education has been the necessity for rapid development of qualified manpower. The methodology initially adopted in the early 1960's to justify and quantify this development has had a significant impact on the evolution of African countries' higher education systems. Expansion occurred at a time when economic policymaking had embraced the concept of 'comprehensive development planning' and the ability of planning authorities to not only forecast but also guide the development of the economy was taken for granted. Most planning models assumed

strong, simple relationships between inputs and outputs, e.g. between investment and gross national product. In this context, the approach taken to educational planning was based on similar perceptions and followed similar approaches. From a forecast rate of economic growth, the manpower requirements necessary to support that growth were calculated on the assumption of unique relationships between output and different types of manpower. These manpower requirements were in turn transformed into unique education equivalents. Over the last twenty five years, the precise methodologies used have grown slightly more sophisticated but continue to be based on the same assumptions. In the early 1960's, the methodologies were very simple indeed.[1]

Current Criticisms of the Higher Education Sector

For a variety of reasons, the higher education sector today is on the defensive in African countries as in other developing countries. The critique is based on a number of fronts. In this sub-section, the critiques are presented and some initial comments are made. No conclusions are drawn, however, until further discussion in the following sections.

While there has been a virtual consensus that the primary purpose of universities and other institutions of higher education is to produce qualified manpower, that has not meant that there have been no debates over the place of higher education in developing countries. These debates have focused on curricula, attitude formation and the general relationship between the institutions and society at large. Criticisms have been made that higher education institutions are elitist, isolated, further the attitude of self importance among students rather than fostering ideals of community service, encourage the transfer of Western ideology, reinforce the emerging patterns of status stratification and altogether operate as imported institutions.

A second set of criticisms is based on the impact which higher education is said to have on the rest of the educational system. It is argued that the emphasis on examination success for entering the sector (together with the overuse of qualifications in the labor market) distorts and narrows what is taught and learned in secondary schools. In particular, there is a downgrading of 'non-academic' skills which are of

[1] For a detailed account of the use of manpower forecasting in educational planning in Nigeria in the 1960's, see Hinchliffe (1973).

importance to the majority of secondary school leavers who must immediately enter the labor market. The same processes, it is argued, also extend down to the primary school. This suggested distortion of the whole education system by the values of the higher education sector is said to be much greater in the developing countries in which formal schooling is virtually the only vehicle for career advancement and where earnings differentials are very much wider than in the industrialised countries.

A third area in which criticism is directed towards the higher education sector is in its so-called 'external efficiency' - that is, the degree to which its outputs (graduates and research) correspond to the demand and are of value in relation to their costs of production. In terms of the education and training of students, the critique comes in three forms:

- that the scale and/or structure of the sector has resulted in the persistence of shortages in some manpower fields and in surpluses trained in fields of low priority;
- that the overall rates of return to investment in higher education are lower than in several other sectors and in particular are low in relation to other education levels - also that returns vary substantially by subject, again reflecting an inappropriate structure of expansion;
- that the sector has had too much emphasis placed on it which has resulted in a simple displacement in the labor market of graduates of lower levels of education often without any increase in productivity but which then fuels additional social demand for higher education and a reduction in resources for a large section of the population who are not even provided with a basic education.

These critiques are documented and judged in section II according to the evidence available for African countries.

The final set of criticisms revolves around the concept of internal efficiency, or the efficiency with which the sector uses resources to produce educated and trained graduates. The starting point for such criticisms is the high unit costs of higher education borne by African states in relation to other levels of education, levels of income in the countries concerned and costs in other regions of the world. High unit costs have a number of causes including teaching salaries far above per capita income, low student/teaching staff ratios resulting in part

from a proliferation of specialist courses, large numbers of non-teaching staff and subsidised staff housing. Added to these high unit costs in most African countries are substantial scholarships and living allowances paid to the students. Some of the relevant data were produced earlier in table 5 and more is presented in sections III and IV.

The Future

Pressure is being placed on the higher education sector in African countries to produce better trained graduates in more appropriate fields and to increase its level of service to the rest of the community through applied research and greater outreach. There are also significant pressures to expand from secondary school students whose numbers increased from 1.4 million in 1965 to 4.8 million in 1975 and to 9.7 million in 1981. The incentives for secondary graduates to enter higher education remain very large in most countries as the private costs are low and earnings differentials are substantial. These pressures on the higher education sector to expand are being felt at a time when the budgetary constraint in most African countries is tightening.

Economic growth in sub Saharan Africa averaged 5.6 percent a year between 1960 and 1973 falling to an average of 3.7 percent for the rest of the 1970's. In terms of per capita income the seven lowest income countries in this latter period had zero growth, the next 17 countries grew by 1.0 percent, the next 11 by 1.5 percent and the four highest income countries by 3.2 percent. Overall, per capita incomes grew at a mere 1.6 percent a year. More recently, the situation has worsened further with GNP increasing by only 1.1 percent in 1982 and 0.3 percent in 1983. Per capita incomes have fallen. The future looks equally bleak. For the period 1985 to 1995, the World Bank has forecast the average change in per capita income for low-income African countries at between -0.1 and -0.5 percent a year.

While increases in GNP have been small, pressures to expand government expenditure have remained. For most African countries that has led to an increase in government expenditure as a share of GNP. The World Bank (1984a) presents these shares for both 1972 and 1981 for eight countries. The averages are 24.1 and 28.6 percent respectively. Of the

20 countries for which data is presented for 1981, 9 have government expenditure at levels equal to over 30 percent of GNP. With slow rates of economic growth and public expenditure shares already high in many countries, pressures to increase public expenditure in the foreseeable future are likely to be resisted.

Turning to education's share of total central government expenditure, the average for sub Saharan African countries in 1980 was 18.9 percent. What is slightly disturbing for the future is that in seven countries for which data on the share is available for 1972 and 1981, it has fallen on average from 17 percent to 14 percent (World Bank, 1981). At the same time, military expenditure as a proportion of GNP increased between 1968 and 1978 in 20 out of 33 countries.

Increasing resistance to further expansion of educational expenditure therefore can be expected to come from two sides. On the one hand, the forecast economic environment for sub Saharan countries is bleak and pressures are to cut rather than expand public expenditure. On the other hand, there is mounting competition from other sectors to take a greater share of any increases and, indeed, to cut into education's existing share.

With regard to the higher education sector, this is allocated revenue in either of two ways. First, it may compete with other levels of education for a share of a total education budget. Second, it may be considered separately and compete with all other claimants. In both cases, given the nature and range of the criticisms being directed against the sector, its position at present does not appear to be strong in terms of receiving substantial additional public funds. In this context there are four possible strategies for the higher education sector:

a) negotiate more strongly for a greater share through producing:
   - a stronger argument from the existing case
   - an improvement in the case

b) reduce unit costs in ways which do not affect quality to provide:
   - more graduates for a constant level of finance
   - more graduates for a less than proportional increase in finance

c) increase non-government finance through the stimulation of the private sector and the shifting of costs to students

d) reduce the demand for higher education.

If none of these strategies is systematically adopted the result will be the worst of all worlds - continued expansion of enrollments, an unplanned for reduction in per student expenditures and a reduction in effectiveness. The following three sections discuss the feasibility of the alternatives.

SECTION II

EXTERNAL EFFICIENCY OF HIGHER EDUCATION

Introduction

There are two concepts of efficiency applicable to analysis of the higher education sector - internal and external efficiency. Internal efficiency focusses on the amount and utilisation of resources used to produce the sector's output. In section I it was shown that the presumed outputs of the higher education sector are numerous, ranging from graduation of students to the maintenance of national culture. For simplicity in the rest of this paper, outputs are taken to be of two types - graduating students and research. In economic analysis, cost effectiveness assessments provide measures of internal efficiency. In practice, analyses of internal efficiency in higher education use such indicators as repetition rates, dropout rates, class sizes, teacher contact hours, intensity of use of facilities and overall unit costs. These are discussed for the higher education sector in sub Saharan Africa in section III.

The external efficiency of higher education institutions is concerned with the impact of their operations on the economy and society as a whole. In economic theory, the appropriate instrument to measure this efficiency is cost benefit analysis. However, as is discussed below, some suspicion of this approach as applied to education exists and in practice, analyses have also concentrated on levels of unemployment, manpower shortages, the quality and effectiveness of graduates in work, the amount of research and its relevance to national needs, and other such indicators. The external efficiency of the higher education sector in sub Saharan Africa is the subject of this chapter.

The Labor Market for Higher Education Graduates

There is a conventional wisdom in general discussions of developing countries that graduate unemployment and/or a mal-utilisation of graduates widely exists alongside continuing shortages in particular science-based occupations. The empirical evidence for this view has often been taken from Asian countries but the 'dangers' of school leaver and eventually higher education surpluses, have also been pointed to in discussions of African countries for several years. In section I, a

brief description of this generalised view was presented in three forms. Below, a similar view is reproduced from the Economic Commission for Africa (1978):

"Firstly there is evidence of growing open unemployment of secondary and even tertiary school leavers in African countries. Secondly, the forecasts of manpower requirements in African countries in recent years are increasingly yielding predictions of middle level and higher level manpower surpluses.....Thirdly, there is evidence that the social rate of return on investment in education is higher in primary education than in any other level of education.....by and large in the continent as a whole it is true to say that all the indicators point toward a possible overexpansion of the upper levels of the educational system." (pp.85-6).

Much of the rest of this section develops these arguments further and surveys the evidence. It begins by considering some of the problems involved in measuring the degree of labor market imbalance.

Measures and causes of labor imbalance

Identifying shortages and surpluses of specific manpower categories is not simple. The most common approach has been to concentrate on the level of unfilled vacancies and for relatively highly educated people in most African countries, this mainly involves vacancies in the public sector. For teachers, doctors, extension workers and the like, establishments are determined according to size of service population and norms of service, e.g. teacher:pupil ratios. Such norms always involve a large degree of subjectivity and arbitrariness. This is even more so in the case of central and local government administrators. For example, how many trained economists does a ministry of finance actually need? Turning to sectors producing for the markets, vacancies again are not unambiguous. In parastatal enterprises not directly operated on rigorous efficiency criteria, establishments may again be created for many reasons other than that the value of increased output would match or exceed the additional wage bill.

While the presence of vacancies does not necessarily constitute a true shortage, the employment of expatriates can be used as an indicator of at least minimum levels. Although there are almost always possibilities of reorganising work patterns and combinations of workers with various skills, the retention of expatriates on often high wages is

a reasonable indication of unmet demand.

Another indicator of manpower shortages may be escalating wage rates as employers compete for inadequate supplies of particular skills. However, while their presence may indicate shortages, an absence of rising rates is not conclusive evidence that shortages do not exist. Government control of wages may rule these out and a much more careful analysis of job grading may be required.

Turning to indicators of labor surpluses, the most common approach is to measure open unemployment and the period taken to find first employment. Whether unemployment and long periods of job search are truly indicative of surpluses depends partly on their causes. These could include, an unambiguous lack of jobs of the type to utilize the skill learned and at a wage similar to that in the immediate past, a poorly functioning labor market in which information of vacancies is only slowly transmitted, or a labor market in which wide wage differentials exist between jobs such that it is in the individual's interest to wait for a long period of time until a high-paying job becomes available. Another major problem in using unemployment measures as the indicator of surpluses is that in countries such as Ethiopia, Guinea, Mali and Somalia employment for graduates is guaranteed by the government in which case no visible surpluses are allowed to exist.

One other measure of surplus is low or falling wage rates. Again, however, only if the market is being allowed to set these rates can they operate as a useful indicator.

The employment indicators described above can provide some, partial, information on the current state of, and trends in, the graduate labor market and whether there has been over- or under- expansion of higher education in terms of jobs. If wage rates are used, this also tells us something about demand, in an economic sense. All this information, however, is insufficient for assessing whether the resources allocated to higher education are being used efficiently. For instance, shortages as indicated by large numbers of vacancies may exist and many expatriates may be employed in a situation where the costs of training appropriate labor would be much greater than the increases in output produced by that labor. On the other hand, open unemployment rates may be relatively high and periods required to gain employment lengthy yet the additional output produced by graduates when they do find work could have a far greater value than the costs involved in producing them. If

then the concern is with the appropriate level of resources being directed towards higher education and the efficient allocation of this within the sector, measures of social rates of return become, in principle, relevant. Rates of return to investment in higher education need to be compared to those of investments at other levels if the concern is with efficient allocation within the education sector as a whole, and returns by separate higher education area are required if the concern is with efficiency within the higher education sector alone.

