

# **FINANCING HIGHER EDUCATION IN KENYA: The Case of Student Loans**

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## DEDICATION

*To George and Rudy,*

*For the love, support and inspiration that saw me through my studies*

*To Mama and Daddy,*

*For laying the foundations and instilling the discipline I needed to succeed in this  
course*

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## ABSTRACT

*Student loans have become increasingly important in the financing of higher education in developing countries. The objectives of this study are; i) to analyze the performance of the student loan scheme in Kenya, ii) to find out the characteristics of the beneficiaries and iii) determine the extent of government subsidy to the programme. The data used was extracted from records of the loans board and loan application forms.*

*The methods of analysis were adapted from Albrecht and Ziderman (1995) for the calculation of the subsidy and loss to government, and Scott Long (1997) for the multinomial logistic estimation of the bursary and loan award determinants. Analysis for the determinants of loan and bursary award was done in two parts. The first part employed simple cross tabulation while the second part involved regression analysis. The results of the estimation indicated that region, income, expenditure, family status (orphaned) and number of siblings were significant in explaining the variations in amount of loan and/or bursary that a student would be awarded. Other important variables were residence (rural or urban) and father's education.*

The challenges to the management of the loan scheme include addressing issues of equity and efficiency in funding universities, enhancing cost recovery and tapping of additional financial sources other than the government. A number of policy recommendations arise from the conclusions. First, resources should be directed to the most important fields of study. Second, students from the urban poor should be given equal consideration as those from the rural areas in accessing funds for higher education. Third, policies that encourage female students to enroll in the traditionally male-dominated courses must be implemented to promote equity. Fourth, the means testing mechanism should be tightened to ensure that only those who deserve loans and bursaries benefit. Lastly, financial assistance should be strictly directed to the most needy students.

# CHAPTER ONE

## 1. INTRODUCTION

### 1.1 Background

In the late 1940's, a Colombian youth by the name of Gabriel Betancourt dreamt of going to the university even though he came from a relatively poor family. He convinced the manager of the company for which he worked to give him a loan to pay for his studies abroad. After he obtained his degree, he was so thankful for the opportunity he had benefited from that he decided to promote a way to institutionalise this type of loan. He successfully lobbied the government of Colombia and in 1950, established the Colombian Student Loan Institute, ICETEX, the first of its kind in the entire world. Today, student loan schemes are operating in more than sixty countries across all continents, making student loans an increasingly important financing mechanism for higher education.

The genesis of financing higher education in Kenya through loans dates back to 1952 when the then colonial government started giving out selective loans under the Higher Education Fund (HELF) to Kenyans pursuing education in universities outside East Africa, notably Britain, the USA, the former USSR, India and South Africa. This was later on revised after independence with the establishment of a new loan scheme in 1974 after the establishment of the university of Nairobi. The main aim of the new loan scheme was to assist students finance their university education while at the same time reducing government expenditure in higher education. University students were then obligated to pay part of their tuition while the government covered other expenses. The Ministry of Education (MoE)

prepared annual budgets, managed the loan scheme in liaison with the disbursing bank (the National Bank of Kenya) and was solely responsible for the recovery of loans from graduates. Following recommendations by the Ndegwa Report (1992) and the Presidential Working Paper on Education and Manpower Training for the Next Decade and Beyond (Government of Kenya, 1988), a new strategy for the selection of needy students was adopted. As part of the reform, a direct fee of Kshs 6,000 was introduced in 1991, alongside a university bursary scheme. This however was not received well by the students, as had happened in other countries such as Uganda, Nigeria and Botswana (Kipsang', 2002).

In reality it was a reactivation of the old program, which was not discontinued in essence, as it was only the funding from the government that was stopped. The program was renamed the University Students' Loan Scheme (USLS), and was a division under the Ministry of Education known as the Loan Disbursement and Recovery Unit. Its main functions at that time were to promote equal opportunity to qualified students irrespective of their backgrounds, to reduce drop-out rates by providing economic incentives to university students, to provide a continuous source of finance through a fund that would eventually become self-sustaining and to complement the government's financial commitment to university education. This unit however did not have any clear-cut policies guiding its operations. Despite outlining such impressive objectives, nothing was practically done to ensure that they were achieved. No attempts were made at recovering the funds that were literally dished out to university students whose number grew rapidly. The budgetary allocation from the Ministry of Education to the loan scheme grew from 3% to 6% in ten years from 1974, and was the fastest growing component of university education (Otieno, 2002).

Several factors were to account for this poor performance of the loan scheme. First it was started in an unplanned approach, hence no precautionary measures were taken. Second, the programme lacked trained personnel, who were mostly drawn from the Ministry of Education, instead of staff that were experienced and skilled in debt management such as those from banks. Third, the beneficiaries were neither educated in their obligations nor the benefits resulting from repayment. The extent to which students rioted every time that changes were introduced to the scheme is testimony to this. Fourth, the loan scheme lacked a legal basis, making loan recoveries unenforceable, as should be the case with other forms of lending. Other legal obstacles prevented recovery of the loans. For instance, the Limitations of Actions Act, which renders any debt not claimed within six years from the time it is due, unrecoverable. The new loan scheme has however been exempted from this law with the enactment of the HELB Act in 1995.

Faced with such hurdles, a rapidly growing university student population and more constrained resources, the government was forced to rethink its university financing policy. Subsequent to recommendations from the World Bank and the IMF, a semi-autonomous agency was established through an Act of Parliament. The Higher Education Loans Board (HELB), henceforth referred to as the Board, was established in 1995 to manage the revised student loan scheme.

The Board was to initially get funding from the government, though it would eventually become self-sustaining through funds obtained from the loan scheme. Currently, the Board receives approximately 30,000 applications annually from students in both public and private chartered universities. Funds received from the Exchequer stand at 50% of the total loans that

the Board gives out to students annually, but tops up this loan portfolio from monthly recoveries to the tune of 50 million Kenya shillings.

## **1.2 The History of Higher Education in Kenya**

The development of higher education in Kenya can be traced back to the history of post-secondary education in East Africa, which dates back to 1922 when the then Makerere College was established by the British as a small technical college, and the only provider of university education in the region. The Royal Technical College of East Africa (now the University of Nairobi) was established much later in Kenya in 1956 to provide basic training on technical and commercial education (Wandiga, 1996; GOK, 1981). Three more public universities were established in the 1980's, each by an Act of Parliament. Moi University was established as a second university in 1984 following the Report of the Presidential Party on the Second University (1983). The former Kenyatta University College, a constituent of the University of Nairobi became the third university in 1985, while the former Egerton College, which was also a constituent college of the University of Nairobi, became the fourth university in 1987. The Jomo Kenyatta College of Agriculture and Technology was granted university status in 1994. Lastly, Maseno University, a constituent college of Moi University became a full-fledged university in 1996. On the other hand, by 1988 there were 14 private university institutions that offered degrees of foreign universities. These institutions' operations are overseen by the Commission for Higher Education<sup>1</sup>, which is an agency under the Ministry of Education.

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<sup>1</sup> See section 1.2.1 for further details

The Commission for Higher Education (CHE) currently recognizes six public universities and 17 private universities (out of which five are already chartered and fully recognized, six are registered and offered degrees before the Commission was established but are not fully accredited and six are still operating under letters of interim authority). Two new universities (Strathmore and the Aga Khan Universities) are yet to start admitting students. In addition to the universities, there are four national polytechnics, 11 technical and teacher training institutes and several institutes of technology. These tertiary level institutions provide training leading to diplomas and certificates and therefore provide necessary training for those not able to get admission into universities. These tertiary-level institutions however do not benefit from the student loan scheme.

### **1.2.1 The Commission for Higher Education**

The Commission for Higher Education (CHE) was established through an Act of Parliament (Universities Act, 1985) to make better provisions for the advancement of university education in Kenya. The CHE is the government body responsible for the advancement of higher education in Kenya. Its main role is overseeing the funding, curriculum development and management of institutions of higher learning (this includes all post-secondary school institutions that are registered in Kenya).

Under the CHE are University Grant and Admissions committees that oversee admissions into all the universities. The main functions of the CHE are;

- I. To promote the objectives of university education
- II. To accredit universities

- III. To co-ordinate long-term planning, scholarship, staff and physical development of university education
- IV. To liase with government and private bodies in matters pertaining to overall national manpower development and requirements
- V. To plan and provide for financial needs of university education and research, including recurrent and non-recurrent needs of the universities
- VI. To co-ordinate education and training courses offered in post secondary school institutions for the purposes of higher education and university admission.

### **1.2.2 Growth, Enrolment and Finance**

In light of changes in the education system and rapid increase in enrolment in the then University of Nairobi, a Grants Committee was then set up in 1971 to oversee the planning, development and funding of the university (GOK, 1981).

This arrangement assured the only university in the country of funding three years in advance. However in the late 1980s, there was no more long-term planning and financing of university education was done on an ad hoc basis. In addition, several events that were to change university planning and budgeting occurred during this time. These were: (i) the attempted coup of 1982, which led to a prolonged university closure; (ii) the increase in the number of universities in the country to four (with Moi University opening in 1984, Kenyatta University in 1985 and Egerton University in 1987) and (iii) the creation of the Commission for Higher Education (CHE) through an Act of Parliament in 1985.

With more emphasis being placed on higher education as opposed to lower levels of education, enrolment sharply rose over the years especially in the public universities (see

table 1.1). Enrolment at public universities as at the year 2000 stood at 42,508 students while at private universities it was about 7,000 students (CHE, 1994). This increase in enrolment was however not complemented with an increase in university funding by the Ministry of Finance, which was responsible for the financing of higher education. The universities and other institutions of higher learning such as diploma awarding public colleges were required to determine their needs and present operating budget requests that could be justified, upon which funds were released from the treasury for the next academic year. Funds to be released were determined according to the individual university budgets, though the allocation would vary with the budget depending on the variations in the recurrent expenditure. The experience has been that the university budget allocations have often fallen short of their needs.

**Table 1.1 Enrolment in Public Universities (1963-2000)**

YEAR	NO. OF INSTITUTIONS	NO. OF STUDENTS
1963	1	602
1978	1	6,421
1992	5	41,674
1995	6	39,243
2000	6	42,508

**Source: Government of Kenya, Statistical Abstract (2001)**

Table 1.1 shows how enrollment sharply rose in the public universities. This is partly attributed to the double intake of graduating students of high school from two different systems, along with the increase in the number of universities. The highest change occurred during the formative years of university education in 1963-1978. The increase after 1995 has since remained steady.

While enrolments rose, public funds available to finance all levels of education were significantly constrained. The government was therefore obliged to revise its educational

policies directed by various Sessional Papers and reports. These papers included the Mackay Report of 1981, Sessional Paper No. 6 of 1988 on Education and Manpower Training for the Next Decade and Beyond and Sessional Paper No. 1 of 1986 on Economic Management for Revived Growth<sup>2</sup>. These papers outlined the policies that the government would adopt in the education sector in order to achieve its social as well as economic development goals.

While changes in financing structures were already taking place in other social services previously funded wholly by the government such as health, the government was similarly required to rethink its university financing policy. Following recommendations from the World Bank and other donors, a semi-autonomous agency – The Higher Education Loans Board was established through an Act of Parliament to manage the new student loan scheme.

### **1.2.3 The Higher Education Loans Board (HELB)**

The Higher Education Loans Board (HELB), was established in 1995 to manage the student loan scheme in addition to formulating sound policies that would assist the government in financing higher education (Government of Kenya, 1995a). The Board was to initially get funding from the government, though it would eventually become self-sustaining. Currently, the Board receives approximately 30,000 applications annually from students in both public and private chartered universities. Over 75% of the applicants are usually successful and get varying amounts of loans and bursaries. Funds received from the government stand at 50% of the total loans that the Board gives out to students annually, but tops up this loan portfolio from monthly recoveries to the tune of 50% (or 50 million Kenya shillings) of the total loans given out. (The main functions of the Board will be discussed in more detail in Chapter two).

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<sup>2</sup> Sessional papers are special reports by government-appointed policy analysts containing recommendations on policy reform.

### **1.3 Problem Statement**

The motivation behind this research is the fact that the student loan schemes in developing countries, including Kenya, have not been effective, while several such schemes have been abandoned altogether (Albrecht, 1995). Efficiency has been jeopardized by pressure to maintain social equity.