Why might imbalances in skills produced within the higher education sector and identified by either differences in unemployment rates, periods of job search and/or wage rates or by significant differences in rates of return, exist? There are three major reasons - inadequate information about future labor market conditions available to both students and those responsible for providing higher education places, an insufficient number of qualified school leavers available or willing to take up places offered and institutional rigidities that hinder rapid labor supply adjustments. These are briefly looked at in turn.

Higher education is characterised by long gestation periods. As a consequence, labor market conditions at the time of graduation may differ substantially from those existing at the time when individuals made their course decisions and when the authorities decided on the number and distribution of places. One possible result is that markets for educated labor are subject to cycles of under - then over - supply. The long gestation period is also a feature used to justify basing the provision of higher education places on manpower forecasts. Unfortunately, the experiences with these forecasts have in general not proved satisfactory in developing countries. Economic growth and structural changes have varied widely from those forecast, productivity and skill mixes have departed from the assumptions, and skills have been formed in ways other than those anticipated.

Even if the future behaviour of labor markets was identified accurately by students and policy makers, there is no guarantee that places provided on this basis would be taken up. On the one hand students' career choices may be made on grounds other than the purely economic. On the other, there may be a lack of students qualified in subjects required as a basis for advanced courses.

Finally, even if changes in labor demand were accurately forecast by both students and education planners and even if students were qualified and willing to adjust their choices accordingly, there is no guarantee that higher education institutions would make the necessary adjustments to their programs. Faculty tenure, elaborate decision making procedures and the semi-autonomous status of many higher education institutions make rapid change unlikely. Added to this, those fields where there are labor shortages and where expansion is desirable are precisely the ones for which higher education teachers are likely to be most scarce.

This subsection began with a precis of commonly held views of the situation in developing countries with regard to employment and the higher education graduate. Labor market imbalance in terms of either a general surplus of graduates or a mixture of shortages and surpluses seems to be a common assumption. The data required to fully test this assumption, however, are not available for any African country. In the analysis which follows the state of the current, and likely future, labor market for higher education graduates in sub Saharan African countries is reviewed using a battery of, admittedly, partial evidence.

Rates of return

Rates of return to investment in education have been calculated for only a small number of sub Saharan African countries. Psacharopoulos (1980a) presents the results for eight countries as shown in Table 6.

Table 6

Rates of Return to Education by Level and Country (percent)

Country	Survey Year	Private			Social		
		Primary	Secondary	Higher	Primary	Secondary	Higher
Ethiopia	1972	35.0	22.8	27.4	20.3	18.7	9.7
Ghana	1967	24.5	17.0	37.0	18.0	13.0	16.5
Kenya[a]	1971	28.0	33.0	31.0	21.7	19.2	8.8
Malawi	1978					15.1	
Nigeria	1966	30.0	14.0	34.0	23.0	12.3	17.0
Rhodesia	1960				12.4		
Sierra Leone	1971				20.0	22.0	9.5
Uganda	1965				66.0	28.6	12.0

Source: Psacharopoulos (1980a) Table 1

Note: (a) social rates refer to 1968

Averaging across countries the rates are:

	Primary	Secondary	Higher
Private	29	22	32
Social	26	18	12

Before aspects of the methodology behind these calculations and the use which can be made of them, are discussed, the implications of the results will be set out. For all countries, the social returns are highest for primary schooling. In four of the six cases, returns to higher education are lowest and are below 10 percent in three cases. The implications of these results, at least for the time being, are that within the education budget existing resources, and any increases in resources, should be switched away from higher education towards the other levels. The appropriate overall level of resources for the education sector, of course, depends on a comparison with returns in the other sectors.

The apparent simplicity and the strong implications of these social rates of return require that the methodology followed in their calculation be looked at carefully. Leaving aside the fundamental

questions of the meaning of the relationships between earnings and marginal productivity (particularly in the public sector) and productivity and education, the earnings data used should utilise realistic assessments of lifetime differentials. Since it has not proved possible to accurately forecast changes in the earnings differentials through time the standard methodology has been to use cross sectional data on the assumption that age-education-earnings differentials will remain similar to those observable today. In inspecting rate of return studies, therefore, the best form of earnings data that can be hoped for is cross sectional data based either on the population census or on large, well constructed sample surveys.

In only two of the African case studies presented in table 7 are cross sectional data based on sample surveys used. The earnings benefits resulting from higher education in the Nigerian, Ghanaian, Sierra Leone and Ugandan studies were taken directly from civil service pay scales. Only in the cases of Kenya and Ethiopia were the earnings differentials derived from surveys.

Another data problem relates to costs. In all cases the costs of producing graduating students were inflated through the attribution of all institutional costs to this purpose. To the extent that there are outputs other than graduates, the costs have been inflated, and the returns reduced.

A final point to be considered in surveying these studies of returns to higher education is that all were conducted 12 to 18 years ago. Since then enrollments have increased by an average of 11 percent a year, public sector employment has exploded and expatriates have been widely replaced. There is little reason to believe, therefore, that the separate forces acting on the demand and supply for higher education graduates have operated in such a way that returns have remained constant over this period.

Social rates of return to investment in education can be powerful tools of analysis if the earnings data used can be assumed to reasonably reflect different levels of productivity between graduates of different education levels. Because of the weight given in the methodology to earnings in the early years of working life, reliance on cross sectional rather than longitudinal data will not unduly distort the 'real' returns.

The more well constructed the design of the earnings survey, the more up to date the information and the more realistic it is to assume that in a given country demand and supply in the labor market are major determinants of earnings, the greater can reliance be placed on the results. So far, however, most of the studies which have been made of rates of return in African countries have used seriously deficient data in these respects. As a result the existing studies are of very limited use in evaluating investment in higher education and the labor market facing present and future graduates.

Wage structures

Rates of return attempt to provide a comprehensive view of the economic benefits of educational investments over a lifetime. Where reliable calculations of these are generally unavailable for African countries the question arises of whether at least partial and short term assessments of the nature of the labor market facing higher education graduates can be derived from existing data on current earnings structures and recent trends in these.

Surveys of earnings in African countries across both the private and public sectors are virtually non-existent. However, since in only a few countries such as Nigeria and Kenya are higher education graduates employed in the private sector in any significant numbers, it is feasible, in principle, to derive judgements on the labor market for graduates by concentrating on the public sector alone. Even here, however, the available data are very limited and are largely based on comparisons of starting salaries and points on the salary scales for different education groups.

The most recent survey of public sector earnings across countries comes from an International Labour Office (1982) study covering eight Anglophone countries. Table 7 presents graduate starting salaries as a multiple of per capita income in each country.

Table 7

Ratios of Graduate Starting Salary to Per Capita Income 1979

Country	Graduate starting salary: Per capita income
Gambia	11.1
Ghana	3.6
Kenya	14.6
Liberia	11.1
Sierra Leone	5.1
Somalia	8.3
Tanzania	14.2
Zambia	12.0

Source: International Labour Office, 1982

On average, starting salaries were ten times per capita income but the multiples varied widely from 3.6 in Ghana to over 14 in both Tanzania and Kenya. There appears to be no obvious explanation for such variations in terms of either the enrollment ratios in higher education or the varying degree of government wage control. Beyond concluding that higher education graduates generally receive earnings far in excess of per capita income, little can be further gained from this data.

More appropriate for the purposes of this study are data comparing starting salaries of public sector entrants with different levels of education. The ILO study provides examples. In Liberia the starting salary for a university graduate is $6300 as opposed to a school leaver's $2646. In Sierra Leone the corresponding figures are Le.2154 and Le.1446 and in Tanzania Sh.17,040 and Sh.7,800. These, and other examples given, are transformed into index number equivalents in table 8.

Table 8

Starting Salaries in Public Service by Education Level

('O' level equivalent = 100)

Country	'O' level	'A' level	Degree
Ghana	100	120	169
Kenya	100	127	269
Liberia	100	-	339
Sierra Leone	100	229	[illegible]
Somalia	100	128	171
Tanzania	100	148	323
Zambia	100	116	169

Source: Derived from International Labour Office, 1982

In four of the seven countries surveyed the differentials received by higher education graduates appear to be substantial with earnings for this group around three times as large as for people who finished their formal education five or six years earlier. In the other three cases - Ghana, Somalia, Zambia - the differentials appear to be rather narrow. In Ghana at least this is a result of substantial falls in the differentials through the 1970's. Between 1974 and 1980 the university:'A' level differential fell by 32 percent and the university:'O' level differential by 55 percent.

Earlier work by Jolly (1977) also points to quite significant falls in the relative position of university graduate earnings. Comparing graduate starting salaries with per capita income between approximately 1963 and 1976 for eleven African countries, these fell on average from a multiple of 23 to 16.5. Combining Jolly's data for 1963 with the ILO's for 1979 for Ghana, Kenya, Sierra Leone and Tanzania this differential on average was reduced from 22.- to 9.-.

The experiences of changes in wage structure, however, are not uniform across the continent as examples of Ethiopia and Malawi demonstrate. In Ethiopia there have been no salary adjustments since

1975 and incremental steps have been allowed only for those on the lower salary levels. For the public servant above these levels who has had no promotion, real income fell by 57 percent between 1975 and 1981. The position in Malawi is very different. There the earnings ratio between highest and lowest classes in the civil service remained virtually unchanged throughout the 1970's. Between these extremes, however, there were significant changes in the wage structure. While the administrative and professional classes and the upper ranks of the secretarial, nursing and teaching classes gained in relative terms, the executive, technical and clerical officer class lost.

Interpretation of all these data causes considerable problems. The apparent general reduction in the premium received by higher education graduates may have been caused by supply increasing at a rate much faster than demand with a consequential tightening of the graduate labor market and the possibility of surpluses existing or being created in the near future. On the other hand, decreased differentials may be solely a result of government wage policy directed at a more equal distribution of income. However, despite the problems involved in interpretation, the apparently substantial fall in graduate earnings differentials across a number of countries with differing approaches to the degree of government intervention and control over the economy does suggest that, in large measure, these have resulted from a tightening of the labor market for university graduates. The sparcity of the data does not allow a more firm, general conclusion.

As is the case with rate of return studies, analyses of earnings structures can, in principle, and under certain conditions, provide a great deal of evidence for judging the behaviour and state of labor markets for higher education graduates. In both cases, however, the existing studies and data for African countries are insufficient for this purpose. Certainly in most countries graduates' earnings differentials have decreased over the past twenty years and, presumably, so have the rates of return on investment in university education. While this suggests that university expansion has often been at a rate not matched by the demand for graduates, neither the amount of data available nor the type is sufficient for detailed judgement. As a result, despite the reservations described earlier regarding estimates of labor shortages and surpluses based on measures such as public service vacancies, expatriate

employment and periods of job search this type of information has to be used and is presented below.

Labor market surveys

Data on expatriate employment, public sector vacancies, manpower forecasts, government employment practices and periods of job search have been accumulated, unevenly, for fifteen African countries. To give just an indication of the type and quality of this information which is derived from a large number of formal and informal sources, some examples are presented below. The conclusions are summarised in table 9.

Expatriate employment

The level of expatriate employment remains substantial in several African countries. For example, in Liberia there are 5300 expatriate workers of whom 70 percent are in managerial, professional and technical occupations. These workers hold 40 percent of the most senior jobs and 15 percent of jobs categorised as professional and technical. The situation in Malawi is very similar, with expatriates holding 43 and 13 percent of jobs respectively in these categories. In Nigeria a 1977 manpower survey showed one fifth of administrative and managerial workers to be expatriate and in Tanzania expatriates are widely employed, particularly as pharmacists, engineers, technicians and science teachers. The mining industry is partly responsible for very large numbers of expatriates in Zambia - 48 percent of the high level manpower category mainly employed as engineers, metallurgists, architects and secondary school teachers. Finally, there is the unique case of Zimbabwe. In 1979, 16,000 non-Africans were employed in occupations defined as high level.

Public service vacancies

For reasons discussed above, the use of public sector vacancies to infer shortages needs to be regarded with great care. The 1977 Manpower Survey in Nigeria implied substantial vacancies for the modern sector as a whole (24 percent) and for secondary school teachers (43 percent) and technical, scientific and professional workers (42 percent) in particular. Similarly, in Tanzania vacancies averaging around 30 percent of establishments exist in senior professional jobs and are again highest in those based on science and technological training.

Manpower forecasts and assessments

Medium term forecasts of manpower requirements and short term assessments of the graduate labor market have been based on very rudimentary methodologies but examples are again included here for the sake of completeness. A manpower forecast for Burundi suggests a virtual overall balance in the supply and demand for graduates through to the early 1990's. In Lesotho, however, the planned growth of enrollments is expected to outstrip demand, particularly outside the teaching sector. The most detailed manpower forecast is for Nigeria. From a list of 27 high level occupations, existing stocks in 1980 were assessed at 81,000, existing vacancies at 47,000 and additional requirements to 1985 at 49,000. To fill the vacancies and meet these requirements, university enrollments are planned to increase from 53,000 in 1979 to 104,000 in 1985, with a switch towards science based courses. The situation in Somalia appears to be very different. There, the demand for additional graduates by the late 1980's is assessed at 150 a year compared to an expected outturn of 800. Part of the surpluses is expected to be taken up by employment in the Gulf states.

Government employment

A further indication of the labor market situation can be gained in a number of countries from recent changes in the government's attitude as an employer, particularly in countries where employment in the public sector has been guaranteed by law. In Guinea, for example, the 1981-85 national plan proposes a reduction in higher education enrollments of 40 percent, explicitly to prevent further overstaffing of the public service. Responding to similar pressures, the Mali government in 1983 rescinded the right of employment to all graduates of higher education.

Periods of job search

Some of the most useful information for analysing the current state of the labor market is the period taken to find employment. This is unfortunately available for very few countries. In a study of graduates in the Sudan, Sanyal and Yacoub (1975) found that, on average, 96 percent of agricultural, engineering and natural science graduates entered employment within six months while 65 percent of social science and liberal arts graduates did so. Unfortunately the data are now ten years old. A similar survey by Bardouille (1982) of Zambian graduates in

1976 showed that 50 percent entered employment immediately upon graduation, 37 percent within a month and 13 percent between one and six months. Since 1981, however, it is argued that there have been growing difficulties in placing humanities and social science graduates while there are continuing shortages of science and engineering graduates. For Zaire, it is reported that there are high levels of unemployment with most graduates taking between one and three years to find employment.

The amalgamation of the type of information described above is summarised in table 9 for fifteen countries.

Table 9

Summary of Labor Market Conditions for Higher Education Graduates

Country	Comments
Botswana	Very high proportions of expatriates employed and an increasing shortfall of higher education graduates over the 1980's.
Burundi	Forecast demand and planned supply should keep pace implying a constant number of expatriates.
Cameroon	Unemployment of university graduates is emerging.
Ethiopia	Real shortages of higher education graduates in virtually all fields.
Guinea	Very rapid growth of enrollments has resulted in graduates greatly exceeding absorptive capacity.
Lesotho	The labor market for graduates is tightening. Future vacancies for arts graduates mainly in teaching.
Liberia	High proportions of expatriates employed. Greatest shortages in secondary teaching, technical professions and all levels of management.
Malawi	Large numbers of expatriates employed.
Mali	An excess of higher education graduates is now emerging.

Nigeria	Substantial numbers of expatriates employed and high levels of vacancies identified in the public service particularly for technical, scientific and professional personnel. Massive planned expansion of higher education with slight shift towards science based courses.
Somalia	Manpower requirements for higher education graduates forecast to be well below expected outturn.
Sudan	Substantial over-production of arts based graduates and under-production of science based graduates. Engineering and agricultural graduates meet only half of government needs.
Tanzania	Continued employment of expatriates particularly among engineers, technicians, science teachers. Substantial number of vacancies in science based professions.
Zaire	High levels of unemployment, particularly among humanities graduates.
Zambia	Continued shortage of science-based graduates necessitating substantial expatriate employment. Increasing difficulty in absorbing humanities and social science graduates.

In a few countries such as Zaire, Guinea and Mali unemployed higher education graduates are becoming commonplace. In others such as Nigeria, Botswana and Ethiopia, even high levels of expansion appear capable with for the time being. In the largest group of countries, however, the situation appears more mixed and there is concern that the labor market will not be able to absorb the high numbers of humanities graduates in the near future together with an expectation that shortages of science based and professional manpower will remain.

The main determinant of the situation in the labor market facing higher education graduates in the short term is the trend in government employment, largely determined by levels of government expenditure. Governments in five of the fifteen countries surveyed have guaranteed employment to graduates and in others the proportions employed in the public service are often very high even without such a guarantee. In Lesotho for instance 98 percent of science graduates are employed in the public service. Expansion of the public service in most countries was rapid in the 1960s and 1970s as table 10 shows.

Table 10

Annual Growth Rates of Public Sector Employment, Various Dates

Country	Period	Annual Growth (%)
Gambia	1976-81	14
Kenya	1971-80	8
Liberia	1973-79	6
Mali	1975-79	23
Somalia	1971-78	17
Togo	1975-79	15

Source: Government and World Bank estimates.

While many parts of the public services are now widely regarded as inflated this is not uniformly the case. Teaching is the prime example. While developed countries have moved towards all-graduate teaching services most African countries do not approach this situation. Given the availability of government finance many graduates could continue to find employment in this sector filling new posts and replacing 'under qualified' teachers. Unless graduate wages fall, however, the severe public finance constraint facing most African governments is likely to lead to a blocking off of this area of public employment similar to other areas. The stark reality is that governments

can no longer be regarded as willing or able to provide employment irrespective of the skills offered. And no other sector, currently, is filling the governments' place. The result is that apart from the few countries such as Botswana which still employ very large numbers of expatriates and those such as Nigeria in which natural resource exploitation creates general expansionary conditions the employment market, for graduates, particularly in the humanities and social sciences, can be expected to tighten.

Policy Implication of Labor Market Analysis

The proportion of the relevant age group enrolled in higher education in African countries is very low compared to other regions of the world. Graduate intensity in most parts of most economies is low. Secondary school teaching is commonly dominated by non-graduates. Many countries continue to rely on significant numbers of non-Africans in a wide range of occupations. Planned work schedules in many government departments often imply levels of establishments which are not filled. At the same time, however, governments in many countries cannot afford a general expansion of employment. While the constraint on public expenditure and the relatively small size of the private sector is likely to lead to a tighter labor market all round, the survey of countries suggests that some types of graduates will be affected more than others. This points to an imbalance in the higher education labor market. Before any hasty responses are made to this conception, however, the discussion above should be sufficient to indicate one important point. The factual information available in terms of rates of return, wage analyses, and systematically collected data on employment indicators is totally inadequate. Monitoring of the outcome of an activity which on average consumes 20 percent of the education budget which in turn consumes around 20 percent of total government expenditure is almost non-existent in most countries. In view of the lack of relevant data plus the tentative conclusions which have been reached, recommendations for future actions, some of which could be usefully supported by development aid agencies, are made below.

a Information systems

Better labor market information systems are required for potential students, graduating students and institutions. Conventional

manpower requirements forecasting is insufficient, and has the added drawback that any sense of responsibility for graduating students is taken away from the educational institutions. Ideally, more tracer studies and job evaluations should be undertaken. At the very least, emphasis needs to be placed on documenting labor market experiences during the first year of graduation, or after the period of national service. The possibility of tying receipt of this information to the budgets of institutions could be investigated. Modern sector labor markets are so small in many countries that very fast feedback is required if over - and under-shooting of labor demand is to be avoided.

Attention also needs to be given to increasing consultation between educational institutions, the government department responsible for recruitment, major private employers and professional organisations. While employers' employment forecasts can never be regarded as totally accurate, they are potential sources of information which should not be neglected.

b Incentives to students

As the major employer of most categories of higher education graduates, the government has a large role to play in influencing both the total number of graduates and their specialisation. If, after carefully conducted studies have been made, potential surpluses and/or shortages of manpower are identified, it is possible to alter both the overall incentives to enter higher education and to enter particular faculties. Increasing and varying the costs incurred is one approach. The other is to alter wage structures. In principle, more graduates can be absorbed and utilised in jobs not previously filled by them, the lower the wage. The ability to reduce overall differentials will vary by country and in some countries may be politically impossible. More feasible, however, is a restructuring of starting salaries between occupations providing greater incentives for students to study in areas judged to be suffering from shortages.

c Incentives to institutions

Given what appear to be potential surpluses of certain types of higher education graduates in many countries and the predominance of the public services, any programs for further expansion of enrollments need to be very closely linked to forecasts of additional government expenditure and the pattern of graduate absorption into the labor market.

Apart from providing greater information on current and projected labor market demand to higher education institutions, governments can also attempt to overcome institutional inertia by financial means. Programs can be provided for retraining staff, special incentives offered for recruiting new staff in priority areas and leverage applied in general to ensure the introduction of new facilities and programs only in those fields where a proven demand for graduates exists.

d Secondary school science

Many examples exist of unfilled places in high priority subjects in higher education institutions. In particular, faculties of science and engineering often find difficulty in filling places with students having even a minimum qualification in maths and general science. In some cases this may be due to a lack of incentive provided by salary structures coupled with a knowledge that failure rates are often extremely high. Mainly, however, it is due to the very small proportions of secondary school graduates who actually possess the basic qualifications. In Nigeria, for example, only 3.5 percent of secondary examination entrants achieve results required for university science courses (Federal Republic of Nigeria 1981b). This results from inadequate science teaching in schools caused by a shortage of qualified science teachers and a severe lack of equipment and materials. Until governments and development agencies attack this problem with additional incentives and resources, the present lack of graduates with a well rounded science based training will remain.

Despite its generally low quality, the available information on the current state of the graduate labor market all point to a growing tightening in most fields. This is particularly the case of humanities and social science graduates. For science based graduates the continuing levels of vacancies and expatriate employment reflect the lack of qualified entrants and, perhaps, the quality of higher education teaching more than it does an inadequacy of places. In the immediate future, the expected slow growth of government expenditure and public service employment suggest that a further tightening can be expected. There would, then, appear to be little case for any across-the-board expansion of the higher education sector at the moment.

In the meantime, increased efforts are required to both monitor the immediate experiences of graduates and to develop indicators which will provide signals of imminent changes in the labor market facing them. Added attention needs also to be given to analysing the performance of graduates in employment. These efforts will involve both data gathering and effective consultative procedures. Once a more detailed knowledge of the workings of the labor market has been developed, policies relating to both wage structures and the private costs of education can be developed to influence total demand, and its structure, for higher education. Parallel to these efforts, there is a need to further investigate the internal workings of the higher education sector focussing on increasing the quality of teaching and reducing both student wastage and unit costs. Internal efficiency is the subject of the next section. Prior to that discussion, a brief consideration of the research role of higher education is presented below.

Research

Universities and polytechnics in African countries have generally been modelled on European and North American lines and are intended to have both a teaching and a research function. As will be shown in section III, student staff ratios are often very low implying that time is amply available to conduct research. In many institutions, however, the complementary factors of resources and experienced senior staff are not available, which results in non teaching faculty time being used inefficiently. This lack of sufficient 'real world' experience by faculty hinders the potential communication to students of how to analyse and solve problems related to the disciplines taught. Courses are often overly theoretical and descriptive rather than oriented to problem solving.