The loan scheme in Kenya has had very high rates of default and evasion and tracking down past beneficiaries has been painfully slow with not much success. Cases of irregularities in loan disbursement are not rare. Whereas the recovery rate in Kenya has lately significantly increased, administrative costs have been on the rise, even as the loan agency aims at maximizing monthly recoveries. Though the loan scheme now recovers approximately Kshs. 50 million (about 50% of monthly loan disbursements) every month, the realization of a fully self-financing loan scheme is still farfetched, and the revolving fund may not be established as soon as previously targeted. This is because for the revolving fund to be established, annual recoveries must exceed disbursements.

Maintaining credibility of information provided by the students applying for the loans has been a major challenge to the loan agency. In addition, many eligible and disadvantaged students have been unable to get loans and bursaries while others who are not genuine cases have benefited. It is therefore very important that cost-sharing should be implemented with careful targeting of the very needy students.

#### **1.4 Objectives of the study**

The main purpose of this study is to determine the characteristics of the beneficiaries of the student loan programme in Kenya. The study aims at finding out the main reasons for the successes and failures of the loan scheme, and provide an insight into the operations of the student loan scheme in Kenya.

Specifically, the study will try to:

- Identify the key issues in the working of the student loan scheme in Kenya, and evaluate aspects of its failures and successes.
- Determine the characteristics of students who benefit from the loan scheme.
- Determine the extent of government subsidy to the loan scheme
- Derive policies that would assist the relevant authorities such as the HELB, university authorities, loanees (beneficiaries) and the government with a view to introducing efficiency in loan management, improving loan recovery rates and increasing the number of beneficiaries.

## **1.5 Operational Hypotheses**

The main hypothesis in this study is that the loan scheme has not performed as well as it should have. In addition, the following hypotheses will be tested against the available data;

- Students living in rural areas are more likely to get higher loan awards and bursaries than those living in the urban areas
- The higher the family income and expenditure, the less the loan amount that a student is likely to get.
- Orphans and students from single parent families are likely to be awarded more bursaries as compared to those whose both parents are alive.
- The extent of government subsidy is more than 70% of the loans disbursed

## **1.6 Significance of the study**

Though a number of studies (Bertrand and Griffin, 1988; World Bank, 1983; Wandiga, 1996) have been done regarding student loans in Kenya, they of them lacked empirical evidence of inefficiencies in the loan scheme and focused on theoretical issues. This study will try to bridge the gap between what the Board knows about the characteristics of the students and what actually is the real situation on the ground. The study will also provide important empirical evidence of the setbacks of the student loan programme in Kenya and highlight the issues that need to be addressed.

## **CHAPTER TWO**

### **1. REVIEW OF RELEVANT LITERATURE**

#### **1.1 FINANCING HIGHER EDUCATION: An Overview**

Before the existence of the modern university in 11<sup>th</sup> century Europe, high-level instruction took the form of students hiring teachers upon which they would be remunerated depending on academic and moral reputation. Albrecht and Zideman (1995) report that most ancient universities in Greece, China, India and Egypt trained only elite administrators and religious figures, mainly in law and philosophy. This was to be followed later by a significant innovation by the Romans (who borrowed heavily from the Greeks), through the provision of financial aid to higher education and endowments for particular chairs. Today, financing higher education has increasingly become more complex even for many developing countries. This is primarily because a better-trained populace has over the years been considered an important ingredient for faster economic growth, yet studies have shown that tertiary education provides lower social returns than primary or secondary education. Governments have therefore been faced with a complex decision making process in the face of dwindling resources, ailing economies and a population that is steadily expanding.

Traditionally, the state played a central role in the financing of universities for almost all developing countries. Over the years however, the trend has changed, with many governments steadily moving away from being the primary financier of higher education, giving way to the participation of the private sector and more involvement of the individual student. While low and middle level income countries experienced rapid student enrolment growth in the 1980s,

real public expenditures on higher education fell significantly implying that the resource gap had to be filled by other sources (see table 2.1).

**Table 2.1 Indicators on Expenditure on Tertiary Education in Some African Countries**

Countries	Current expenditure as % of GNP per capita 1990	Current expenditure as % of GNP per capita 1996
Egypt	82	68
Ghana	250	NA
Kenya	475	780
Mozambique	998	NA
South Africa	96	54

**Source: World Education Indicators – UNESCO (2000)**

Drawn from a recent UNESCO study on a few developing countries, Table 2.1 shows that in general, allocation to tertiary level has decreased, but the unit cost has not decreased by as much showing that there is some form of inefficiency in costing, yet the need to replenish the supply of graduates has been the mainstay of all the African countries strategy (UNESCO, 2000). The 1980s were the turning point for a number of countries both developed as well as developing countries with regards to education and education reforms. The reason for the rethinking of the role and cost of tertiary education was caused by a combination of external costs to the global economy – increases in oil prices and consequent increase in raw materials, and the political shift from demand side Keynesian macroeconomic to market-oriented liberal policies (World Bank, 1988). In Africa, the situation had an even larger impact because of the balance of payments imbalances and the consequent structural adjustment plans to alleviate their debt problems. Importantly, these adverse economic developments were manifested in the rising government deficits and growth in public expenditure, which tended to depress the level and growth of educational finance. Prior to this, in the immediate post-independence

period, it was widely accepted that investment in tertiary education in Africa was based on the need for government officials to replace expatriate staff and to an extent, achieve macro-economic growth (Arrow, 1973; Pritchett, 1991; Albrecht and Ziderman, 1995). The result was an education system solely dependent on government funding. The extent of government subsidy is highlighted by Albrecht and Ziderman who conclude that

*“In many systems, state subsidy of student living expenses approximate, or even exceeds direct transfers to universities to cover recurrent expenditures.”*

Typically for most developing countries, public funds are channelled to universities direct from ministries of finance and/or education, while in other countries, this is done through an accredited government agency (such as the Higher Education Loans Board for the case of Kenya). The formula for funding takes one of three basic forms (Johnstone et. al., 1998). One form involves the transfer of resources to institutions based mainly on their teaching costs. A second form is based on actual average cost per student of differentiated types and levels of education or training. A third form allocates funds on the basis of normative unit costs reflecting what the government’s contribution to the costs for various fields should be.

The supplementation of government financing of higher education by non-governmental means—primarily students and family—has been viewed by the World Bank and most other development experts as one important alternative mode of finance for the increasingly under-funded and overcrowded universities in the developing world (Woodhall 2001; World Bank 1984b; Johnstone et. al., 1998). These alternative sources were seen as a major step towards reducing dependence on governments in funding universities.

Some universities in Kenya have so far managed to diversify their revenue through the privatisation of some essential services and the introduction of income-generating production activities by college-run enterprises. Examples are Moi and Egerton (dairy production), Jomo Kenyatta (IT training) and University of Nairobi (food production and services). The University of Nairobi, Moi and Kenyatta Universities currently runs parallel degree programmes that are a significant source of revenue. These income generating activities supplement the public funds received from the government and have been given more emphasis in recent reforms that are aimed at ensuring that the universities are run efficiently. (See table 2.2).

**Table 2.2 Revenue from non-governmental sources**

<b>University</b>	<b>Percent of Total Income</b>
University of Nairobi	31.6
Egerton	30.8
Kenyatta	25.7
Maseno	17.5
JKUAT	17.1
Moi	16.4

**Source: Wandiga (1996)**

The central role of the government in university financing and provision has over the past years been a subject of debate among economists, government policy makers and educationists alike. Economists (Psacharopoulos, 1980; Albrecht, 1992; Albrecht and Zideman 1995; Woodhall, 2001) argue that the traditional economic justification for state subsidy and provision do not seem able to explain the extent of government intervention in

the university sector. This is particularly so when there are very high rates of unemployment due to economies that cannot absorb these graduates.

Against the backdrop of declining revenue sources and more pressing priorities, alternative financing options have been adopted by some developing countries to augment government funds that are allocated for higher education, most important of which is the student loan scheme - the main subject of this study.

## **2.2 Why Student Loans?**

It is widely accepted by economists (Jimenez, 1986; Hauptman, 1999; World Bank, 1988; Albrecht, 1992, Albrecht and Ziderman, 1995; Woodhall, 1988) that loans enable students finance their current studies against future incomes. However, experience with education loans in developing countries is still limited, with most of the studies having been done in the developed countries.

Student loans have been found to provide performance incentives to students at university and helps ease the financial burden of students from poor families (Albrecht, 1992; World Bank, 1983; 1993; 1984c). This is true of the Kenyan case where students repeating academic years are granted no or much less loan award than they obtained in the previous year. The same studies however found that loan programs in most cases have not been used to support cost recovery for higher education, but as support mechanisms for the maintenance of students.

Studies have shown that student loans are educational investments. Psacharopoulos (1980) argues that if returns to education increase demand for higher education, then as a result, the flow of private resources into education through tuition charges increases. Secondly, he argues that loans improve resource allocation because students will choose high

returns courses. His argument however does not account for cases where the student is admitted to courses that they did not opt for, especially in developing countries where the facilities are limited. Third, with selective scholarships added, loans improve student selection and equity since poor students compete for places in higher education.

Furthermore, the guaranteeing of student loans by the government in many countries (Albrecht; 1992) eliminates risk to the lender and lowers the interest rate charged for borrowing funds to attend college. By reducing the private direct cost of a college education, such loans indirectly guarantee increased college enrolment. Similarly, the state of the economy has been found to influence college enrolments through its effects on the indirect costs or opportunity cost of attending college. A recession, he argues, reduces the earnings of high school graduates, or alternatively reduces the probability of obtaining a job. In such a situation, he argues, the opportunity cost of attending college falls, and enrolments rise. Lower opportunity costs increase the net present value of a college education, making investment in education profitable for some who previously found it to be unprofitable.

Despite the positive arguments justifying student loans as outlined above, lending to students still has imminent shortcomings. Johnstone et al. (1998) point out that the major problem with lending to students, especially to needy students in poor countries is the absence of credit-worthiness nor collateral. The need for collateral from the government or parents is therefore fundamental if students are to have access to such loans. The experience with most developing countries in the event of default is that it is extremely rare that the government recovers its loan value through taking over family assets. The loans are mostly written off (World Bank, 1993).

### 2.2.1 Types of Loan Programmes

Student loan programmes have been developed in various forms in over fifty countries throughout the world (Albrecht and Ziderman, 1992 and 1995). In general, developing country student loan programmes have been used to assist with student living expenses and typically cover a big percentage of the total student population. Most programmes offer credit in the form of a *mortgage* loan, where repayment is made over a specified period, usually with fixed monthly repayments, interest rates and maximum length of repayment (typically used to calculate the fixed periodic payments). The second form of repayment (used at Chile's Catholic University) is the *graduated* nominal payments, where borrowers pay equal rather than nominal amounts, thus ensuring that the first payments are not necessarily large in real terms in relation to others. The third type of repayment mechanism as noted by Albrecht and Ziderman (1995) is the *income contingent* loan, where loans are repaid as a proportion of a graduate's income each year. This form is more favourable to graduates with lower incomes.

There have been a number of student loan programmes running in Africa. In Kenya, Malawi, Tanzania, Nigeria and South Africa, the loan schemes have been of mortgage type, while that in Ghana is income contingent. Programmes in Nigeria and Tanzania have since been abandoned (Albrecht and Ziderman, 1995). Similar programmes are run in Australia (income contingent), Sweden (income contingent), Morocco (mortgage), Sri Lanka (mortgage), Philippines (mortgage) and the UK (mortgage).<sup>3</sup>

In South Africa, the government established the National Student Financial Aid Scheme (NSFAS) in 1996 to ensure that academically able students without financial

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<sup>3</sup> See Appendix 7 for a summary list of the types of student loan programmes.

resources can attend higher education through borrowing. Higher education was free in the Soviet Union, but since that country dissolved, private institutions have opened and state institutions have been allowed to charge fees to students who fall below acceptable scores on entrance examinations but are willing to pay to study. At Moscow State University, for example, about 10 percent of the 40,000 full-time students pay from \$1,500 to \$4,000 in tuition per year (Bain, 1997).

Student loans in Singapore are interest free. But the marketability of the program of study is a crucial prerequisite for the award. In this case, the repayment schedule should be completed by three years, starting six months after graduation. Other programs have interest free loans that are administered by the universities (World Bank, 1983).

## **1.2 On Equity and Efficiency**

Equity is a term often used in economics to mean ‘fairness’ or ‘impartiality’ in the distribution of public resources or social services. Equity implies equal treatment for all ages, income groups, gender or ethnicity in the allocation of such resources. Efficiency on the other hand refers to the effective utilization of resources to minimize wastage and promote profitability. It is often applied in the proper governance of public resources.