Measuring the quantity and quality of research output of higher education institutions is particularly problematic. Little evaluation of this has been undertaken in the developed countries, let alone in Africa. The potential for organised research, however, has been demonstrated by universities such as Ibadan in Nigeria, Legon in Ghana, Da es Salam in Tanzania and Nairobi in Kenya. Court (1980) briefly describes the current situation in East Africa. A bibliography of research on East African economies showed one out of 50 items contributed in 1963 to have been prepared by African scholars. By 1975, the ratio

was 23 out of 42. A similar pattern, he states, occurs in other social sciences and in natural science. A common feature of those universities mentioned above has been the creation of specialized research units, which have gradually built up necessary infrastructure. Court concludes "Research from being an individual, academic and largely foreign activity has become a sizeable, organised, indigenous and highly valued feature of university life." (p.673). How widely this conclusion applies across African universities is impossible to say.

If research is to remain a major function of higher education institutions then it is necessary that additional resources are provided for equipment, research assistance, data processing and so on. In the more expensive research areas of high technology cooperative programs with industry and government appear desirable but in the social sciences, agriculture and the humanities it is possible that small increases in resources could have large payoffs both for purposes of improved teaching and for tackling specific problems. What are required are incentives (or penalties) designed to encourage research plus a framework for allocating additional resources such as through grant giving research councils. The extent of direct government involvement in directing research to its own priorities is a matter which will have to be determined in an atmosphere of cooperative negotiation between governments and institutions in each country.

There are several ways in which external donors can help facilitate increased and more effective research. These include:

- financing fellowships for study (training and research) abroad and technical assistance for the short-term strengthening of indigenous faculties;
- financing direct research costs (through government research grants);
- financing the provision and strengthening of infrastructure for good teaching, research and knowledge dissemination, such as libraries, documentation centres, and computers;
- encouraging and financing cooperative arrangements for collaboration in research and for the sharing of research results;
- establishing institutional relationships between developed and developing countries on a long-term basis;
- encouraging borrowers to increase their use of higher education institutions for consulting and research activities and strengthening these institutions where necessary;

- supporting research in priority areas through small non-project-linked grants to scholars in higher education institutions.

Initiatives such as these are based on the pre-condition that research activity continues to be an important inbuilt feature of universities. So far, these institutions have largely been able to defend their research role by arguing that it is necessary if well qualified staff are to be recruited, a truly African body of knowledge developed and students presented with the very latest 'state of the art'. These arguments and the desirability, in principle, of a research role have been widely accepted. What remains at issue is the balance in faculty time devoted to teaching and to research and the degree of orientation of that research towards issues regarded by governments as relevant. As the following section demonstrates, staff student ratios are often very high and teaching commitments low. In this section it has been argued that, for the time being at least, in most countries the economic arguments for a substantial expansion of graduates are weak. A major increase in teaching commitment is therefore unlikely. If this argument is accepted the time is due for a major reconsideration of the ways in which faculty non-teaching time can be most efficiently used.

SECTION III

INTERNAL EFFICIENCY OF HIGHER EDUCATION

This section focuses on the levels and components of unit costs of higher education in African countries, and on student wastage. Policy changes and organisational reforms required to reduce both costs and wastage are then considered.

Unit Costs of Higher Education

Comparisons of annual per student costs in higher education can be illustrated in three ways. First, by a straightforward presentation of the absolute costs converted to United States dollars, second through a comparison with the costs of other levels of education and thirdly through the presentation of the costs as multiples of per capita income. It is the recent emphasis on the latter measure, in particular, which has led to the conception that higher education in Africa is a very high cost activity. All three types of cost measure are produced for 24 African countries and for Asian, Latin American and developed countries in table 11. In order to maintain as close a comparability as possible between countries, most of the cost figures used relate to university alone rather than the more general 'third level'.

Concentrating first on column (1), the absolute unit cost per higher education student is, on average, similar to that for a student in the developed countries. In some African countries, however, the costs are well above particularly in Zimbabwe, Tanzania, Nigeria and Botswana, while in others such as Somalia, Sudan and Ethiopia they are much lower. The similarity of the costs overall between African and developed countries could be viewed as unsurprising given that the institutions perform essentially the same functions, are similarly structured and, in part, recruit staff from a common market. However, since the absolute costs of higher education institutions in Asia and Latin America are lower than in Africa such a determinist view should not be taken too far.

The concern with higher education costs in Africa increases further if comparisons across countries and regions are made, not in absolute terms, but in terms of 'affordibility' and opportunity cost.

Table 11

Unit Costs of Higher Education, Selected Countries and Regions

Country/Region	Unit Cost In U.S.$	Unit Cost As Multiple of Primary Cost	Unit Cost As Multiple of Per Capita GNP
	(1)	(2)	(3)
Botswana	6572	42	7.0
Burundi	2928	55	12.7
Ethiopia	1553	57	11.1
Kenya	4149	78	10.6
Lesotho	5167	171	14.2
Malawi	3440	254	15.9
Mauritius	3169	27	2.9
Rwanda	3079	110	14.0
Somalia	895	33	3.2
Sudan	1533	36	4.2
Swaziland	2473	36	3.2
Tanzania	8661	38	30.9
Uganda	2313	385	4.1
Zambia	3750	53	6.5
Zimbabwe	11,081	81	12.7
Cameroon	1870	58	2.1
Liberia	4720	102	9.4
Niger	1670	28	5.4
Nigeria	6462	84	7.5
Senegal	1573	13	3.2
Sierra Leone	3332	107	8.5
Togo	2148	56	6.3
Upper Volta	2780	45	13.2
Ivory Coast	5400	39	5.7
Africa	3655	83	8.6
Asia	370		1.18

Latin America	1500	0.38
Developed Countries	3449	0.49

Sources: World Bank, 1984a, Table 1
World Bank, 1984b, Table 4
World Bank, 1984c, p33
G. Psacharopoulos, 1980b, p23

The data in columns 2 and 3 give indications of these. Column 2 which compares unit costs in primary and higher education in some cases underestimates total primary school costs since the multiples are based on government costs alone and in a number of countries local communities and/or religious bodies also finance primary schools. On average, however, government costs of one place in higher education are equivalent to 83 places in primary school (the median is 55). Column 3 focuses on higher education costs in relation to 'total resource availability' as measured by per capita GNP. In these terms, on average a higher education place in Africa consumes a share of total resources 17 times greater than in developed countries, almost 10 times greater than in Latin American countries and 7 times greater than in Asian countries.

The absolute cost figures in column 1 are averages across subjects. Although, on the whole, the distribution of students by subject in African countries does not vary greatly from other regions (Psacharopoulos, 1980b) and is not therefore a cause in itself of the relatively high average costs, variations in costs across subjects are interesting to examine. These are shown for six African countries in table 12. While reservations must exist over the raw data used, it is clear that the actual distribution of students across faculties will have a very large effect on average unit costs since science based subjects appear to be two to three times as expensive as arts based ones.

Table 12

Higher Education Unit Costs by Subject (Humanities = 100)

Country	Humanities	Social Science	Law	Education	Science	Agriculture	Engineering	Medicine
Lesotho	100	66	72	148	133	-	-	-
Sudan	100	83	85	100	86	95	88	136
Somalia	100	58	87	89	-	184	-	198
Tanzania	100	100	93	-	647	912	120	-
Kenya	100	100	-	-	191	260	-	208
Zambia	100	100	76	-	-	212	115	292
Average	100	84	83	116	264	333	108	208

Source: World Bank estimates for Lesotho, Sudan, Somalia and Tanzania.
Psacharopoulos 1980b Table 5.2. for Kenya and Zambia.

Determinants of Unit Costs

Previous sections have illustrated that the development of the higher education sector in Africa has been very recent. Nigeria's experience of one university in 1960 and over 20 today highlights this point most dramatically. Not only are most institutions new, many have small numbers of enrollments - between one and two thousand in a majority of countries. It may be, therefore, that the current high unit costs can be partly explained by the non-realisation of economies of scale. Such an explanation usually goes together with an expectation that these economies will occur in the future as expansion proceeds. Whether this is likely to be so can be partially tested in two ways: first by comparing enrollment and unit cost relationships across countries and second by examining the movement of unit costs over the recent past within individual institutions.

To test whether there is any relationship across countries between the levels of enrollments and unit costs a simple linear regression analysis was made for 18 African countries with actual unit costs (UC), the dependent variable and enrollments (E), the independent variable. The results are shown below:

$$UC = \underset{(5.903)}{3259} + \underset{(1.012)}{0.032E} \qquad R^2 = 0.06$$

Numbers in parenthesis are t-ratios. There appears to be no statistical relationship between the actual unit cost and enrollments. This corroborates Psacharopoulos' (1980b) calculation for developing countries as a whole, although in his case the addition of enrollment squared and per capita income did produce statistically significant results with an R^2 of 0.21. Similarly, calculations using average cost as a multiple of per capita income also led to statistically significant results indicating decreasing 'costs' for higher levels of enrollment.

Whatever the results of such cross country regressions, there is no inevitability that unit costs of individual institutions will or will not decrease as enrollments expand. Institutions tend to have a dynamic of their own. Recent experiences within higher education institutions may therefore prove a better guide to what may be expected to happen to costs in the future in the absence of specific policy changes. Examples are provided below.

In Lesotho, unit costs at constant prices increased by 73 percent between 1969 and 1982 while enrollments rose from 386 to 1133.

In Kenya, the University of Nairobi witnessed a decline in unit costs over the 1970's leading to reductions in teaching materials and only 20 percent of the proposed research program being funded. It is not equally certain that unit teaching costs fell.

In Tanzania, the current budget for the University of Da-es-Salaam increased by 418 percent and enrollments by 134 percent between 1971 and 1979. Even allowing for inflation, unit costs have substantially increased.

In the Sudan between 1973 and 1976, the higher education budget grew faster than the combined growth of enrollments and the cost of living.

These experiences are not sufficient to indicate any definite trends in the effects increased enrollments have had on unit costs. Another, proxy, measure of trends in costs is derived from changes in student:teaching staff ratios. Again, existing data is scarce but the figures given for Nairobi, Da-es-Salaam and Makerere for the period 1965 to 1979 are not encouraging. (table 13)

Table 13

Student:Staff Ratios at the Universities of Nairobi, Da-es-Salaam and Makerere, 1964-79

University	Student:Staff Ratios		
	1965	1971	1979
Nairobi	6.3	6.9	5.6
Da-es-Salaam	7.3	6.8	6.2
Makerere	9.0	7.4	5.9

Source: Court 1980 pp69

With the data available for individual African countries it is not possible to definitively judge whether in the past, economies of scale have operated within higher education. On balance the evidence suggests that they have not. That there are possibilities of reducing unit costs without a serious deterioration in educational quality, however, is very clear from examining current practices within a sample of African universities. These are discussed below under the headings of student:staff ratios, salaries and expatriate employment, non-academic expenditures and utilisation rates.

Student:staff ratios

For 51 universities in 30 countries, the median student staff ratio in the late 1970's was 8:1 according to the Association for African Universities (1983). (See Appendix table A3). In table 14, both average and subject specific ratios are presented for twelve countries using a different set of sources and, in most cases, more up to date information.

The average student:staff ratio for the twelve African countries sampled is 7:1. This is well below the ratios in other parts of the world including the developed countries. The problems obviously lie most acutely in the science departments where the average ratio is 5:1 - half that in the United Kingdom - but there are also examples of extremely low ratios in a wide range of other subjects. Even in a university as long established as Da-es-Salaam, student:staff ratios in the humanities and social science faculties are only 3. The potential for either reducing staff or increasing enrollments at well below current average costs obviously exists.