The issue of equity has become a major topic of debate especially with regards to tertiary education in developing countries. This is because studies have shown that free education, particularly at the highest levels, usually leads to regressive income distribution (Albrecht and Ziderman, 1995). After their independence, most developing countries invested heavily in higher education in order to promote industrial development and broaden access.

This has however not improved participation by low-income groups even with high public subsidy. Studies have shown that the highest income groups benefited most from highly subsidized higher education. The situation has not been helped by the fact that the failure of countries to diversify their revenue for higher education (i.e. beyond reliance on governments and taxpayers) has diminished both the quality and access to higher education for a majority of the population due to overstretched facilities (Fueller; 1990). This diminished capacity has not particularly disadvantaged the children of the more affluent families, who always have other options (including private higher education or higher education abroad), but has greatly affected those currently excluded mainly by the very restricted capacity of higher education (Jimenez; 1986). Another indicator that confirms biased access is the fact that most of the students who make it to join universities come from families where both parents are more educated and therefore more affluent. Experience from most developing countries has also shown that access to higher education by lower income groups or minorities is not improved significantly even with lower tuition costs, showing that the misrepresentation starts from lower levels of education. For instance in Honduras, Albrecht and Ziderman (1995) report that almost 50% of the university students come from private unsubsidised secondary schools.

Comparisons of equity with respect to access to funds for higher education financing are often made on the basis of sex, ethnic background, and socio-economic background of the eligible population (Mingat and Tan; 1985). The first approach leads to reasons for the differences in the access to education (loans for different groups e.g. how do procedures regarding admission, examination, etc, promote selectivity, and to what extent do policies on financing affect the social composition of the student body. Or, how do students from different backgrounds perform, who gets to college, and how? The analyses try to examine

also the student achievement in relation to available resources. The second approach aims at finding out the gains associated with access to certain education levels, i.e. human capital and increased future earnings and the appropriation of the resources that are used to subsidize the provision of education, who pays for and who gains from the education subsidies.

In developing countries, current financing arrangements have been found to result in misallocation of public spending on education (Psacharopoulos, 1980). The study found that higher education is favoured because of higher social returns, and that offering across-the-board subsidies to students of all academic and economic backgrounds is inequitable and inefficient.

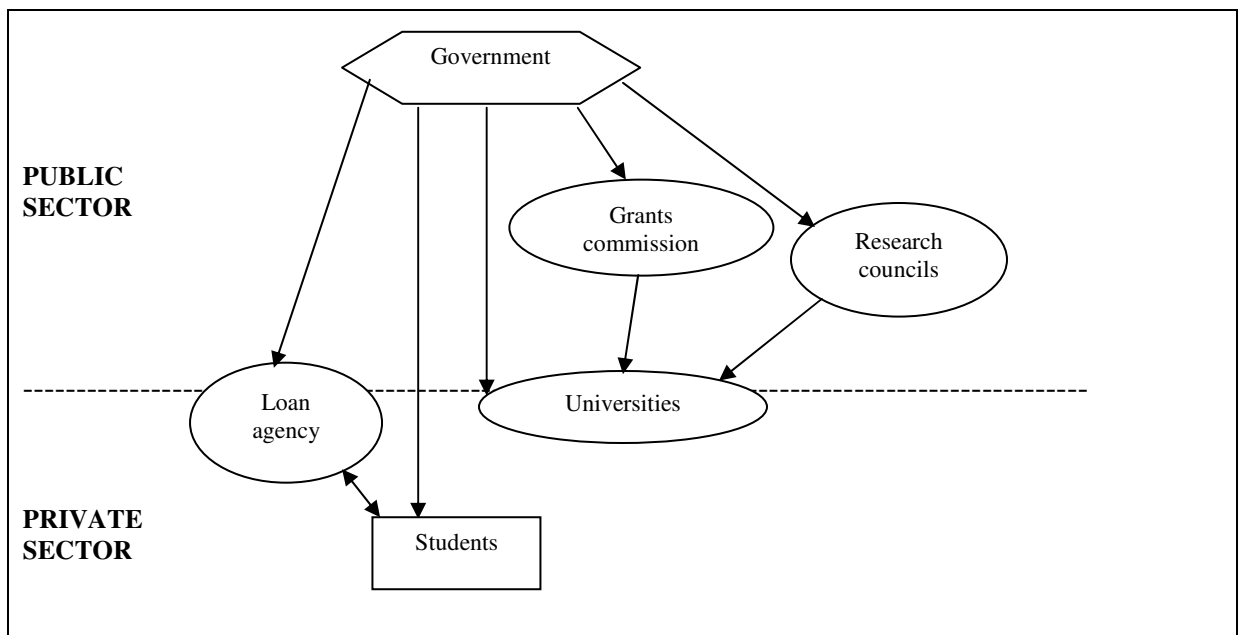
Woodhall (2001) maintains that student loans can only help facilitate recovery and improve quality only if they are efficient and well-designed. Though many student loan programs in Africa may have been well-designed, they generally lack efficiency. She provides certain criteria that student loan programs should meet while trying to promote equity and efficient cost recovery. These are: efficient institutional management; effective financial management; effective criteria used in determining eligibility; provision of information on terms and conditions of loans; adequate legal frameworks and effective loan collection.

## 2.4 University Finance and Cost Recovery

Cost sharing in university finance has been given much importance especially with the introduction of Structural Adjustment Programmes (SAPs) in the developing countries in the 1980s. Cost-sharing has been seen as an alternative means of covering the costs of providing university education.

Reforms being undertaken in many developing countries aim at reforming universities into service institutions that provides given services to the communities that they serve, as well as commercial enterprises that provides certain benefits to individuals through a consumer-producer relationship (World Bank, 1984a, UNESCO, 2000). It is the latter scenario that according to Albrecht and Ziderman (1992), “provides a framework and justification for university financing arrangements that impose realistic tuition fees on students. Albrecht and Ziderman (1992) refer to this model as the cost-recovery model (see figure 2.1 below).

**Figure 2.1 University Finance: Cost recovery**



Source: Albrecht and Ziderman (1995)

Figure 2.1 outlines the institutions involved and the processes through which financing of university education take place. Starting from the public sector, the government as the main financier of higher university education channels funds to three main institutions, that is – the loan agency, the university grants commission and the government research councils. Upon receipt from the government, the loan agency then provides the funds directly to the university students through loans, bursaries and scholarships. On one hand, the universities receive funding from the government directly through remuneration for the university staff, subsidization of essential services, research funds and other forms of direct financial assistance, and on the other hand through tuition and accommodation fees paid in directly by the students. The relationship between the loan agency and the students is that of lender and borrower. Students borrow against their future earnings, in order to finance their education.

Student loans are a prudent means by which recurrent costs in higher education can be met. But studies have shown that while most governments may be well versed in raising funds through debt financing, they are typically far less familiar with and efficient in the processing of loans (Albrecht, 1992; Woodhall, 2000). They are worse still in servicing and collecting student loans; indeed, most government-administered programs have notoriously high default rates. Albrecht and Ziderman (1995) report that average rates of loan recovery was as high as 67% in Sweden and Barbados, but as low as 10% in Kenya and Venezuela. Kenya has however since introduced significant reforms to boost loan recovery though higher education is still largely publicly financed, with the HELB receiving about 50% of its funds from the Ministry of Finance (*HELB Review*, August 2002).

Attempts to shift part of the costs of higher education from the state to students or parents has re-emphasised the important role of student loans in promoting efficiency and

access to higher education. The World Bank particularly stresses that cost-sharing cannot be implemented adequately without a functioning student loan programme, where students borrow to finance their education (World Bank, 1988; 1984a; 1984b; 1984c). Also, in order to minimize subsidy levels, government-financed student loan programs should typically charge interest sufficient to cover the government's cost of borrowing as well as administrative costs (Hauptman, 1999). Detailed financial analysis for selected countries shows that the present value of repayment collected by loan programs in developing countries constitutes a small percentage of loan value disbursed plus costs of administering. Hence, loan programs haven't reduced significantly the governments' fiscal burden for higher education (Albrecht and Ziderman, 1995).

Private-sector lenders, on the other hand, require rates of return on student loans that are typically far higher than what most students can afford. To make loans politically acceptable, governments have to provide funds to buy down the interest rate, thereby substantially increasing the costs to taxpayers of sponsoring the loans. Governments also can keep the interest at below market rates by assuming most or all of the risk of borrower default and other forms of non-payment. However, this, of course, further increases the cost of student loans to the public purse and is frequently the largest subsidy cost in the entire program. (Hauptman, 1999; Woodhall, 2001; Albrecht and Ziderman, 1995)

Therefore, in order to relieve the public treasury and truly shift the cost burden to the student and parent, the loans must be repaid - and at something at least near the generally prevailing rate of interest. This is as true with "contingent repayment" or "income contingent" loans, such as are employed in Sweden and available in the US, as with conventional "mortgage type" loans (Woodhall, 2001, Albrecht 1992). It is also true of other forms of

deferred payment where the student presumably bears a share of the higher educational cost burden, but only repays in the future, over time, and only as long as he or she is gainfully employed. Such repayment schemes include the so-called graduate tax, the "income surtax" repayment employed in Australia through the Higher Education Contribution Scheme (HECS), and the governmental pension payments employed in Ghana to repay the student loan fund.

In all of these repayment schemes, Johnstone et al. (1998) argues that the present discounted value of the stream of future payments (or of income surtax payments, or of foregone pension fund contributions) must equal the original value of the loan, or of any forgiven tuition, for the cost burden truly to have been shifted to the student. In the case where loan repayments are "lost" through high defaults, lost tax records, emigration or simple disappearance, subsidized interest rates, or excessively high governmentally-borne costs of collection and servicing, the loan does not really shift the costs, and can be more accurately characterized as a grant.

Nevertheless, the emphasis on cost recovery has not been an exercise in futile. Woodhall (2001) presents a case in point – the University of Makerere in Uganda, which has moved from a situation where none of its students paid fees to one where more than 70 percent do. Where previously the government covered all running costs, now more than 30 percent is internally generated. This experience puts to rest the notion that the state must be the sole provider of higher education in Africa, even though university fees have become a contentious issue in recent years in countries as diverse as Hungary, India, South Africa and the UK. So far, the overall contribution of cost recovery is relatively small in many of these

countries, but as demand for higher education increases, the pressure to relieve financial burdens on government, by introducing or increasing tuition fees, is likely to grow.

## **2.5 Student Loans and Subsidies**

A major point at issue in discussions of subsidies to education is that education is not simply a consumer good yielding purely private benefits, hence the market place will likely under produce it (Vaizey, 1966). He says that the case for subsidy clearly rests on this principle, though he argues against any institutional support for private higher education while supporting some form of student loans. According to him, though fully funded long-term loans at market interest rates would increase the internal efficiency of higher education without significantly reducing the production of any hypothesized externalities, it may not serve to meet the socio-political goals of developing economies such as Kenya. The amount of subsidy therefore is a question of the government's priorities or the availability of financial resources to direct towards financing higher education.

Many authors therefore agree that the grounds for which higher institutions of learning are established are teaching, learning and scholarship, and it is for these outcomes that public subsidies are justified, whether or not they produce public benefits (Albrecht and Ziderman, 1992; Woodhall, 2001). For these reasons, the government of Kenya continues to grant universities a large proportion of its annual education budget. For instance, Albrecht and Ziderman (1992) found hidden grants/subsidies to be as high as 70% for Kenya and 93%, 73% and 91% for Venezuela, Colombia and Brazil respectively.

## **2.6 Student Loans in Kenya**

The student loan scheme in Kenya was introduced in 1974 to assist students finance their university education. University students were then obligated to pay part of their tuition while the government covered other expenses. The Ministry of Education (MoE) prepared annual budgets, managed the loan scheme in liaison with the disbursing bank (the National Bank of Kenya) and was solely responsible for the recovery of loans from graduates. This centralization of the loan scheme may explain why default rates for the loans was as high as 80% while the net contribution of the loan scheme to government revenue actually negative (Kipsang', 2002). This is because with centralization, management of finances and other responsibilities associated with the loan scheme were not clearly stipulated.