Salaries and expatriate employment

Student:staff ratios are an important determinant of unit costs because of the high teaching salaries relative to per capita incomes. African universities did not expand gradually as in a number of Asian and Latin American countries and their establishment required large numbers of expatriate lecturers. Recruitment, therefore, was on the international market and salaries were set accordingly. In addition, for whatever reasons, public sector salaries as a whole were set at

Table 1-

Student:Staff Ratios by Country and Subject

Country	Year	Student Staff Ratios Average	Subject		Subject	
Lesotho	1982	8.6	Science	7.4	Education	4.6
			Social Science	11.9	Law	12.9
			Humanities	7.7		
Botswana	1982	9.8	Humanities	6.5	Science	4.7
			Social Science	10.0		
Malawi	1981	8.3	Fine Art	1.0	Physics	3.9
			Philosphy	2.5	Chemistry	4.7
			English	10.0	Economics	10.0
			Engineering	6.2	Agriculture	9.5
Tanzania	1982	4.0	Agriculture	2.0	Engineering	6.0
			Arts	3.0	Medicine	2.0
			Social Science	3.0	Commerce	15.0
Kenya	1982	9.5	Agriculture	5.2		
		12.5	Medicine	3.4		
Sudan	1976	9.6				
Mauritius	1979	5.4				
Rwanda	1980	7.0				
Burundi	1982	7.1				
Uganda	1978	5.9				
Somalia	1983	5.7	Languages	5.3	Medicine	4.1
			Engineering	7.9	Agriculture	3.9
Ghana	1980	3.7				
		3.2				
		5.3				
Average Africa		7.1				
United Kingdom		12.0				
United States		15.0				
France		15.0				

Sources: World Bank, 1977 Table 5 and 12. Sudan
World Bank, 1984a Table 19. Mauritius; Burundi, p42 France. United States
World Bank, 1984b p12 Lesotho
World Bank, 1984c Table T.23 Malawi
Williams 1981 p.20 Ghana
Court 1980 p669 Uganda
World Bank UNESCO and USAID estimates Botswana, Kenya, Tanzania, Rwanda, Somalia

Note: Where more than one figure exists for a country, they relate to individual institutions.

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levels above per capita incomes to a degree much greater than in other developing regions. While we do not have comparative data on current university teacher salaries, Eicher (1984) has demonstrated the relatively high salaries of primary school teachers in Africa. These average 6.7 times per capita income, compared to 2.4 times in both Asia and Latin America. Similarly Tait and Heller (1983) show that in Francophone and Anglophone Africa, civil servants' salaries average 9.6 times and 4.6 times per capita income respectively, while in Asia the multiple is 2.9 and in Latin America 3.1. While there is no reason to believe that university salaries in African countries are above those earned at a similar level in the rest of the economy, their size is an important cause of high unit cost.

The continued widespread employment of expatriates is another cause. Compared to the rest of the public sector and the private sector, the proportions of expatriates in university teaching are commonly high. Again, Court (1980) provides relevant data for three East African universities between 1965 and 1979. (table 15)

Table 15

Non-East Africans as a Percentage of Academic Establishments, Nairobi, Da-es-Salaam, Makerere 1965-79

	1965	1971	1979
Nairobi	81	69	61
Da-es-Salaam	84	68	46
Makerere	83	73	84

Source: Court, 1980 p669

More recent data for Da-es-Salaam show that expatriates now form 37 percent of the teaching staff and if medicine is omitted, 23 percent. Expatriate intensity also varies by subject in Kenya. The range is from 69 percent in science to 50 percent in arts and social sciences.

Universities in other countries have similarly high levels of expatriate employment. In 1979, non-Africans filled an average of 33 percent of posts in 30 universities in 18 countries (Appendix table A3). Current examples are Somalia 26 percent, Nigeria 28 percent, Ethiopia 40 percent and Rwanda 48 percent. On the whole it appears that expatriates still fill between a quarter and a half of all teaching positions in African countries. As these proportions fall, so should unit costs.

Non-academic expenditures

Direct departmental teaching costs are often a surprisingly low proportion of total costs. At the University of Lesotho, the proportion is 34 percent and at the University of Khartoum, 42 percent. Teaching and research costs at the University of Malawi are again around 40 percent of total costs, most of the rest being spent on travel allowances, transport, administration, maintenance and student living and allowances. One reason for high non-teaching costs is the employment of large numbers of non-teaching staff. At the University of Khartoum in 1976 the total number of employees was 5892 to serve 7600 students. A similar situation exists at the University of Da-es-Salaam where there are two non-teaching staff to each faculty member. The result is to produce a total student:staff ratio of only 1.4. In

Nigeria's universities in 1980-81 there were 77,000 students and 32,000 staff.

Large numbers of non-teaching staff are not the only cause of high non-teaching costs. Many African universities have taken on functions which are absent in other parts of the world. Staff housing is one example. In Kenya, for instance, the University of Nairobi owns 200 houses and rents another 730. Staff housing is commonly heavily subsidised. Other facilities often provided free or at low cost by universities include schools, medical centres and staff clubs. All of these add significantly to unit cost per student.

Another widely observed major cause of the high unit costs of higher education to governments in African countries is the often free provision of student living facilities coupled with student allowances. This issue will be examined in greater detail in the final section but is introduced here. Acharya (1982) has shown that a sample of Francophone governments in the late 1970's spent an average of 43 percent of the higher education budget on scholarships and social expenditures and Anglophone governments, 14 percent. These compared with 4 percent for a sample of Asian countries. In 1978 in Mali scholarships in higher education were equal to 45 percent of the total education budget, although by 1982 the percentage had fallen to 29.0. Students at the University of Ougadougou in the Upper Volta in 1981 received stipends equal to 770 percent of GNP per capita. As a whole, these were equal to 81 percent of the total primary school budget. In Zaire, allowances are higher than the average primary school teacher's salary.

Utilisation rates

The low student:faculty ratios described above are partly a result of the attempted provision of a very wide variety of courses. At the University of Lesotho, for example, 142 courses are offered in students' final year with an average enrollment of 15. In some cases, even though student:staff ratios are low, student contact hours are also low. At the University of Malawi these range between 3 and 12 hours a week (World Bank, 1984c). This situation points to an under-utilisation of faculty. Other measures of utilisation concern the institutions' physical facilities. The evidence is mixed. A case study has been

prepared for the University of Lesotho where unit costs have been increasing as enrollments have grown (World Bank, 1984d). During term time, the average classroom use is 74 percent and laboratory use 57 percent. However, because of small classes only 44 percent of places are on average occupied. Given these use factors and calculating over a whole year, only 31 percent of capacity is taken up. Obviously there are severe constraints to substantially increasing classsroom use in term time but once again the potential exists for changes which would result in a decrease in unit costs. At other higher education institutions, however, there are reports of overuse of existing facilities. Pressures on facilities such as libraries are reported for Kenya where enrollments (at Kenyatta University) are already 25 percent higher than planned. Student contact hours there are significantly greater than those reported for Malawi - social science 24 hours, agriculture 27 hours, engineering 31 hours, science 26 hours. Similarly, the University of Dakar in Senegal was originally planned for 3500 and now holds 8000 students.

A warning

This subsection has shown that from almost any standpoint unit costs of higher education are high in African countries and the reasons for these have been described. There are also, however, reports of overcrowding, curtailment of research funding, cutbacks in staff development programs and reductions in books and teaching materials. Recent descriptions of the situations in two of West Africa's universities provide examples. An article in West Africa (18 July 1983) describes the students at the University of Kumasi in the following way ".....they are attending a university which is grossly short of staff, books, paper and food." In a description of the University of Ibadan (West Africa, 12 September 1983) it is argued, "Everything in the University today points to an agonising decline. Students swarm from their hostels where there are six in a room designed for two, into a dingy lecture room where a teacher shouts his notes across a hall of five hundred listeners.....there are generally no course seminars or tutorials..... Without doubt the most affected of all the faculties is the Faculty of Science. For several months now we have been expected to run a physics laboratory without electricity, perform biology and

zoology experiments without water and get accurate readings from microscopes blinded by use and age. Chemicals are unimaginably short. The result of all this is a chemistry laboratory that cannot produce distilled water and hundreds of 'science graduates' lacking the benefits of practical demonstrations."

The recent Commission on Salary and Conditions of Service of University Staff, in Nigeria (1981a) reports in a similar vein, "The Commission was horrified to witness the disgraceful spectacle of students in the corridors and outside lecture theatres struggling to comprehend the proceedings inside." Similarly, the Vice Chancellor of Fourah Bay in Sierra Leone is reported as describing a situation in which university budget estimates 'pared to the bone' of 11.3 million leones were cut to 9.5 million, then 7.5 million (West Africa, January 1982).

These descriptions are important antidotes to the impression that since unit costs are high, any form of reduced funding will have no effect on the quality of education. African universities have evolved in the context of a set of ideas which have given them welfare responsibilities in addition to educational responsibilities and it is extremely important that in any discussions of the causes of high costs, these are separated.

Student Wastage

Internal efficiency measures for higher education are not confined to analysing resources per student. It is also important to assess the extent to which students graduate from their courses, and the degree of repetition of course years. For the higher education sector in Africa two different types of comparison can be made to set the context. In the United Kingdom 94 percent of all first year students graduate after three years. On the other hand dropout and repeater rates at primary and secondary schools in Africa are very high. In 15 Eastern African countries, the average completion rate for the primary cycle is 65 percent and for 10 Western African countries it is 47 percent.

Turning to examples of higher education student wastage in individual countries, dropout rates in Kenya are reported to have been relatively high up to 1975 but to have fallen since (World Bank, 1980).

They were highest in architecture (20 percent), engineering (14 percent) and agriculture (10 percent), but are currently at around 6-8 percent in these subjects. Repetition rates have also fallen. In 1970 18 percent of final year engineering students were repeaters while in 1980 the figure was down to 10 percent. In social sciences and sciences, repeaters make up between 1 and 3 percent and 1 and 4 percent of total enrollments a year respectively.

The situation appears to be considerably worse in a number of other countries as table 16 indicates.

Table 16

University Wastage Rates by Year and Subject, Selected Countries

Country	Subject				First Year	Overall
	Engineering	Law	Humanities	Agriculture		
Zambia	40	25	19	17		30
Sudan	48	19		44		45
Burundi					50	
Ethiopia					35	49
Zaire					62	68
Zimbabwe					29	

Source: World Bank and UNESCO estimates.

Although wastage rates in only 7 countries have been presented, the picture is very bleak. Of these countries, only in Kenya are rates apparently under control and in the rest wastage appears to be between one third and two thirds. The high unit costs per student then translate into enormous unit costs per graduate.

There are four possible causes of high wastage rates - financial pressure, inadequate prior preparation in secondary schools, low teaching quality in higher education and inappropriate standards for promotion and graduation. The low level of direct costs to students in higher education and the large returns upon graduation suggest that in all but the most extreme case, financial hardship is not a major cause of dropout. The main causes lie within the education system. Secondary schools in many African countries are often inadequately staffed with unqualified teachers and suffer from a lack of teaching materials. Combined with poor primary schooling and non-supportive home backgrounds, the educational outcomes are often inadequate as a base for higher education. This is especially the case for science subjects. However, because of the policy of many governments of enrolling increasing proportions of students in science faculties, entrance requirements are often low. Once in higher education, the educational deficiency may not be corrected. Despite the excellent staff development programs of some institutions, the rapid expansion of universities may in some cases have led to the appointment of poorly qualified and inexperienced faculty. In addition, teaching methods may be ineffective and performance evaluation not conducted in time for remediation. Finally, institutions may be continuing to use promotion and graduation standards adopted from European countries which are unnecessarily restrictive. Some of these causes of high wastage rates will take many years to cure. Others, however, can to some extent be remedied.

Policies to Increase Internal Efficiency

Unit costs of higher education in African countries are typically very high and need to be reduced if enrollments are to increase. The already high wastage rates, however, imply that in reducing costs great care needs to be taken to ensure that the quality of teaching does not fall. While this does not mean that the level and composition of direct teaching resources needs to be left totally unchanged it does imply that greater emphasis should be given to reducing the non-teaching expenditures borne by governments.

Faculty:student ratios are extremely high in many departments in many universities. Partly these result from a high degree of specialisation relative to the number of students in each major area. Minimum sizes for classes and departments need to be set and targeted faculty:student ratios consciously moved towards by non-renewal of contracts, a reconsideration of tenure arrangements, encouragement of secondment and the re-direction of faculty to sponsored research, together with a careful expansion of enrollments in high priority subjects. This may involve combining small departments and requiring faculty to teach in other than specialist areas. In the larger countries, institutions could be encouraged to specialise more on a narrower range of subjects while small countries could share facilities. In the past, regional universities such as the University of East Africa comprising campus' in Nairobi, Da-es-Salaam and Makerere, and the University of Botswana Lesotho and Swaziland have not been able to sustain themselves. Today's financial constraints, however, may provide a new stimulus. Another alternative is to continue sending students abroad for study. Both these options require detailed research.

The possibilities of reducing repetition rates by altering university regulations have been demonstrated in Kenya. Existing regulations governing promotion and graduation need to be reviewed in many countries to assess whether they could be eased without too great an effect on the eventual capabilities of graduates. Conversely, 50 percent dropout rates at the end of first year courses indicate that in some countries admission criteria need to be re-examined. The requirement to expand higher education science courses while secondary school science achievement remains low points to a need to re-appraise the nature and objectives of first year programs.

The utilisation rates of physical facilities vary widely. In some institutions classrooms and libraries are grossly overcrowded while in others space, particularly in laboratories, is under-used. In some cases, higher enrollments could be easily accommodated in existing facilities. In all cases, better scheduling and a concentrated effort made by individual faculties and departments to share facilities could improve efficiency. More radical would be the use of new teaching technologies such as those initiated by the United Kingdom's Open University or the Ramkhambaeng University in Thailand whose enrollments now reach 115,000. Even those universities where term time utilisation

rates are high, and even excessive, generally operate at these levels for only parts of the year. Thirty-week teaching years make little sense in countries with such low levels of resources. While African universities had to compete in a tight international academic labor market in the 1960's and offer conditions similar to those in developed countries, this market has substantially tightened. Even in cases where longer teaching years for faculty could not be implemented, there is room for experimenting with four term university years with each faculty member taking only three.

Most of the policies suggested above to reduce unit costs involve an expansion of enrollments and would not lead to decreases in the overall level of government resources used in higher education. To do that would require the whole issue of university and government expenditure in areas not directly related to teaching and research to be opened up to discussion. Student finance will be considered at length in the following section. There are other areas, however. Subsidised staff housing is an example. Automatic study leave with travel entitlements is another. Full salary while undergoing further study abroad is yet another, and the provision of university funded schools for faculty children again requires a fresh look. In addition, the apparently inflated numbers of non-teaching staff documented earlier for several universities suggest that savings could be made in this area.

A second way in which inefficiencies can be reduced is through measures designed to strengthen the management of the total system of higher education. Political and bureaucratic factors are, again, likely to constrain the scope for reform and most improvements will occur in small steps rather than through wholesale changes.

The multi-objectives which higher education institutions aim, and are expected, to fulfill and the autonomy which many have preserved lead to managerial complexity. In the context of external demands to take on an increased developmental and outreach role in addition to the requirement to give high quality teaching, institutions need to more clearly define their objectives and roles. The wide range of services which many remain responsible for beyond the provision of education and research facilities makes day to day management even more demanding than in many developed countries and places a strain on senior administrators who are often not supported by sufficiently experienced staff. Again adopting practices of institutions in developed countries,

administrations are often staffed on the basis of academic credentials rather than managerial skills and proven experience. While many universities have undertaken substantial programs of staff development for faculty, often with foreign donor support, few have developed such programs for administrative staff.

The potential which exists for cost reductions and increased student flows requires that reliable information systems exist and that cost control and budgeting systems are in operation. Case studies of the management of universities (Kenya, Tanzania, Malawi, Lesotho) all point to a lack of these. For the University of Nairobi it is argued that the accounting and information support systems for planning and budgeting are absent and that a priority should be the tracking of efficiency indicators to aid admission policies, the determination of faculty budgets, staff requirements and so on (World Bank, 1980). In a recent (1982) report prepared by the University of Da-es-Salaam for President Nyerere, serious weaknesses in financial control are admitted. Similarly, at the National University of Lesotho, it is argued that the planning and budgeting process is not carried out systematically and that measures of staff:student ratios, graduate output, research, etc., are not being used to justify departmental budgets (World Bank, 1984d). These universities are among the more established ones in Africa and it is unlikely that the situation is very different elsewhere.

The decisionmaking autonomy which universities, in particular, enjoy is based on the principle that they are able to manage their activities efficiently without significant government involvement. At a time of increased financial constraint, more attention is likely to be focussed by governments on this principle. It is in the interests of higher education institutions, therefore, to begin to implement systematic evaluations of teaching programs covering aspects such as objectives, staffing, enrollments, wastage, placement, manpower needs, relationships to other programs and institutions and student and faculty achievement.

To conclude this section, it will be useful to present the results of exercises which have attempted to calculate the financial and enrollment effects of introducing the types of cost cutting measures described earlier.

At the University of Lesotho in 1982, overhead costs totalled M4.2 million. An estimated saving of M1.1 million could be made by the following measures:

- elimination of leased housing
- full costing of the primary school
- privatisation of the refectory, garage, maintenance and stores
- reduction in student residence staff and an increase in fees
- full costing of printshop and books (World Bank 1984d).

In addition, it is calculated that the building up of staff:student ratios to 1:10 in science and 1:12 elsewhere could support a student population of 1574 as against the present 1154 resulting in a reduction of 10 percent in overall unit costs.

Taking the 1980/1 budget of the University of Malawi, an estimated 20 percent reduction in total costs would have resulted from:

- a decrease in the staff:student ratio to 1:10 in most departments and 1:12 in a selected few
- reduced salaries for faculty training abroad
- reduced travel and transport costs
- restriction of allowances to 25 percent of students (World Bank 1984c).

An alternative way of viewing the effects of decreased staff:student ratios is to argue that at 1:10 and 1:12 ratios, 2260 and 2712 students could have been accommodated respectively compared to the actual 1912 in 1982.

These rough calculations imply that significant public expenditure savings of around 20 percent could be made by changes which would still result in staff:student ratios being higher than in many European universities, continued substantial subsidisation of students and non-wage staff benefits beyond those of most of the rest of the working population. It is evident that the scope for cost reduction exists.

This section has mainly emphasised the high unit costs of higher education and the measures which could be implemented to reduce these. In the final subsection some consideration is given to instances in which increases in resources might be required and might show high returns. These relate to an improvement in the quality of education.

Improved Quality

Levels of dropouts and repeaters in higher education have been shown to be very high in many countries. This leads to a waste of large amounts of resources. The reason for this wastage lies mainly in a mixture of inadequate secondary school teaching and low quality higher education. Especially for science based courses, those countries which have not already introduced remedial programs in maths and basic science need to consider this option at least as a temporary measure until secondary schooling improves.

High quality teaching requires high quality staff. Staff development programs are often one of the first activities to be cut when financial constraints are imposed. If the institutions themselves do not protect this area, budget allocations could be more tightly earmarked. Additional resources may also be required for the further development of curricula and teaching materials. Recent research results showing the strong positive effects of textbook provision on levels of primary school learning are equally applicable at higher levels of education. Curricula development is a relatively low cost activity with large returns. Together with small increases in resources, motivated faculty are required. This can be encouraged by the adoption of promotion criteria which take such activities into account.

SECTION IV

DIVERSIFYING THE SOURCES OF FINANCE

Introduction

In section 1 it was argued that the higher education sector in African countries typically consumes a large share of public expenditure despite enrollment ratios which are low relative to all other regions of the world. It was also argued that because of increased competition from other sectors in which governments are involved and also from other levels of education the distribution of any increase in overall public expenditure is likely to be keenly fought over. In any event, this increase will be small in most countries in the foreseeable future. (Some countries of Southern Africa may be an exception). Forecasts made by the World Bank of economic growth in African countries over the next few years are low (per capita income growth, on average, being negative) and it is unlikely that public expenditure will significantly increase as a proportion of gross national income. As a result, a quite severe financial constraint on the level of public resources can be anticipated and one from which higher education is unlikely to be exempt.

At the same time as financial constraints are increasing, social and economic pressures to expand enrollments can also be expected to persist. From the side of social demand, the rapid growth of secondary schooling which has led to an increase in the enrollment ratio from 3 percent in 1960 to 15 percent today results in an increase in the number of young adults both willing and qualified to further their education. Pressure to expand higher education not only comes through social demand. High levels of expatriate employment, large numbers of unfilled vacancies in administrations and the professions and a very low degree of graduate intensity in the labor force as a whole compared to other developing regions demonstrate the continued sparcity of highly educated labor in Africa. This sparcity is widely perceived as a constraint on social and economic development. While public finance constraints on the absorption of graduates into the public sector are likely to be widespread, social, political and economic forces can be expected to result in pressures on governments to continue to expand higher education enrollments.

Given this scenario, it is evident that a planned response is needed from governments. The alternative is that enrollments will continue to grow (often following a pattern which governments consider undesirable) and with a restriction on the overall level of funding this will lead to an across-the-board reduction in the quality of education provided. Such an outcome would be both inappropriate and unnecessary. In section III it was argued that while there are activities in higher education which require increases in funding if outcomes are to improve there are also areas in which economies could be made without this resulting in a significant reduction in the quality of teaching. Another possible option - not an alternative - is to increase the level of non-government funding of higher education. This option is considered in this section. Prior to that, however, more details of the social pressures for higher education expansion which are being built up are provided.

The educational sector is an interlocking system. Expansion of one level then increases enrollment demand for the next. Over the period 1970 to 1980 enrollments in secondary education in Africa increased by an average of 13.4 percent a year. Together with the existing salary differentials between higher and secondary educated labor, documented in section II, this expansion leads to very strong pressure to increase higher education enrollments.

At present, the proportions of secondary school graduates who continue their studies are relatively low in most African countries. Using UNESCO (1983) data, higher education enrollments as a percentage of secondary enrollments average 5 percent in Western Africa and 7 percent in Eastern Africa compared to 15 percent in Arab countries, 16 percent in Asia and 27 percent in Latin America. Since the period of study in secondary and higher education and also between countries is dissimilar, these percentages do not provide a clearcut comparison of 'opportunity' but they are indicative of both the small size of the higher education sector in Africa and the pressures to expand.

A more detailed indication of social demand can be seen from data for Kenya, Nigeria and Somalia. In Kenya, secondary school enrollments have escalated rapidly due to the expansion of Harambee 'private' schools. In 1981, at the end of Form Four 11.6 percent of students entered some form of institutional vocational training and 12.3 percent progressed to Forms V and VI. Following Form VI, only 21

percent of those with the minimum required qualifications for university found places, this percentage having fallen from a peak of 30 percent in 1978/9. Another 40 percent or so found places in teacher training institutes, the polytechnics and the institutes of technology. (Bertrand and Griffin, 1984). It is unlikely that many of the remaining 40 percent did not enter higher education from choice. It should be noted that Kenya has experienced one of the highest rates of economic growth in Africa and therefore has been in a better placed position to expand higher education than most countries.

For Nigeria, two sets of data on 'unsatisfied' demand exist. Ojo (1978) has documented the proportions of qualified applicants who were offered places at three universities in the early 1970's. Since students can apply to several institutions (and since the number of universities has increased fourfold since then) the data need care in analysing but they are useful as a rough indication of the situation at that time. (table 17)

Table 17

Percentage of Qualified Applicants Receiving University Offers, Nigeria 1970-74

Year	University			
	Ife	Ibadan	Lagos	Average
1970	46	32	22	33
1972	17	46	21	28
1974	19	17	36	24

Source: Ojo (1978)

More recent data are provided by Adesina (1982) broken down by subject. These are presented in table 18.

Table 18

Percentage of University Applicants Receiving Offers, Nigeria 1979/80 by Subject

Subject	Percentage Offers
Agriculture	17.4
Arts	20.6
Business Admin.	8.1
Education	15.5
Law	4.8
Medicine	13.1
Science	40.5
Social Science	12.9
All	15.5

Source: Adesina (1982)

No description of the precise nature of these figures or of the way in which they were derived is provided but the acceptance rate for science subjects is double that of any other subject, substantiating the argument in section III that the sciences are being forced to take many poorly qualified students with a resultant high dropout rate.

Finally, there is similar documentation for Somalia. In 1983, there were university places for 910 out of 3890 secondary school graduates, or 23.7 percent. This compares to 33.6 percent in 1981. If intake levels remain constant, the percentages of those qualified who will actually gain places will be 17.1 percent in 1984. For the period 1985-91, the 'index of opportunity' will average around 13 percent.