Following recommendations by the Ndegwa Report (1992) and the Presidential Working Paper on Education and Manpower Training for the Next Decade and Beyond (1988), a new strategy for the selection of needy students was adopted. The aim was to promote equity in access to higher education and to transfer part of the cost of higher education to the beneficiaries through the introduction of tuition fees. Initially the Board would get funding from the government, though it was to become self-sustaining through the revolving fund, which was a strategy to reduce the government allocation from 38% to 30% of the national budget (Kipsang', 2002).

Subsequently, in 1991, a direct fee of Kshs 6000 was introduced alongside a university bursary scheme. This however was not received well by the students (as had happened in other countries such as Uganda, Nigeria and Botswana (Kipsang', 2002)) and led to a prolonged closure of main university. This new fee payment system was later on accommodated by the students and has now been running for more than ten years. Out of the

unit cost (per student) of Kshs 120,000 per academic year, the government would pay Kshs 70,000 to the university, while the students' contribution would be Kshs 50,000. This includes the revised direct fee of Kshs 8000. Students who cannot raise the balance of Kshs 42,000 are eligible to apply for the student loans from the Board.

### 2.6.1 Empirical Findings

Empirical studies on the performance of the student loan scheme in Kenya are still at their infancy. Nevertheless, mention will be made of one similar study. The study carried out by Wandiga (1996) used a computer financial simulation model and applying principles outlined by Albrecht and Ziderman (1992). In his model, he did a simulation of the student loan costs, assuming that the present value of the loan (PVL) is known. In his model, the ability to pay back depends on the loanee's earnings. If the proportion of future earnings used to repay the loans is **a** and the grace period before starting to pay is **g**, then the present value of repayment is given by

$$PVR = \sum_{t=n+d+g}^d aE_t / (1+r)^t \quad t=1,2,\dots,d \quad \text{where } d \text{ is the disbursement value}$$

In this model, he tried to ask the following questions:

- a) What are the set of (a, d, g) that give full cost recovery?
- b) What is the proportion of PVL that will be recouped for any set of (a,d) and what is the proportion if reasonable values are assumed?

To answer these questions, he used the cost per student per year in Kenya of Kshs 20,500. The data on the earnings were averaged at Kshs 47,000 or taken directly from the salary scales of each job scale.

The sample calculation of the real cost was given by,

$$A = d \sum (1+t)^{g+(k-l)}$$

And the principal sum is given as  $P = A * k / 1 - (1+i)^{-n}$

$$\text{PV disbursement} = \sum dk / (1+r)^{k-l}$$

$$\text{PV repayments} = P \sum 1 / (1+r)^{g+k-l+l}$$

Interest on subsidy  $S(i) = \text{PV disbursement} - \text{PV repayment}$

Subsidy due to interest rate and default =  $S(i,b) = \text{PVdisburs} - (i-b)\text{PVrepay}'t/\text{PVdisburs}$

Where

d= disbursement value

b=probability of default

t=initial interest rate (during period of lending)

i= Interest rate during repayment period (this is currently 4%)

g=grace period in years

N= repayment length

R= opportunity cost of capital, from time of lending onwards

k= disbursement length

Wandiga found that full cost recovery for a Kenyan student who borrowed Kshs.20,500 for four years and earned Kshs. 47,000 in 1991 could best be met by apportioning 10% of their earnings toward loan repayment within 10 to 24 years of repayment with an interest rate of 2%. Higher interest rates imply higher proportions of income apportioned towards loan repayment to realize full cost recovery. That is, it would take 17

years at 15 percent interest rate to fully recover the loan if 45 percent of income is apportioned to loan repayment.

In the same study, he found that only 26% of university students in Kenya were women in 1994, a much higher figure though, compared to 2.5% in 1989 for the continent at large. He also found that more students of rural origin attend higher education than those of urban origin, but that the geographical distribution was inequitable. This implied that well to do districts or regions of political power were favoured. Finally, the study also concludes that students from urban poor were misrepresented in higher education, and by implication in access to funds for higher education.

Albrecht and Ziderman (1995) found in a study in Kenya that non-repayment as a percentage of loans was about 80% for the year 1987. Their method of analysis of subsidy and loss to government is the basis for the methodology applied in this study, and is presented in chapter three. In the same study, these authors calculated the government loss with default to be 103% of the loan amount while the hidden grant was 70% of loan. However, their estimation was based on loan disbursement and recoveries for public universities only.

### **2.6.2 The Higher Education Loans Board**

As stated earlier, the Higher Education Loans Board (HELB) was established through an Act of parliament in July 1995. The Board derives its functions from the Act and has the following main objectives:

- Disbursement of loans, scholarships and bursaries to needy Kenyan students in institutions of higher learning both locally and abroad.

- Recovery of loans from students who were beneficiaries of Kenya government loans since 1974 to date.
- Establishment of a viable revolving fund by 2005 for future sustenance of student loans, bursaries and scholarships.

The Board's other activities include among others:

- Formulation of policies for regulating the management of the education fund
- Setting criteria and conditions governing the granting of loans including the rate of interest and recovery of loans
- Processing loan applications and determining the maximum number of eligible applicants to be awarded the loan.
- Recovery of matured loans and investment of surplus funds.

**Eligibility:** Due to financial constraints, the Board awards loans to needy Kenyan students admitted to the public universities through the Joint Admissions Board and also needy Kenyan students who attend public and private universities and other institutions recognized by the Commission for Higher Education.

**Loan Amounts:** According to the cost-sharing policy, a student currently pays Kshs 50,000 per annum to train at a public university. Of this amount, the HELB awards a maximum loan of Kshs 42,000 and a bursary of Kshs 8,000 to very needy students. Other loan amounts awarded are Kshs 20,000, Kshs 25,000, Kshs 30,000, Kshs 35,000 and Kshs 40,000. The students are expected to raise the difference from other sources. For the 2002/2003 academic year, the minimum loan awarded was raised from Kshs 20,000 to Kshs 30,000 due to complaints from students. (See table 2.3 below).

**Table 2.3 Number of Loan Awardees (2002/2003)**

University	Nairobi	KU*	Egerton	Maseno	Moi	JKUA	Baraton	Daystar	Catholic	USIU
Ksh 42000*	1301	641	467	236	844	338	18	10	13	4
Ksh 30000-40000	6117	2776	2080	991	3871	1630	272	152	215	50
No award	192	86	23	22	123	99	71	55	30	18
<b>Total applicants</b>	<b>6610</b>	<b>3503</b>	<b>2570</b>	<b>1249</b>	<b>4838</b>	<b>2067</b>	<b>361</b>	<b>217</b>	<b>258</b>	<b>72</b>
<b>TOTAL</b>										<b>21745</b>

Source: Helb Review, August, 2002

Note:

1. Baraton, Daystar, Catholic and USIU are private universities
2. KU = Kenyatta University
3. JKUA= Jomo Kenyatta University of Agriculture and Technology
4. USIU= United States International University
5. Kshs 75 = 1 USD (February, 2003)

**Applications:** Applications are usually received in March, and loan awards are announced before the next semester begins in June or July. Students who fail to get loans appeal, upon which such appeals are reviewed individually. Students' accounts are credited directly in three government commercial banks – Postbank, Kenya Commercial Bank and National Bank of Kenya.

**Interest rates:** Currently, those who graduated between 1974/75 – 1994/95 academic year are repaying their loans with an interest of 2% while those who took the loan after this period are repaying at 4% interest. The Board however can vary the interest rate any time without referring to the loanee according to provisions in Section 6 (c) of the Act.

**Employers' obligations:** The provisions of the Act put a legal obligation on all employers who have beneficiaries of the loan scheme in their employment. Upon employment of any loanee, employers are required to inform the Board within a period of three months. The employer is then legally bound to deduct from the wages of the loanee the amount of any loan as shall be shown on the billing schedule.

**Loanees' obligations:** The grace period allowed is one year after completion of studies. The Board may decide to recall the loan whichever is earlier. Any loanee who may not comply may face civil prosecution, where the entire principal amount plus the interest thereon becomes due and payable in lump sum. Repayment of the loan is not in any way tied to those loanees who have secured employment in the formal sector. Any loan granted on false information furnished will be cancelled, and where part of the disbursement has been done, the remaining instalment will not be released and the amount so far disbursed recalled immediately.

## **CHAPTER THREE**

### **3. RESEARCH METHODOLOGY**

#### **3.1 SOURCES OF DATA**

The study uses cross-sectional and time series data extracted from the Higher Education Loans Board records on the socio-economic status of the student loan applicants. The cross-sectional data is extracted from questionnaires that are in the form of loan application forms presented to the Board by the students applying for student loans (See **Appendix 1I**). The forms are completed and signed by the student for each academic year that the loans are to be applied for.

Data for calculating the loss to government and subsidy was obtained from records of the loans disbursement and recovery unit of the Board. This includes the total annual loans in Kenya shillings disbursed and recovered that were previously handled by the Ministry of Education since 1974 before the Board was established, until the year 2002 after the Board was established.

##### **3.1.1 Sampling procedures and sample characteristics**

To obtain a representative sample, probabilistic and systematic random sampling is used to obtain the percentage of loan application forms for each public university as a fraction of all the total applications. University of Nairobi with the highest student population representing about 32 percent of the total university student population takes about the same proportion in the sample. Kenyatta, Egerton, Maseno, Moi and JKUAT represent 17%, 12%,

6%, 23% and 10 % respectively. The target population was a sample of undergraduate students from all the six public universities for the academic year 2002/2003. This sample however does not include the evening degree programme students (since they are not beneficiaries of the loan scheme), diploma students, continuing students (mature students who do work and study programmes), as well as students from the private universities.

Systematic random sampling was used to select students from five faculties of each of the universities, where students were proportionately randomly selected from each faculty. The initial sample was 400 loan application forms but this was scaled down to 350 after omitting forms with missing variables or misleading information. To the knowledge of the researcher, the sample characteristics are considered relatively homogenous and hence the sample size should be reasonably representative, representing about five percent of the total third year population in all the six public universities. This sample should be statistically adequate for answering the questions in the study. However, the homogeneity may unfortunately be to an extent attributed to the fact that students assist one another to fill in the questionnaires, in the hope that the information they give will increase their chances of getting the funds that they are applying for. It is important to note that the Board applies the means-testing for the award of loans and bursaries based on the information provided by the students.

## **3.2 MODEL SPECIFICATION**

### **3.2.1 The Multinomial Logistic Regression Model (MNL)**

The multinomial logistic model is used for the analysis of the socio-economic characteristics of the students who borrow from the loan scheme.

The general conceptual model depicts the loan award of a particular student to be a function of the student's socio-economic background. Such general characteristics as applied by the board include family income, parents' educational background and family size. The levels of the loan awards vary, with the highest award being Kshs 42,000 and the lowest being Kshs 30,000 having been raised up from Kshs 20,000. The multinomial logistic regression (MNL) is best suited to analyse the likelihood of a student getting a certain amount of loan that falls in the given categories. This method is also suitable for comparison of the likelihood of outcomes falling across these categories.

The multinomial logistic regression analysis is used to estimate the likelihood of obtaining a loan for a given set of socio-economic factors. An extension of the binary logit model, the MNL is used when the dependent variable can be categorised into more than two groups. This model therefore provides a better analysis method in determining why a student would fall in one category of loan awards and not the other, as opposed to the binary logit model which would simply provide a 'yes' or 'no' analysis.<sup>4</sup>

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<sup>4</sup> For a detailed overview of the model, see Long, J Scott, *Regression Models for Categorical and Limited Dependent Variables*. 1997. Sage Publications.

The analysis is an extension of the linear regression models, which express the categorical dependent variable as a function of the explanatory variables that may either be categorical or discrete (Pindyck & Rubinfeld, 1998; Intriligator, Bodkin & Hsia, 1996).

The parameters in the binary logit model are usually interpreted as ordinary regression coefficients where positive values indicate that the independent variable or their interactions raise the log odds of the dependent variable while negative coefficients show lower log odds. An odd is the ratio of the frequency of being in one category to not being in that category. It is interpreted as the chance that an individual randomly selected will be observed to fall in the category of interest. In the binary logistic regression one directly estimates the probability of an event occurring for one independent variable such that:

$$\text{Probability of event} = \frac{e^{\beta_0 + \beta_1 x}}{1 + e^{\beta_0 + \beta_1 x}}$$

$$\text{Or } \frac{1}{1 + e^{-\beta_0 - \beta_1 x}}$$

Where  $\beta_0, \beta_1, \dots, \beta_n$  are coefficients estimated from the data,  $X$  is the vector of independent variable and  $e$  is the base of the natural logarithms. For more than one independent variable, the model can be rewritten as:

$$\text{Prob (event)} = \frac{e^z}{1 + e^z} \text{ or } \frac{1}{1 + e^{-z}}$$

$$\text{Where } z = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n$$

Probability estimates always lie between 0 and 1.