Both the very general ratios of enrollments in higher to secondary education and the three more detailed examples of Kenya, Nigeria and Somalia point to an excess demand for higher education in Africa. An important set of factors influencing this demand is the private benefits and costs facing potential students. Although apparently declining, earnings differentials remain substantial in many countries. Later in this section it is shown that private costs, apart from earnings foregone, are negligible or even negative.

Non-Government Sources of Finance

The fundamental set of factors in higher education facing most African governments is that while there are both social and economic pressures to expand enrollments, budgetary revenues are not increasing. It is a logical step, therefore, to ask whether non-government sources of revenue can be tapped. These could involve the establishment of private universities in which student fees cover the costs, contributions to the funding of aspects of public universities from private industry, and the charging of tuition fees and/or fees for food and accommodation to students in public universities. These are considered in turn below.

Private institutions

Privately owned and managed institutions of higher education are few in Africa, those that exist mainly being run by the churches. There are two main reasons for this lack. The first is the ethos inherited from the colonial powers that social services are the responsibility of government and as church-operated primary and secondary schools have been gradually taken over in many countries, for instance in Nigeria, this view has if anything grown stronger. The second reason is financial. As was shown in section III, higher education in Africa is expensive to provide. Private institutions would need to charge substantial fees to cover the costs. While the public sector institutions continue to provide free education there is little chance that fee charging institutions could emerge. Certainly in the context of African incomes, these could only develop alongside arrangements which provided students with access to loans.

Private sector contributions

In principle, the private sector could contribute to the costs of higher education in a number of ways, beyond its existing contribution via taxation. The efforts could be piecemeal or generalised. In the first category, large firms could be encouraged or required to help fund those faculties from which they recruit graduates, particularly when such faculties are very specific such as mining engineering or rubber technology. Instances of this practice are very few. Alternatively, firms might offer high level training themselves.

An instance of this is the multinational mining companies in Liberia. More generalised schemes could include the provision of bursaries or scholarships to at least partially replace government subsidies. Alternatively, finance might be generated through some form of graduate-hiring tax. The feasibility and employment effects of this would depend on the tightness of the labor market and the ability of employers to alter earnings structures.

One of the areas which is likely to become (even more) underfunded in a period of constraint or cutting of university finance is research. A recent commission investigating academic salaries and conditions of employment in Nigeria has suggested the imposition of an earmarked levy on the private sector for university research (Federal Republic of Nigeria, 1981a). For the present, the Government has rejected the proposal.

Schemes along these lines are unlikely to provide significant resources. In only a few African countries is the private sector a major employer of higher education graduates. While efforts should be increased to analyse the feasibility and consequences of increasing the private sector's contribution, the main options for alleviating the financial constraint in higher education are unit cost reductions and a greater contribution from the students.

Student contributions

With the advent of the current world recession, the severe restraint on government finance felt throughout the third world and the current vogue among Western governments and international development agencies to lay greater stress on the play of markets, there has been a recent upsurge in interest in the possibility of implementing schemes of 'cost recovery' and 'user cost charges' in the social services. Not surprisingly, one of the areas which has attracted attention in this way is higher education. In general, proposals have come in two forms. First, the straightforward charging of fees for tuition and for accommodation and food. This proposal is often coupled with a scholarship scheme for the poorest students. The second proposal is for a system of student loans which again would cover living expenses and at least some proportion of direct teaching costs and would be available for all students.

Before turning to the arguments for and against such cost recovery schemes and their feasibility, the existing financial arrangements for students in higher education in twenty four African countries are summarised below in table 19. Fuller descriptions of these arrangements are presented in Appendix 2.

Table 19

Summary of Higher Education Student Finance

	Free Tuition	Free Board and Lodging	Spending Money	Loan Scheme
Botswana	/	/	/	
Burundi	/	/	/	
Cameroon	/	(1)		
C.A.R.	/	/	/	
Congo	/	/	/	
Ethiopia	/	N.A.	N.A.(2)	
Ghana	/	(/)	(/)	
Ivory Coast	/	/	/	
Kenya	/	/	N.A.	
Lesotho				/(3)
Malawi	/	(/)	(/)	
Mali	/	/	N.A.	
Niger	/	/	/	
Nigeria	/	(/)	(/)	
Senegal	/	/	/	
Sierra Leone	/	/	N.A.	
Somalia	/	/	N.A.	
Sudan	/	/	/	
Swaziland				/
Tanzania	/	/	/	
Togo	/	/	/	
Uganda	/	/	/	
Upper Volta	/	/	/	
Zambia	/	/	/	

Notes: 1. 30 percent of students receive free board and lodging
2. N.A. information not available
3. Lesotho loan scheme very ineffective
Marks in parenthesis indicate that a change in policy is to be implemented.

From this survey a number of points stand out. First, apart from not altogether successful attempts in Lesotho and Swaziland, no government has a general policy of charging even partial tuition fees which are not then covered by some form of grant. Second, most governments cover board and lodging expenses for most students. Third, a majority of governments provide allowances for additional living expenses. Fourth, those governments which have attempted to implement loan schemes have either abandoned them or have come to terms with the fact that repayments are very low. Fifth, a number of countries require either bonding to government employment or some period of national service on reduced income. In summary, virtually no African government charges tuition fees not covered by grants or requires most students to provide their own non-subsidised accommodation. In addition, probably a majority of governments also provide pocket money. Recent policies introduced in Ghana, Nigeria and Malawi, to charge for accommodation, however, suggest that attitudes may be changing.

The arguments in favour of increasing student contributions are based on a series of efficiency and equity considerations. These have been amply developed by, among others, Rogers (1972), Woodhall (1983), Mingat and Tan (1984) and Mingat and Psacharopoulos (1984) and are, therefore, only briefly presented below.

Demand for higher education would be high in LDCs even in the absence of subsidisation as a result of very high income benefits. These benefits constitute an economic rent for those few individuals who are able to gain access to a limited number of places. The existence of government subsidies increases the private rates of return even further. Basically, it is argued that demand does not need to be stimulated by subsidisation and that in most countries a sufficient number of graduates would become available in its absence.

A policy of charging students for tuition and/or living expenses would increase the incentives to students to make a more careful consideration of their educational options. Essentially, it is argued that the labor market transmits signals of shortages and surpluses through wages and levels and periods of unemployment which students would be more likely to give consideration to if their own level of investment in education was higher.

Increasing the economic contribution from students would improve their level of commitment to study, so reducing both repetition and dropout rates.

The reduction in demand for higher education following an increase in the private contribution could result in a greater proportion of resources being used in primary and secondary education where, it is argued, social rates of return are greater.

The main argument based on equity considerations is that higher education leads to substantially higher earnings and therefore ought to be financed by those who gain. Even before their higher education courses, these students have enjoyed large amounts of public subsidy. Analyses of who pays and who benefits from higher education which have been made in developing countries (for instance, Malaysia and Colombia) have shown that the present system of public subsidisation is highly regressive.

Given the very large differentials in earnings between higher education graduates and other workers, the high cost of this level of education and the obvious excess demand for it in most countries, it is difficult on the basis of economic theory to find strong arguments against the substitution of grants by loans. On the other hand, several of the 'efficiency' arguments put forward for loans are weak. Since large earnings premiums exist for all branches of higher education, it is not clear that with an increased private cost students would alter their subject choice acting more as 'investors' than 'consumers'. Given their secondary school qualifications, students appear to already opt first for subjects with the most lucrative career prospects. Again, there is no necessarily logical connection, and no evidence from African countries, that repetition and dropout rates would be altered by

increased private financing. For instance, these rates are extremely low in the United Kingdom where student subsidies are among the highest in the world. The argument that fees and charges would lower student demand, thereby releasing resources for educational levels with higher rates of return is also based on a very weak factual base. Many reasons exist to suspect that social returns calculated for African countries have been systematically biased upwards for primary schooling and downwards for higher education. The argument also presumes a budgetary system in which the total education budget is first decided and then divided between levels. Probably more common is the practice of building the total education budget upward from its constituent parts. There is no reason why savings from higher education would be directed towards primary schooling under such a system of budgeting.

The arguments in favour of greater student contributions which are based on considerations of equity appear much stronger. Earnings premiums are very substantial and public subsidisation is almost certainly highly regressive. However, under a scheme to simply increase charges or lower/abolish grants, it is likely that access to higher education places would become more restricted according to parental income unless a means-tested scholarship program accompanied the scheme. With a comprehensive system of loans, however, the access argument against cost recovery disappears. If all students are offered loans which are paid back during working life there is no reason why this would have any significant effect on the ability of students from poor backgrounds to continue their studies. Loan schemes, however, which covered both tuition and accommodation would, in their initial period, use greater government resources than a policy which provided free tuition but required students to meet all their own living expenses.

Turning now to the feasibility of schemes to raise the student contribution to the costs of higher education, Woodhall (1983) points out in her comprehensive treatment of the whole student loans issue that an argument which has often been made against loans is that the amount which can be expected to be recouped is relatively small and, in any case, in no way provides a short term solution to financial constraints. In an attempt to quantitatively assess these arguments two simulation exercises have recently been made within the World Bank for African countries focussing on the size of student subsidies and their opportunity cost and the potential level of cost recovery. The first of

these concentrated on the trade-off between subsidies for higher education students and places in primary schools (Mingat and Tan, 1984) and the second on the degree of cost recovery feasible in different country groups under various assumptions of the proportion of incomes recouped. (Mingat, Tan, Hoque 1984.)

Using data from eight Francophone and two Anglophone African countries, the first set of simulations showed that a 30 percent cut in student living allowances (in kind or cash) could result in savings sufficient to fund a 10 percent increase in primary places. The second simulation was based essentially on data from Malawi but then generalised through data from the same set of countries described above. The aim of the study was to enquire what proportion of total unit costs in higher education could be reclaimed at different repayment rates.

The results of such an exercise depend essentially on the ratio of costs to earnings. Initial assumptions were that a rate of interest of 5 percent was charged and repayment was over ten years. For Malawi, an annual repayment equal to 10 percent of income would result in a rate of cost recovery of 16 percent. Repayments of 15, 20 and 25 percent of income would result in the recovery of 24, 32 and 39 percent of costs respectively. The authors conclude that it would be quite difficult to achieve a substantial rate of cost recovery in Malawi via loan schemes. Turning to the eight Francophone countries, however, the scheme appears more feasible as a result of higher graduate earnings. An annual repayment equal to 10 percent of salary over ten years would result in a rate of cost recovery of 64 percent and if the repayment was 15 percent, the recovery would be complete.

These sets of results lead back to the consideration of earnings differentials presented in section II. There it was shown that, at least in several Anglophone countries, differentials attributable to higher education have been falling over time and in countries such as Ghana are now quite narrow. The smaller the differential, the weaker are both the efficiency and equity arguments for cost recovery schemes and the lower the feasibility of recovering a substantial proportion of costs. Similarly the easier it is to absorb graduates into employment. The history of failure in introducing loan schemes in Africa and, where they have been introduced, of recouping significant payments has to be recognised. The likely increased pressure on governments to guarantee employment after graduation and to maintain earnings differentials

following a loans scheme must also be considered. In these circumstances it is recommended that in countries where differentials are low emphasis be mainly placed on imposing charges for accommodation and that wage policies to continue the erosion of differentials are implemented. In this way, financial pressure on governments is eased both in terms of the education budget and its total wage bill together with the possibility of achieving a greater intensity of graduate employment throughout the economy.

Where, because of market pressures or for political reasons earnings differentials attributable to higher education are unlikely to fall, greater emphasis needs to be placed on designing loan schemes. This would appear to be the case for several Francophone West African countries and for the small countries in southern Africa. Alternatives to a loan scheme in these countries is a graduate tax and bonding or compulsory community service for a number of years at low pay. A graduate tax has the advantage over a loans scheme in that it affects all graduates thereby being more equitable. A potential disadvantage is the increased size of the pressure group threatened and the greater likelihood of increased wage demands. Bonding schemes with periods of community service on low pay already exist. These potentially reduce the government's wage bill but the costs of administration and provision of accommodation have, in practice, quite severely reduced the savings.