Related to the logistic regression model is the multinomial logistic regression model. It involves nominal response variables with more than two categories. Multinomial logit models are multi-equation models. A response variable with  $k$  categories will generate  $k-1$  equations. Each of these  $k-1$  equations is a binary logistic regression comparing a group with the reference group. Multinomial logistic regression simultaneously estimates the  $k-1$  logits.

Further, it is also the case, that the model tests all possible combinations among the **k** groups although it only displays coefficients for the **k-1** comparisons.

Say that we had a response variable with three levels, the probabilities for each of the levels could be obtained as follows:

$$P(y=1) = \exp(\beta_1 * x) / (\exp(\beta_1 * x) + \exp(\beta_2 * x) + \exp(\beta_3 * x))$$

$$P(y=2) = \exp(\beta_2 * x) / (\exp(\beta_1 * x) + \exp(\beta_2 * x) + \exp(\beta_3 * x))$$

$$P(y=3) = \exp(\beta_3 * x) / (\exp(\beta_1 * x) + \exp(\beta_2 * x) + \exp(\beta_3 * x))$$

This system of equations is unidentified, that is, there is more than one solution to the coefficients that lead to the same probabilities. To make the system identifiable, one of the coefficients is set to 0. It doesn't matter which one since they each yield the same probabilities. We will set the probability for **β1** to 0, yielding:

$$P(y=1) = 1 / (1 + \exp(\beta_2 * x) + \exp(\beta_3 * x))$$

$$P(y=2) = \exp(\beta_2 * x) / (1 + \exp(\beta_2 * x) + \exp(\beta_3 * x))$$

$$P(y=3) = \exp(\beta_3 * x) / (1 + \exp(\beta_2 * x) + \exp(\beta_3 * x))$$

This, in turn, leads to the following probabilities relative to the reference group, in this case, group 1.

$$P(y=2)/P(y=1) = \exp(\beta_2 * x)$$

$$P(y=3)/P(y=1) = \exp(\beta_3 * x)$$

Thus, the two coefficients, **β2** and **β3** represent the log odds of being in the target groups relative to the reference group.

In multinomial logistic regression the exponentiated coefficients are not odds ratios per se. The coefficients can be interpreted as relative risk ratios (RRR). Recall from the unit on contingency tables that relative risk in the 2x2 table was defined as

$$rr = P(11)/P(21)$$

In multinomial logistic regression the relative risk can be defined as,

$$rr1 = P(y=1)/P(\text{base category})$$

$$rr2 = P(y=2)/P(\text{base category})$$

Thus, the relative risk ratio for multinomial logit would be

$$P(y=1|x+1)/P(y=\text{base category}|x+1)$$

$$RRR = \frac{P(y=1|x+1)/P(y=\text{base category}|x+1)}{P(y=1|x)/P(y=\text{base category}|x)}$$

$$P(y=1|x)/P(y=\text{base category}|x)$$

Most scholars apply the multinomial logit model, usually referred to as categorical and limited dependent variables (Long, 1997) when analysing relationships involving several choices to be made by respondent. Most common are occupational choice and modes of travel. This model can effectively be adopted in our analysis, which however does not involve choice per se by the respondent. In our case, our dependent variable (loan award) is determined independently of the choice of the respondent. A theoretical presentation of the model as is applied in our study is provided below.

## The MNLM as an Odds Model

The MNLM can also be expressed in terms of the odds, as is with the binary logit model.<sup>5</sup> *Probability* is the chance something will occur while *odds* is the ratio of the probability something is true divided by the probability that it is not. Therefore, the *odds ratio* is the ratio of two odds and is a summary measure of the relationship (effect size) between two variables. In this light therefore, the odds of outcome  $m$  versus outcome  $n$  given  $\mathbf{x}$ , indicated by  $\Omega_{m/n}(\mathbf{x})$ , equal

$$\begin{aligned}\Omega_{m/n}(\mathbf{x}_i) &= \Pr(y_i = m/\mathbf{x}_i) / \Pr(y_i = n/\mathbf{x}_i) \\ &= \exp(\mathbf{x}_i\boldsymbol{\beta}_m) / \exp(\mathbf{x}_i\boldsymbol{\beta}_n)\end{aligned}$$

Combining exponents leads to the odds equation:

$$\Omega_{m/n}(\mathbf{x}_i) = \exp(\mathbf{x}_i[\boldsymbol{\beta}_m - \boldsymbol{\beta}_n])$$

Taking logs shows that the MNLM is linear in the logit:

$$\ln\Omega_{m/n}(\mathbf{x}_i) = \mathbf{x}_i(\boldsymbol{\beta}_m - \boldsymbol{\beta}_n)$$

The difference  $\boldsymbol{\beta}_m - \boldsymbol{\beta}_n$ , called a contrast, is the effect of  $\mathbf{x}$  on the logit of outcome  $m$  versus outcome  $n$ . Since the model is linear in the logit, it is simple to compute the partial derivative:

$$\delta \ln\Omega_{m/n}(\mathbf{x}) / \delta x_k = \delta \mathbf{x}(\boldsymbol{\beta}_m - \boldsymbol{\beta}_n) / \delta x_k = \delta \mathbf{x}\boldsymbol{\beta}_m / \delta x_k - \delta \mathbf{x}\boldsymbol{\beta}_n / \delta x_k = \boldsymbol{\beta}_{km} - \boldsymbol{\beta}_{kn}$$

This allows us to interpret  $\boldsymbol{\beta}_{km} - \boldsymbol{\beta}_{kn}$  as:

*For a unit change in  $x_k$ , the logit of outcome  $m$  versus outcome  $n$  is expected to change by  $\boldsymbol{\beta}_{km} - \boldsymbol{\beta}_{kn}$  units, holding all other variables constant.*

For normalization we can assume  $\boldsymbol{\beta}_1 = \mathbf{0}$ . Since  $\boldsymbol{\beta}_1 = \mathbf{0}$ , the equation for the comparison with outcome 1 simplifies to

$$\ln\Omega_{m/1}(\mathbf{x}_i) = \mathbf{x}_i(\boldsymbol{\beta}_m - \boldsymbol{\beta}_1) = \mathbf{x}_i\boldsymbol{\beta}_m$$

---

<sup>5</sup> There are three approaches of the MNLM model; namely, the probability model, the odds model and the discrete choice model. We restrict our analysis to the odds model. For more details see Long J. S. (1997).

Therefore given the identifying constraint that  $\beta_1 = 0$ ,  $\beta_k$  is the effect of  $x_k$  on the logit of outcome  $m$  relative to outcome 1. That is, *for a unit change in  $x_k$ , the logit of outcome  $m$  versus outcome 1 is expected to change by  $\beta_{km}$  units, holding all other variables constant.*

This interpretation of  $\beta_{km}$  is simple since the effect of a unit change in  $x_k$  on the logit does not depend on the level of  $x_k$  or on the level of any other variable. Unfortunately, it is also unsatisfactory since it is hard to convey the substantive meaning of a change in the log of the odds.

### *Desirable properties of odds ratios as measures of strength of relationship*

The study applies the MNLM as an odds model for two reasons. First, odds ratios can handle categorical data, not requiring interval data. Second, odds ratios also do not require variables be normally distributed or that relationships between variables be homoscedastic (the same along the entire length of the relationship). That is, using odds ratios as measures of strength would involve much more relaxed data assumptions than using, say, regression beta weights.

### **3.2.2 Definition of Key Concepts and Variables**

The dependent variables used for the study are loan awards and bursary awards for the students in the study sample. These are the two most important components of the loan scheme, the other being scholarships. The independent or explanatory variables are the usual socio-economic characteristics of students applying for the student loan. However, these variables may not fully explain the reasons behind why a student may be awarded a certain amount of loan, and even bursary for that matter. Such ‘immeasurable’ but crucial factors

such as irregularities in the award of the loan due to political reasons may be an example. However, such measures are left for future studies while we capture the most important variables for the moment. For in the words of Lawrence Klein, a renown econometrician,

“Econometrics recognizes that social behaviour is exceedingly complex and that a limited number of variables related together in fairly simple and elegant equations cannot explain the whole of such behaviour.”

The table below gives a summary of definitions of the variables used in this study.

**Table 3.1 Explaining the variables**

<b>Variable</b>	<b>Expected Sign</b>	<b>Description</b>
Loan award	Dependent variable	This is the amount of loan awarded to any student applicant for that academic year, repayable upon graduation. This ranges from 0 to Kshs 42,000
Bursary award	Dependent variable	This is the amount of bursary awarded to a student in that academic year. It is a special grant to poor students, not repayable upon graduation. Amounts vary from 0 to Kshs 8,000.
Sex	Positive for females	The student can either be male or female
Faculty	Negative for the ‘softer courses’	This represents the faculty of study of the student. Only major faculties have been taken for the study.
Region	Positive for less productive areas	This is the region of birth/origin of the student. Whereas there is frequent migration to urban areas for work and study, Kenyans have a significant attachment to their area of birth, which in turn determines factors such as investment, agriculture and other production activities.

Residence	Positive for 'rural' residence	This represents the area (rural/urban) where the student currently resides. Rural areas are associated with less access to information, education facilities and alternative sources of income
Mother's education	Negative	The level of education of the mother. The highest grade achieved for each level is taken
Father's education	Negative	The level of education of the mother. The highest grade achieved for each level is taken.
Siblings	Positive	The number of siblings in other educational institutions that the student has in that year
Family Income	Negative	This is the approximate annual family income of the student, including donations from other sources
Family Expenditure	Negative	This is the approximate annual family expenditure of the family on food, clothing, shelter, medical services, school fees and other miscellaneous expenditure.
Father absent	Positive	This variable represents the situation where the father, usually the household head, is absent either through death, divorce, separation or abandonment.

The general conceptual or structural model can therefore be stated as follows:

$$\text{Loan} = f(\text{Inc, Exp, Sb, Sx, Reg, Res, Meduc, Feduc, Fac, Fabsent, } e_t) \dots(1)$$

$$\text{Bursary} = f(\text{Inc, Exp, Sb, Sx, Reg, Res, Meduc, Feduc, Fac, Fabsent, } e_t) \dots$$

(2)

Where

**Loan** = loan award (Kshs) for the student in that academic year

Loan =1 if loan  $\leq$ 20,000  
=2 if loan is between 20,001-27500  
=3 if loan is 30,000  
=4 if loan is 35,000  
= 5 if loan is 40,000  
=6 if loan is 42,000

**Bursary** = bursary award for the student in that academic year

1 if bursary awarded,

0, otherwise

**Inc** = Approximate annual family income (in Kenya shillings) when the loan was applied for

**Exp** = Approximate annual family expenditure when the loan was applied for

**Sb** = number of siblings in other educational institutions in that year

**Sx** = dummy for the sex of the student

$D_m$  = 1 if male, 0 otherwise

$D_f$  = 1 if female, 0 otherwise

**Reg** = dummy for the region of birth of the student

$D_1$  =1 if region = Central, 0 otherwise

$D_3$  =1 if region = Rift Valley, 0 otherwise

$D_4$  =1 if region = Nyanza, 0 otherwise

$D_5$  = 1 if region = Western, 0 otherwise

$D_6$  = 1 if region = Coast, 0 otherwise

$D_7$  = 1 if region = Eastern, 0 otherwise

Dummy for Nairobi ( $D_1$ ) is the benchmark

North Eastern province is omitted, as there was no student from this region in the sample. This region is found in the Northern Frontier of the country – a very sparsely populated area with very few people attending post-secondary education.

**Res** = dummy for family's area of residence, taking the values

$D_r = 1$  if rural, 0 otherwise

$D_u = 1$  if urban, 0 otherwise

**Meduc** = mother's number of years of formal education

**Feduc** = father's number of years of formal education

**Fac** = Dummy for the faculty of study, taking the values

$D_s = 1$  if sciences, 0 otherwise

$D_a = 1$  if arts

**Fabsent** = Dummy for family status, taking the values

$F_a = 1$  if father absent, 0 otherwise

$F_p = 1$  if father present, 0 otherwise

$e_t$  = This is an error term that captures all the other variables which influence loan and bursary awards that are not included in the model.

The maximum likelihood multinomial logistic regression model to be estimated can now be stated as:

$$O_{il} = b_1 + b_2 \text{Inc} + b_3 \text{Exp} + b_4 \text{Sb} + b_5 D_m + b_6 D_u + b_7 D_2 + b_8 D_3 + b_9 D_4 + b_{10} D_5 + b_{11} D_6 + b_{12} D_7 + b_{13} \text{Meduc} + b_{14} \text{Feduc} + b_{15} D_s + b_{15} F_a + e_t \dots (3)$$

Where the  $\mathbf{b_i}$ 's are the population parameters of the model,  $D_i$ 's are the dummies for regions and  $O_{il}$  is the odds of obtaining a given amount of loan for student  $i$ . And,

$$O_{il} = b_1 + b_2 \text{ Inc} + b_3 \text{ Exp} + b_4 \text{ Sb} + b_5 D_m + b_6 D_u + b_7 D_2 + b_8 D_3 + b_9 D_4 + b_{10} D_5 + b_{11} D_6 + b_{12} D_7 + b_{13} \text{ Meduc} + b_{14} \text{ Feduc} + b_{15} D_s + b_{15} F_a + e_t \dots(4)$$

Where  $O_{ib}$  is the odds of obtaining a bursary for a student  $i$ .

Equation (4) is estimated using the binary logit model, which as earlier stated, is applied when the dependent variable has only two outcomes. Recall that the MNLM is linear in the logits of the outcomes, and these are easily estimated using Stata.

### 3.2.3 Calculating the student subsidy, loss due to default and total loss to government

To calculate the total and percentage student subsidy, the method developed by Albrecht (1992) is applied with slight modifications. First, we incorporate loans to students in private universities and secondly, we maintain a constant grace period. Also, instead of calculating each individual student subsidy, we aggregate the loan values, and divide by the number of loan beneficiaries in order to find an average figure. In calculating the subsidy and loss to government therefore, the following assumptions are made:

- a. Students receive equal real value loans over a four year disbursement period in lump sums at the beginning of each year
- b. Administrative costs are spread out evenly during the life of the loan

- c. Default is the frequency of loans that fail to repay. It is expressed as a probability for each year of repayment
- d. Grace periods have been rounded to the nearest year
- e. Repayments are in equal nominal amounts in yearly instalments, at the beginning of each payment period.
- f. Inflation is constant throughout the life of the loan
- g. Defaulted loans carry an administrative cost equal to good loans

1. Calculating the student subsidy

PV= present value

D= disbursement value

I=initial interest rate (during period of lending)

i= Interest rate during repayment period (this is currently 4%)

G=grace period in years

N= repayment length

R= opportunity cost of capital, from time of lending onwards

L= disbursement length

$$\text{Amortization value} = A = D \sum (1+i)^{g+(l-1)}$$

$$\text{The annual payment} = P = A * I / 1 - (1+i)^{-N}$$

Where  $l=1,2,\dots,L$

The cash flow is as follows:

4 years of loan disbursements of equal real values, adjusted for inflation each year

0 during the period of the grace, and

P during the repayment length (n)

$$\text{PV disbursement} = \sum D_l / (1+r)^{l-1}$$

Where  $l=1,2,\dots,L$

$$\text{PV repayments} = P \sum 1 / (1+r)^{g+L-l+n}$$

Money value of subsidy to student = PV of disbursement – PV repayments

Percentage subsidy to student = PV (disb't) – PV (repay't) / PV (disb't)

## 2. Calculating loss with default

The calculations are the same except that payment amounts are reduced to include the probability that they are not made. Thus the cash stream uses the following repayments:

$P(\text{def}) = P*(1-d)$  where d is the probability of default.

This implies that the cash stream is only adjusted during the years of repayment

### **Note:**

1. The interest rate during both the lending and repayment periods was pegged at 2% initially, but was revised in 1995 to 4%.
2. The grace period before a beneficiary can start repayment is one year. The experience has been different, with most repayments starting even three years later.
3. The opportunity cost of capital from the time of lending onwards is the current average Treasury Bill rates. As at February 2003, this was about 22%.

### **3.2.4 A priori theoretical expectations**

#### **Part I: Determinants of Bursary and Loan Awards**

Results of the estimations for the above two equations for the determinants of loan and bursary award should generally give the same findings. This is because higher loan amounts are directly linked to bursary awards in terms of their determinants. The higher the loan award, the higher the likelihood of a student being awarded a bursary. As a matter of fact, it is the Board's policy that a student who gets a full loan (Kshs 42,000) automatically gets a bursary. However, a student may get a bursary whether or not he/she gets a full loan. Bursary amounts differ due to differences in the socio-economic status of applicants.

Family income, expenditure and parents' educational level should be in the normal case negatively related to a loan and bursary award. This is because the programme is designed to cater for the more needy students, and the higher the family income, the less the need for assistance. Though income and family expenditure may be positively correlated, and therefore influence the amount of loan that a student can obtain, certain expenditure levels may render the family incapable of paying university fees, especially if parents are using quite a substantial amount of their income on paying school fees for other siblings. This therefore warrants the assistance of the student loan for the university student in that family.

The higher the education level attained of a parent, the more his income is likely to be, though this may not be the case for lower levels of education, a category which most students in the sample stated as the level of education for their parents. It is however expected that loans and bursaries may vary across faculties, where students enrolled in the more demanding and 'out-of-classroom' courses like medicine and engineering are likely to get more funding.

This is inherent because students have to purchase some necessary items for the course that may not be required for other softer courses like business or arts.

The sex of the student should not be a factor strongly responsible for differences in loan awards. However, for the purposes of study, this will be determined due to the poor representation of women in the institutions of higher learning, which led to the implementation of affirmative action at the level of enrolment into public universities.

The Board gives assistance to students with more siblings at the university or other educational institutes due to the increased burden of fees. It is therefore expected that the number of siblings should be positively related to loan and bursary awards. Also, special consideration is given to students from the arid and semi-arid regions of the country, which are less agriculturally productive and are likely to have less income from farm activities. The case should be also true for students residing in rural areas, since the likelihood of a student being needy is higher for those from rural areas than those from urban areas.

## **Part II: Subsidy and Loss to Government**

Subsidy and loss to government for the most part of the program has not changed much, and therefore calculations are done for only two academic years for comparison purposes only. With slight improvement in loan recoveries, it is expected that subsidy and loss due to default will decline in the year 2002/2003 as compared to 1988/89. Despite improved loan recoveries over the last few years, subsidy levels are still expected to be at least more than 70% of total loans disbursed due to the high default rates. The high default rates can be to a large extent attributed to high unemployment rates as well as a negative attitude towards repayment of government loans.

## CHAPTER FOUR

### 4. ANALYSIS AND PRESENTATION OF RESULTS

This section is divided into two parts. Section one will present the descriptive analysis of the variables used in the study while the second section will present the econometric analysis of the statistical relationships between the variables and the interpretation of the findings thereafter.

#### 4.1 Descriptive Statistics

**Table 4.1 Mean and Standard Deviation of the Variables**

	MEAN	STD. DEVIATION	N	MINIMUM	MAXIMUM
LOAN	.00	42000.00	347	31841.4986	8034.2084
SEX	.6916	.4625	347	.00	1.00
FACULTY	.3660	.4824	347	.00	1.00
REGION	2.8732	1.5267	347	.00	6.00
RESIDENCE	.7983	.4019	347	.00	1.00
INCOME	73254.5648	168716.8745	347	1500.00	2545000.00
EXPENDITURE	54127.2133	81543.2809	347	3500.00	609000.00
MEDUCATION	7.7349	4.3242	347	.00	16.00
FEDUCATION	9.2651	4.1683	347	.00	18.00
SIBLINGS	2.7522	1.9418	347	.00	8.00
BURSARY	2487.0317	2984.8808	347	.00	8000.00
FATHER ALIVE	.5679	.4116	347	.00	1.00

**Source: Study**

Table 4.1 provides a summary of the means and standard deviations of all the variables used in the estimation. Most of the variables are not normally distributed with the exception of income and expenditure. For this reason, application of the usual OLS estimation

would not provide efficient estimators and hence the multinomial logistic model is used to estimate their relationship.

The following section gives a brief summary of the distribution and frequency of the variables according to sex, region and faculty.

**Table 4.2 Sex and Loan**

Loan Award (Kshs)	SEX		Total
	Female	Male	
0	2	9	11
20000	6	15	21
25000	1	4	5
27500	-	2	2
30000	47	114	161
35000	25	44	69
40000	14	22	36
42000	12	30	42
Total	107	240	347

**Source: Study**

From the Table 4.2, we observe that almost half (44%) of all the students obtained a loan of 30,000 Kshs. This is actually the median and mean loan amount for the whole sample as well. Almost half of the students who got the full loan of 42,000 Kshs are female, implying probably that female students are given greater consideration in access to the funds, despite the fact that they constitute less than half of the total student population in the universities. This is further explained by the fact that female students constituted only 20% of those who did not get any loan at all.

**Table 4.3 Faculty and Loan**

FACULTY	LOAN (KSH)							TOTAL
	0	20000	25000	30000	35000	40000	42000	
Science	1	6	-	50	18	7	7	90
Arts	2	2	-	15	8	1	3	32
Engineering	4	2	3	26	10	9	8	62
Education	4	7	-	43	14	10	16	94
Medicine	-	2	-	14	8	2	3	29
Commerce	-	2	2	10	10	7	4	35
Total	11	21	5	161	69	36	41	346
% of Total	3.2	6.1	1.4	46.5	19.9	10.4	11.8	100.0

**Source:** Study

**Note:** ‘-‘ denotes no observations for the category

Table 4.3 indicates that 46.5% of the students obtained the loan amount of 30,000 Kshs. Most of the students in the sample fall in this category. None of the students from commerce and medicine was denied a loan, with most of the students in these two faculties getting more than 30,000 Kshs. It is the practise of the board to give more consideration for students pursuing the more demanding courses when awarding loans and bursaries. For instance, for the case of engineering, more than 75% of the students got above 30,000.

**Table 4.4 Sex and Bursary**

		BURSARY (KSHS)						TOTAL
		0	4000	5000	6000	7000	8000	
<b>SEX</b>	<b>Female</b>	57	24	3	7	3	13	107
	<b>Male</b>	135	45	14	10	13	22	239
<b>Total</b>		192	69	17	17	16	35	346
	<b>% of Total</b>	55.5	19.9	4.9	4.9	4.6	10.1	100.0

**Source: Study**

From the experience of the HELB, bursaries have been the most challenging to award of the two kinds of financial assistance to the students. This is because first, it is non-repayable, and secondly, for the basic reason that almost 75% of the applicants qualify for the award. Access to all eligible students is therefore restricted due to limited funds. Table 4.4 presents interesting results. Of the 192 students who did not get any bursaries at all, males constituted 135 (about 70%). This implies that only 30% of those bursaries loans were females. Slightly more than half (55.5%) of those who applied for bursaries were denied. Students who got the full bursary award were only ten percent of all applicants, with female students comprising well over half of this category. This indicates that female students are more likely to get full bursaries than their male counterparts, their smaller number notwithstanding.

**Table 4.5 Loan and Income**

Income '000 Ksh.	LOAN (KSHS)								TOTAL
	0	20000	25000	27500	30000	35000	40000	42000	
0-10	-	-	-	-	20	5	6	10	41
10-25	-	1	-	-	13	12	11	5	42
25-50	1	-	-	1	14	7	4	2	29
50-75	-	-	1	-	17	7	8	7	40
75-100	1	-	-	-	16	8	1	10	36
100-150	2	4	-	-	20	10	4	4	44
150-200	1	3	1	1	21	7	2	2	38
200-300	1	3	2	-	23	9	-	1	39
>300	5	10	1	-	17	4	-	1	38
Total	11	21	5	2	161	69	36	42	347
<b>Percentage of Total</b>	3.2	6.1	1.4	.6	46.4	19.9	10.4	12.1	100

Table 4.5 provides a breakdown of loan awards for the given categories of income. Though it may not show much, the last column of the table indicates that the incomes are evenly distributed among the categories, with most of the categories representing about 11% of the total. The lower left cells of the table indicate that the lower loan awards are concentrated on the higher income groups, while the upper right cells indicate that the higher loan awards are concentrated on the lower income groups.