The experience over the last fifteen years in African countries of failed attempts to implement loan schemes or introduce full cost charges for accommodation indicates the political problems involved. Examples of successful schemes in other parts of the world, such as Latin America, however, indicate that they are possible to implement. In African countries, the resolve of governments to ensure that students' contributions rise is likely to harden as the financial crisis is prolonged. Similarly students' will to resist as the employment market tightens can also be expected to strengthen. Recent moves in Ghana, Nigeria and Malawi to increase charges indicate that cost recovery measures are beginning to gain momentum.

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Appendix 1. Tables

Table A1

Educational Enrollments and Expenditures, Sub-Saharan Africa

Country	Year	Percentage of Total Central Government Expenditure on Education	Distribution[1] of Educational Expenditure (%)			Higher Enrollment Ratio (%)
			P	S	H	
Botswana	1982	----	56	32	12	----
Burundi	1981	19.0	44	29	27	1.00
Comoros	1980	25.4	49	34	17	1.40
Djibouti	1984	11.9	74	26	-	0.60
Ethiopia	1981	11.1	50	28	22	0.45
Kenya	1982	21.2	65	16	19	----
Lesotho	1982	16.9	40	33	27	1.30
Madagascar	1977	24.0	53	28	19	3.10
Malawi	1981	11.4	50	18	32	0.40
Mauritius	1983	4.0	52	40	8	1.00
Rwanda	1983	24.5	72	16	12	0.40
Seychelles	1979	22.4	44	43	13	----
Somalia	1981	10.5	50	44	6	1.00
Sudan	1980	----	--	--	--	----
Swaziland	1983	20.4	51	34	15	3.00
Tanzania	1980	17.7	64	14	22	0.30
Uganda	1980	16.1	29	46	25	0.60
Zaire	1981	26.4	--	--	10	2.00
Zambia	1980	11.1	52	25	23	1.50
Zimbabwe	1981	19.5	62	32	6	0.50

Benin	1979	35.0	62	30	8	1.00
Burkina	1983	21.7	43	29	28	0.03
Cameroon	1978	16.0	34	45	21	1.30
CAR	1979	20.6	--	--	--	0.70
Chad	1976	21.7	--	--	--	0.20
Congo	1978	27.7	--	--	--	4.00
Gabon	1977	8.4	--	--	--	2.80
Gambia	1977	6.5	60	32	8	----
Ghana	1976	15.5	--	--	--	----
Guinea	1979	----	31	35	34	7.00
Ivory Coast	1981	45.0	36	50	14	1.90
Liberia	1980	19.6	48	25	27	2.90
Mali	1981	21.7	54	30	16	0.90
Mauritania	1978	16.9	33	42	25	0.37
Niger	1978	16.6	52	43	5	0.20
Nigeria	1977	9.6	--	--	--	0.17
Senegal	1977	23.0	46	34	20	2.20
Sierra Leone	1977	16.0	--	--	-	0.60
Togo	1978	26.5	38	35	27	1.60

Source: World Bank, 1985.

Note: [1] Only those parts of total educational expenditure which can be directly attributed to each level of education are included.

--- indicates no information

Table A2

Public Expenditure on Education as a Percentage of Gross National Product and Total Public Expenditure, Selected Countries and Years

Region/Country	Year	Educational Expenditure as a % of	
		GNP	Total Public Expenditure
Africa	1965	3.2	-
	1970	3.5	-
	1975	4.0	-
	1980	4.1	-
Ivory Coast	1970	5.4	19.3
	1979	8.6	29.8
Kenya	1970	5.0	17.6
	1979	6.1	18.0
Liberia	1970	2.5	9.5
	1980	6.1	24.3
Niger	1970	2.0	17.7
	1980	4.3	22.9
Tanzania	1970	4.5	16.0
	1979	5.8	10.7
Zambia	1970	4.7	10.9
	1980	4.6	7.6

Source: UNESCO Statistical Yearbook 1983

Table A3

Characteristics of Selected African Universities 1978-79

Country/ University	Enrollments	Students per Faculty	Books per Student	Non-African Faculty (percent)
Benin	2578	17	11	21
Botswana	860	5	58	
Burundi	648	5	62	36
Cameroon	7800	20	9	
Congo	4336	18	16	
Ivory Coast	11430	16	5	41
Ethiopia				
Addis Ababa	12000	15	21	20
Asmara	600	9	53	71
Gabon	1666	6	24	56
Ghana				
Cape Coast	1421	6	89	
Ghana	3888	7	76	10
Kumasi	2867	6	32	7
Upper Volta	1000	11	30	
Kenya				
Kenyatta	1701	6	29	31
Nairobi	5483	8	64	
Lesotho	1048	6	119	16
Liberia				
Cuttingham	646	10	142	40
Liberia	2685	11	48	21
Madagascar	9814	30	12	
Malawi	1669	11	123	40
Niger	947	6	16	
Nigeria				
A.B.U.	8204	8	85	
Bayero	1949	15	28	40

Country/ University	Enrollments	Students per Faculty	Books per Student	Non-African Faculty (percent)
Benin	3841	10	19	16
Calabar	1335	8	38	
Ibadan	6983	7	48	
Ife	8706	10	19	
Ilorin	1310	6	16	
Jos	2515	9	17	
Lagos	9000	12	14	
Maiduguri	1176	9	19	
Nigeria	6860	7	31	
Port Harcourt	400	5	37	8
Sokoto	500	8		
C.A.R.	1861	9	2	
Rwanda	809	5	147	77
Senegal	8753	16	21	45
Sierra Leone				
Fourah Bay	998	6	90	16
Njala	752	7	53	11
Sudan				
Juba	119	3		
Omdurman	1585	6	5	16
Cairo	12278	72	5	
Khartoum	7912	8	26	9
Swaziland	1149	14	36	
Tanzania	2636	5	84	30
Tchad	800	12	16	84
Togo	2200	9	2	75
Uganda	3406	8	129	6
Zaire	28322	19	16	30
Zambia	3651	10	68	53

Source: Association of African Universities, 1980, 1983.

Table A4

African Students Studying Abroad in 45 Selected Countries 1972, 1980

Country of Origin	Overseas Enrollments	
	1972	1980
Botswana	41	355
Ghana	1912	3158
Ivory Coast	919	3648
Nigeria	6289	26,863
Senegal	569	2848
Cameroon	1173	5288
Zambia	306	1039

Source: UNESCO Statistical Yearbook 1974 and 1983

APPENDIX 2

Financing Arrangements for Students in Higher Education

Botswana

The university charges fees for tuition and for room and board. Bursaries to cover these plus the purchase of books and supplies and an allowance for personal expenses are available to all who apply. In return, graduates are bonded to the government for a period equal to the length of their course plus one year and pay back 5 percent of their salary annually during that period. Students abroad have the same conditions attached to their bursaries.

Burkina Faso (Upper Volta)

In addition to free tuition students at the University of Ougadougou receive allowances equal to 770 percent of per capita income. Scholarships at secondary and higher education constitute 35 percent of total educational expenditure.

Burundi

Free tuition. Between 1977 and 1979, the total value of Government fellowships for living expenses quadrupled.

Cameroon

At the University, only about half of all students receive scholarships and a lack of finance is suggested as a major reason for high rates of student wastage. In the professional institutes, all students receive a scholarship.

Ethiopia

Although part time students who attend evening classes pay fees, full time students do not.

Ghana

Ghana is one of the few countries to have introduced a comprehensive loan scheme for students. It was begun in June 1971 and abandoned in October 1972. The loans were to cover board and lodging plus other personal expenses. The National Consultative Committee on Educational Finance in 1975 recommended the reintroduction of loans but this did not occur. More recently (March 1984) the National Education

Commission again recommended a loan scheme for maintenance and personal expenditure. At present, tuition and board and lodging are free and each student receives an allowance of 900 cedis. Plans to charge students for board and lodging are to be implemented shortly.

Kenya

Student loans have been frequently suggested for Kenya (Rogers 1972, Fields 1974) but only a very limited scheme exists. Since the new loan scheme in 1974 under which living expenses are supposed to be covered, K sh.21 million (US$ 1.5 million) have been loaned. However, in 1981 while 540,025 sh. were due for repayment, only 94,408 sh. were collected. Woodhall (1983) reports that an attempt in 1981 by the Government to introduce a clause making parental land a collateral provoked demonstrations and was dropped. Almost as many Kenyans study at overseas universities as study in Kenya. Ninety percent of these students are paying tuition costs plus bearing living expenses.

Lesotho

Around 86 percent of students receive loans of M1,081 (US$ 1,178) a year, one third of which is paid directly to the university to cover partial costs of tuition and dormitories. The present scheme is for the loan to be repaid in equal annual instalments over five years with a 50 percent remission if graduates work for the government. The enforcement procedures are, again, inefficient. Although the scheme has been in operation since 1977 and total loans in 1983-4 were M1.4 million only around M10,000 a year is currently being collected.

Malawi

Tuition, board and lodging are free and in addition, all students are awarded allowances of K215 a year (US$ 172). The allowances equal 6.2 percent of the University's budget. Boarding costs per student are K312, and form 8.5 percent of the University's total recurrent costs. The Government has recently announced its intention to charge fees for board and lodging.

Mali

Reference has previously been made to secondary and higher education scholarships being equal to almost 43 percent of the education

budget. In the past, any actions to change the scholarships policies have met with serious opposition in the form of student strikes and riots. However, changes to the eligibility criteria for foreign scholarships have mainly been responsible for the fall in scholarships to 29 percent of the education budget in 1981, and the total amount of local scholarships has been frozen at the 1978 level.

Nigeria

During the 1970's, the Federal Government withdrew from the allocation of bursaries in non-Federal universities and the responsibility was given to the state governments. It is not clear how effective this system is. The announcement of increased feeding and lodging charges in 1978 produced widespread unrest, resulting in eleven deaths. The resulting Committee of Enquiry proposed a loan scheme administered by the states but the Government dismissed the suggestion, arguing that it would have to become the guarantor. In the more recent Report of the Presidential Commission on Salary and Conditions of Service of University Staff, 1981 (Cooksey Commission) it is argued that the Government should re-affirm the policy of tuition-free university education, and any student admitted to a university should be assured of an automatic scholarship by his or her state of origin (including tuition and hostel fees plus a maintenance allowance). Recent reports, however, that the universities have been closed indefinitely following strikes and riots as a result of a decision requiring students to pay for accommodation (N150-200 a year) and food, appear to show that the government has not followed this advice. A period of national service is required for each graduate.

Senegal

All education is tuition free.

Sierra Leone

Fees are charged by the universities but these are usually covered by central government scholarships and, increasingly, support provided by private industry.

Somalia

All educational tuition costs plus board and lodging expenses are provided by the Government.

Sudan

Tuition and boarding are free.

In 1976/77, student pocket money alone totalled more than book expenditures in Khartoum University. Student welfare costs were 17.4 percent of the University's budget.

Swaziland

As is the case at all levels of education, university students have to contribute towards their education. Fees, charges and living expenses at the University in 1976 have been estimated at £680 while the average Government scholarship was £540. These scholarships have to be repaid within two years.

Tanzania

As in several other countries, a loan scheme was introduced in the early 1970's but was abolished due to the high costs of administration and presumed injustices. Loans were replaced by an obligation to work for the Government for five years. In addition to free tuition, students receive sh.500 ($25) a month plus a book allowance of between sh.1000 and 3000 depending on the faculty. In 1982, the National Commission of Education recommended the reintroduction of a loan scheme, but so far no action has been taken.

Uganda

No tuition fees are payable and each student receives sh.4800 a year as pocket money.

Zambia

Tuition, board and food are provided free at the university. In addition, allowances are paid to all students.

In a paper by Mingat and Tan (1984) the extent of student subsidies in the Central African Republic, Congo, Ivory Coast, Niger and Togo are described. In none of these countries are tuition fees charged and, in addition to those countries described above, allowances to cover living and other student related expenses are available for virtually all students.