**Table 4.6 Bursary and Family Status**

<b>Bursary (Kshs)</b>	<b>FAMILY STATUS</b>		<b>TOTAL</b>
	<b>Father Present</b>	<b>Father Absent</b>	
0	185	7	192
4000	3	66	69
5000	1	16	17
6000	-	17	17
7000	2	14	16
8000	1	35	36
<b>Total</b>	192	155	347
<b>% of Total</b>	55.3	44.7	100.0

**Source: Study**

Table 4.6 presents the relationship between the presence of the student's father and the amount of bursary awarded. It has become a policy of the Board to give more consideration for orphaned students and those from single-parent families. This is due to the increase in the number of such cases in recent times, due to changing social environments, and most importantly, the increase in the number of orphans due to the HIV/Aids pandemic. The table shows that almost half (155 out of 347) of all the students in the sample either were orphaned or were from single-parent families.

From Table 4.6, only 2% of the students who were denied bursaries did not have their fathers, while 35 out of the 36 students given full bursaries of 8,000 Kshs were from this category. In general, the bursaries are designed to assist the most needy students, and most of the needy cases are either orphaned, abandoned by their fathers or are children of single mothers.

**Table 4.7 Loan and Family Status**

<b>Loan (Kshs)</b>	<b>FAMILY STATUS</b>		<b>TOTAL</b>
	<b>Father Present</b>	<b>Father Absent</b>	
0	12	-	12
20000	22	5	27
30000	114	47	161
35000	32	37	69
40000	6	30	36
42000	8	34	42
<b>Total</b>	192	155	347
<b>% of Total</b>	55.3	44.7	100.0

**Source: Study**

Table 4.7 provides the same information as Table 4.6. Students whose fathers are absent are more likely to get higher loan amounts than those whose fathers are present, and no student whose father is absent was denied a loan. Of the 42 students who were awarded full loans, 34 (or 80%) were either orphaned or from single-mother families. This also reflects the Board's policy of awarding full loans to the most needy cases. This is representative even for the total student population as well, where most of the students awarded full loans are those with no parents or guardians.

#### 4.1.1 Correlation Between the Variables

The variables used in this study have, like in most economic relationships, some degree of correlation. For example, income and expenditure are expected to have some degree of correlation because to a large extent the level of the former determines the level of the latter. The coefficients in Table 4.8 indicate that there is no perfect correlation between any of the variables. This is because there is no value of 1 in the correlation matrix. Income, expenditure and father's education are negatively correlated to bursary as expected. On the other hand, sex and faculty were found to be negatively correlated although not significantly. This may explain the concentration of female students in some courses as opposed to others.

**Table 4.8 Pearson correlation coefficients of the variables**

	SEX	FACUL	REG	RES	INC	EXP	MEDUC	FEDUC	SIBL	BURSA
SEX	1.000									
FACUL	-.117*	1.000								
REG	.039	-.043	1.000							
RES	.084	-.054	.147**	1.000						
INC	.020	-.017	-.041	-.133	1.000					
EXP	-.038	.033	-.042	-.246	.539*	1.000				
MEDUC	.030	-.131*	-.104	-.240	.255	.387*	1.000			
FEDUC	.007	-.046	-.026	-.294	.368	.419	.716	1.000		
SIBL	.018	-.013	.145**	.022	.102	.193	-.069	.050	1.000	
BURSA	-.025	.099	.021	.053	-.209	-.280	-.290**	-.254	-.081	1.000

\* Correlation is significant at the 0.05 level (2-tailed).

\*\* Correlation is significant at the 0.01 level (2-tailed).

There is a high correlation between mother's and father's education. Though this may lead to multicollinearity, it doesn't change the results of our regression because of the model used. Income and expenditure are the most significant in terms of their correlation, since the former determines the latter. All other variables do not show any multicollinearity in addition to having the right signs. Mother's education is not significantly related to income as the father's education is. This is because most fathers are the main source of family income as opposed to the mothers, who tend to have lower levels of education on average.

## **4.2 Results of the Estimation using Stata**

The equations were estimated using Stata version 7.0, in addition to tests for the model's significance and multicollinearity.

### **4.2.1 Loan Award**

The equation to be estimated was

$$\mathbf{O_{il} = b_1 + b_2 Inc + b_3 Exp + b_4 Sb + b_5 D_m + b_6 D_u + b_7 D_2 + b_8 D_3 + b_9 D_4 + b_{10} D_5 + b_{11} D_6 + b_{12} D_7 + b_{13} Meduc + b_{14} Feduc + b_{15} D_s + b_{15} F_a + e_t}$$

The following section outlines the results of the regression and some of the important interpretations.

For the determinants of the loan award the comparison group was when the loan is Kshs 30,000. Interpretations of the effect of the explanatory variables are based on this category as the reference group. The major impacts were seen in the fourth outcome, that is, when the loan award is 30,000, and the last outcome, when the full loan is awarded. For simplicity of interpretation, only these two groups are considered.

**Multinomial regression: Outcome LOAN=30,000 is the comparison group**

**Number of observations = 347 LR chi2 (80) = 234.96 Prob > chi2 = 0.0000**

**Iteration 40: Log likelihood = --393.77487 Pseudo R2 = 0.2298**

**Table 4.9 Regression Results for Category IV (Loan = 30,000)**

**Dependent Variable: Loan Award**

Explanatory variables		dy/dx	Std. Err.	Z	P> z	X	RRR
Sex	Male=D <sub>m</sub> =1	.016293	.01301	1.25**	0.210	.75880	.041793
	Female=D <sub>f</sub> =0	Left	Left	Left	Left	Left	Left
Faculty	Science= D <sub>s</sub> =1	-.0132757	.01313	-1.01	0.312	.8887	.012456
	Arts= D <sub>a</sub> =0	Left	Left	Left	Left	Left	Left
Residence	Rural= D <sub>r</sub> =0	-.0383048	.02935	-1.3**	0.192	1.0683	.019221
	Urban D <sub>u</sub> =1	Left	Left	Left	Left	Left	Left
Income	Continuous	2.06e-07	.00000	1.02	0.309	.69588	6.0e-07
Expenditure	Continuous	7.49e-08	.00000	0.68	0.494	.99999	2.9e-07
Mother's educ	Continuous	-.0072287	.00273	-2.65*	0.008	1.0005	-.001885
Father's educ	Continuous	.0028912	.00267	1.08	0.278	1.0684	.008119
Siblings	Continuous	-.000232	.00382	-0.06	0.952	1.0353	.007253
Bursary	Continuous	3.54e-06	.00001	0.41	0.680	1.1338	.00002
Father absent	Father absent=F <sub>a</sub> =1	-.0453612	.03568	-1.27**	0.204	1.0002	.024574
	Father present=F <sub>p</sub> =0	Left	Left	Left	Left	Left	Left
Region	D <sub>1</sub> = Nairobi	Left	Left	Left	Left	Left	Left
	D <sub>2</sub> = Central	-.0312619	.01067	-2.93*	0.003	.76553	-.01034
	D <sub>3</sub> = Nyanza	-.0307604	.01016	-3.03*	0.002	.76591	-.01084
	D <sub>4</sub> = Rift Valley	-.0272663	.01088	-2.51*	0.012	.89886	-.005941
	D <sub>5</sub> = Western	-.0287269	.00964	-2.98*	0.003	.65554	-.009842
	D <sub>6</sub> = Eastern	-.028042	.01097	-2.56*	0.011	.86887	-.006543
	D <sub>7</sub> = Coast	-.0686855	.01915	-3.59*	0.000	.99997	-.031161

**\*\* Significant at 90% confidence level**

**\* Significant at 95% confidence level**

Table 4.9 presents a summary of the results of the regression for category IV, when the outcome for loan is 30,000. Overall, the explanatory variables explain only 23% of the variations in the dependent variable. Significant variables for this category are mother's education, sex, residence the presence of the father and the region of birth (as shown by the dummies). From the results obtained for the marginal changes in probability, it can be concluded that as the change in probability of a student getting a loan of this category increases by about 1.6% as sex changes from female to male. Mother's education decreased

the probability of falling in this category of loan award by only 0.7%. If the student was from a rural area, the probability decreases by about 4%. In addition, the regional dummies all have a negative but significant effect on the outcome of the probability for this category. This implies that the probability of a student getting a loan of 30,000 decreases if the student is from a region other than Nairobi. In other words, the probability that the student gets this loan value decreases by 3.1, 3, 2.7, 2.8, 2.8 and 6.8 percentage points, if the student is from Central, Nyanza, Rift Valley, Western, Eastern or Coast provinces respectively. Similarly, the presence of the father decreased the probability of getting a loan of this value by about 4.5%. Income and expenditure were not significant for this category.

**Table 4.10 Regression Results for Category VI (LOAN= 42000)**

**Dependent Variable: Loan Award**

Explanatory variables		Relative risk ratio <sup>6</sup>	dy/dx	Std. Err.	Z	P> z	X
Sex	Male=D <sub>m</sub> =1	1.089245	.0030025	.00531	0.57	0.572	.690751
	Female=D <sub>f</sub> =0	Left	Left	Left	Left	Left	Left
Faculty	Science= D <sub>s</sub> =1	1.059213	.0040303	.00605	0.67	0.505	.364162
	Arts= D <sub>a</sub> =0	Left	Left	Left	Left	Left	Left
Residence	Rural= D <sub>r</sub> =0	Left	Left	Left	Left	Left	Left
	Urban D <sub>u</sub> =1	0.330999	-.02195	.01493	-1.47**	0.141	.800578
Income	Continuous	0.005092	-1.40e-08	.00000	-0.16	0.877	73362.2
Expenditure	Continuous	0.999985	-1.86e-07	.00000	-1.40**	0.162	54181.9
Mother's educ	Continuous	0.82062	-.0030592	.00126	-2.43*	0.015	7.73988
Father's educ	Continuous	1.256298	.0029635	.00127	2.33*	0.020	9.26879
Siblings	Continuous	2.331815	.0003213	.00148	0.22	0.829	2.75723
Bursary	Continuous	3.12264	3.96e-06	.00000	1.72**	0.086	2473.99
Father absent	Father absent=F <sub>a</sub> =1	2.386482	-.010392	.00627	-1.66 **	0.097	.445087
	Father present=F <sub>p</sub> =0	Left	Left	Left	Left	Left	Left
Region	D <sub>1</sub> = Nairobi	Left	Left	Left	Left	Left	Left
	D <sub>2</sub> = Central	18.20731	.9992641	.00052	1936*	0.000	.161850
	D <sub>3</sub> = Nyanza	18.7074	.9990542	.00088	1130*	0.000	.141618
	D <sub>4</sub> = Rift Valley	17.8487	.9997334	.00003	38064*	0.000	.245665
	D <sub>5</sub> = Western	18.9879	.9989534	.00099	1010.5*1	0.000	.132948
	D <sub>6</sub> = Eastern	18.7132	.9998086	.00003	34248.3*	0.000	.248555
	D <sub>7</sub> = Coast	-24.9623	-.0204	.00705	-2.89 *	0.004	.020231

\*Variables significant at the 95% confidence level.

\*\*Variables significant at the 90% confidence level.

<sup>6</sup> Some authors refer to this as the odds ratio

Table 4.10 presents results obtained for the 6<sup>th</sup> outcome, that is when the loan value is 42,000 or full loan award. For this category, residence, expenditure, mother's education, father's education, the presence of the father, bursary awards and the region of birth of the student all had a significant impact on the probability of obtaining a full loan. However, the impact was negative and quite small for most of the variables with the exception of the regional dummies, because the percentage decrease in the probability was less than 0.5% for most of latter variables. The probability of falling in this category increased by almost 100% if the students were from a region other than Nairobi, as can be seen from the very high marginal values obtained from the dummies for regions of birth.

Another aspect of the results worth mentioning is the odds ratios. As stated earlier, odds ratios give the measure of the relationship (effect size) between two variables. Odds ratios of more than one indicate that the variable has a positive effect on the outcome, while odds ratios of less than one indicate a negative effect. Results obtained for this category indicate that the odds that a student will receive a full loan increase if the student is from a region other than Nairobi, if he is male, if his/ her father is absent and if he has more siblings.

#### **4.2.2 Bursary Award**

The equation to be estimated was:

$$O_{il} = b_1 + b_2 \text{ Inc} + b_3 \text{ Exp} + b_4 \text{ Sb} + b_5 \text{ D}_m + b_6 \text{ D}_u + b_7 \text{ D}_2 + b_8 \text{ D}_3 + b_9 \text{ D}_4 + b_{10} \text{ D}_5 + b_{11} \text{ D}_6 + b_{12} \text{ D}_7 + b_{13} \text{ Meduc} + b_{14} \text{ Feduc} + b_{15} \text{ D}_s + b_{15} \text{ F}_a + e_t$$

The following are the results of the regression:

Iteration 7: log likelihood = -48.925893

Number of obs = 347	Wald chi2 (11) = 98.792
Prob > chi2 = 0.0000	Pseudo R2 = 0.76346

**Table 4.11 Bursary equation estimation results**

Explanatory variables		Coefficient	Std. Error	Z	P> z	odds ratio
Sex	Male= $D_m=1$	.4655947	.5845601	0.80	0.426	1.592961
	Female= $D_f=0$	Left	Left	Left	Left	Left
Faculty	Science= $D_s=1$	.0721613	.2018026	0.36	0.721	1.0748
	Arts= $D_a=0$	Left	Left	Left	Left	Left
Residence	Rural= $D_r=0$	Left	Left	Left	Left	Left
	Urban $D_u=1$	-1.21842	.8780982	-2.39*	0.065	0.295696
Income	Continuous	-4.33e-06	4.19e-06	-2.93*	0.002	0.013167
Expenditure	Continuous	-4.25e-06	4.23e-06	-1.91**	0.084	0.01426
Mother's educ	Continuous	.0184591	.109571	0.17	0.866	1.01863
Father's educ	Continuous	-.1851879	.0896229	-2.07*	0.039	0.830948
Siblings	Continuous	.099144	.1168734	1.95**	0.066	1.104225
Bursary	Continuous	.3951809	.3752609	1.05	0.092	1.48465
Father absent	Father absent= $F_a=1$	6.608468	.7519013	8.79*	0.000	741.3464
	Father present= $F_p=0$	Left	Left	Left	Left	Left
Region	$D_1 =$ Nairobi	Left	Left	Left	Left	Left
	$D_2 =$ Central	180.2053	251.5115	0.72	0.474	1.819 <sup>78</sup>
	$D_3 =$ Nyanza	291.5401	285.9574	1.02	0.309	-
	$D_4 =$ Rift Valley	101.6998	308.5005	0.33	0.742	1.47 <sup>44</sup>
	$D_5 =$ Western	-44.25855	335.251	-0.13	0.895	1.65 <sup>-19</sup>
	$D_6 =$ Eastern	82.89181	278.808	0.30	0.766	9.969 <sup>35</sup>
	$D_7 =$ Coast	-60.29546	448.4204	-0.13	0.893	6.55 <sup>-3</sup>

\* Significant at the 95% confidence level

\*\* Significant at the 90% confidence level

Results of the estimation of the equation for the determinants of bursary awards indicate that most of the important variables are significant at the 90% confidence level. That is, income, expenditure, presence of the father, residence and whether or not the student was awarded a loan significantly explained variations in the bursary awards. Table 4.11 also shows that the signs of these variables conform to earlier stated hypotheses. That is, income and expenditure negatively affects the award of bursary, whereas the amount of loan awarded, the absence of the father and rural residence positively influenced the award of a bursary.

However, none of the regional dummies were significant, implying that the regional disparities were not significant in explaining whether or not a student would be considered for a bursary award.

Table 4.11 also gives a summary of the odds ratios for the explanatory variables that influence bursary awards. At first glance, it can be seen that as income, expenditure, father's years of education and residence (rural=0, urban=1), increase, the odds of a student being awarded a bursary decrease since the odds ratios are less than 1. Similarly, the odds of obtaining a bursary increases if a student is male, orphaned or from a rural area. Most importantly, the odds of obtaining a bursary also increase significantly if the student was awarded a loan. The absence of the father (either through death, divorce or separation) was the most significant in determining whether or not a student would get a bursary. Except for the sex, mother's education and region of birth, all the other variables conform to our earlier hypotheses. It should be noted that the means testing instruments applied by the Board are by no means efficient in determining different levels of need, even though it is said to be highly computerised. Therefore it is expected that some variables may have more influence than others in determining the level of need, and hence the amount of bursary that a student will be awarded.

#### **4.2.2.1 Means testing<sup>7</sup> for equity**

Means testing in determining the award of loans and bursaries has been one of the main components of the new loan scheme that the old system did not incorporate. Before 1995, all university students were given equal allowances irrespective of their socio-economic backgrounds. As enrolments rose and funds become more constrained, means testing was introduced to ensure that the poorer students benefit more from the loan scheme. The means testing instruments applied by the Board ensure that students are grouped into different

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<sup>7</sup> This is a mechanism often applied in the provision of many social services that are usually subsidized, to determine who is least able to pay from a set of socio-economic characteristics.

categories based on their level of need, with category 1 being the most needy (Table 4.12). A computer-based programme awards points according to the information provided by the student in the loan application form. The higher the points, the greater will be the need for more financial assistance.

**Table 4.12 HELB's Criteria for Allocation of Loans to Undergraduate Students**

Category	Amount (Kshs)*	Tuition per semester (paid directly to universities) (Kshs)		Allowance disbursed to student accounts (Kshs)	
		1 <sup>st</sup> semester	2 <sup>nd</sup> semester	1 <sup>st</sup> semester	2 <sup>nd</sup> semester
1	42,000	4,000	4,000	17,000	17,000
2	40,000	4,000	4,000	16,000	16,000
3	35,000	4,000	4,000	13,500	13,500
4	30,000	4,000	4,000	11,000	11,000
5	27,000	4,000	4,000	9,750	9,750
6	25,000	4,000	4,000	8,500	8,500
7	20,000	4,000	4,000	6,000	6,000

Source: HELB, 2003

\* Kshs 75 = 1US\$ as at February, 2003

Students get different allowances depending on their level of need, though they get equal maximum allocation for tuition, which is paid directly to their respective universities. One setback of the means testing is that it fails to categorize students based on realistic expenditure groups. This is because the main aspect of the categorization is parental income. Besides, the differences between one income group and another may be quite significant, but which is ignored as reflected in the differences between the loan awards. For instance, a student considered most needy gets only Kshs 10,000 more than one in the median category. It is worth noting that a contributory factor in the setbacks of the means testing is the fact that the information provided by the students is not representative enough to place students into more realistic categories. This point is further strengthened by the fact that expenditure as an

explanatory factor in determining the award of bursary and loans was not as significant as it was expected from this study.

#### **4.3 Student Subsidy and Loss to Government with default**

For the calculation of the student subsidy and loss to government, an extension of the compound interest formula is used to calculate the present values of the loans disbursed and repaid. From these values, the student subsidy is then derived. These calculations are made for two academic years and the results obtained are presented in table 4.13 below. For the 1988/89 academic year, students were awarded equal loan amounts of Kshs 27500 per year at an interest rate of 2% for both the disbursement and recovery period. For the 2002/03 academic year, the loans are aggregated for the total number of student beneficiaries, then an average is taken for each student. This is because after 1989/90, students were awarded varying amounts, which makes computation for each student a complex task. In estimating the loss to government with default, administrative costs were pegged at Kshs 150 million per academic year.

**Table 4.13 Student Subsidy and Loss to Government**

YEAR	1988/89	2002/2003
Amortization value (Kshs)	92,552	159,002
Annual payment	11,232	19,600
Present Value of disbursement	70,088	107,402
Present Value of repayment	15,656	17,192
Subsidy to student	51,734	90,209
Percentage Subsidy to Student	87% of loan disbursed	83% of loan disbursed
Loss to Government with default	91% of outstanding loans	89% of outstanding loans

Table 4.13 provides a breakdown of the extent of government subsidy to the student loan scheme. The amortization value gives the total amount of money that a student actually receives. The annual payment is what s/he would pay back annually. Table 4.13 shows that even though the subsidy to students declined in the 2002/2003 academic years as compared to 1988/89, it only decreased by 4%, showing that efficiency of the loan scheme did not improve for that period. Similarly, the government was able to recover only 11% and 13% of funds it allocated to the loan scheme in 2002/2003 and 1988/89 respectively. This implies that the loss to government before the Board was established remained fairly at the same level even after its establishment, since the default rates are still quite high. The very high default rates of more than 80% of the loans disbursed are reflected in the loss to government with default. This is because with default comes higher administrative costs involved in servicing the loans. The level of subsidy to students is still quite high as compared to other loan programmes in the developed countries, where the interest rates applied when repaying student loans are nearly as high as the market lending rates. This may be attributed to the political reluctance on the part of the government to reduce government subsidy and increase tuition fees as a means of cost recovery in university education. Evidence shows that Kenya's experience of tuition fee increases in 1991 proved quite costly politically and led to university closures for long periods.<sup>8</sup>

The degree of subsidy and loss to government reflects how efficient a loan scheme is. For the case of the student loan scheme in Kenya, efficiency has been jeopardized in the quest for increased access and equity of education funds. The low level of loan recovery indicates that efficiency of the loan scheme was not a priority of the government prior to the

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<sup>8</sup> See Albrecht and Ziderman (1995) p60.

establishment of the Board. With the establishment of the Board, loan recovery has increased from 50 million shillings in 1994/95 to almost 600 million shillings in 2001/2002.

A second important point to note as regards the high default rates in the high level of unemployment among university graduates. Whereas not all employed university graduates may honour their repayment obligations, an unemployment level of over 30% has been cited as a crucial factor in determining the level of loan recovery. In addition, high interest rates may deter prompt repayment. Although the interest rate has been increased from 2% to 4%, this has not attracted past beneficiaries to pay back their loans. This is because it has become common knowledge that it is the culture of most loan borrowers in Kenya to evade repaying their loans, including student loans. Therefore if the loan scheme were to implement a higher interest rate for repayment than the current rate, evasion would probably increase.

It may be argued that the recovery rate of 17% in 2002/03 is still very low, though this is a large improvement from only 3% when the Board was established. Given the prevailing economic situation in the country, indications are that it will surpass the 20% mark come the year 2004. The success of the Board in improving loan recoveries rests on its efforts to enforce recoveries from outside the public sector, which accounts for nearly 75% of all the collections – with teachers accounting for 56% of the total (see table 4.13). It can however be pointed out that managerial efficiency of the Board has also improved over the last few years with the establishment of a website and the downsizing of staff. Students can now know their loan repayment status, apply and even get feedback without going physically to the Board's office. These steps are seen as ways of improving loan disbursement and recovery and reducing administrative costs.

**Table 4.14 Loan Recovery by employment category, January – September 2002**

<b>SECTOR/EMPLOYMENT CATEGORY</b>	<b>AMOUNT (Kshs)</b>	<b>AS % OF TOTAL LOANS RECOVERED</b>
Agricultural organizations	332,482.10	0.71
Diplomatic missions	19,696.60	0.04
Educational institutions: schools, colleges	2,333,973.00	4.97
Financial institutions	1,885,788.50	4.02
Individuals/self employment	1,219,417.90	2.59
Insurance companies	493,539.70	1.05
Manufacturing	1,635,772.80	2.91
Government ministries/departments	6,942,656.80	14.80
Non Governmental Organizations (NGOs)	387,028.80	0.82
Parastatals/state corporations	2,900,182.40	6.18
Service industry	1,451,874.60	3.09
Teachers' Service Commission	26,167,766.30	55.77
Others	1,420,806.80	3.03
<b>Average total</b>	<b>46, 920, 986.30</b>	

**Source: Computed from data obtained from the HELB, 2002**

Table 4.13 reflects trends in employment, and hence the extent of loan recoveries from various sectors of the economy. The government is the largest employer, with teachers taking up the largest share of public employment. The private sector constitutes only a small percentage of those repaying their loans. This points out the difficulty of reaching this lot, especially with increased informal and self-employment over the last few years. Other sectors such as non-governmental organizations and diplomatic missions employ a significant number of past loanees but they are also very mobile in the sense that their jobs involve travelling within and outside the country and are usually contractual in many cases.

#### **4.4 Past Experiences and the Way Forward**

The experience of the Board in the management of the new loan scheme has not been as smooth as expected when changes were made to the system. Certain hurdles have hindered the realization of a revolving fund, which would ensure that the loan scheme becomes self-sustaining. Such problems include; i) increased unemployment (unofficially estimated at 30% for the year 2002), ii) the perception that university education should be free hence high default rates, iii) hard economic times that have contributed to retrenchment of a large number of loanees who were repaying their loans and iv) increased administrative costs associated with tracking down defaulters.

However, eight years since its establishment, these difficulties seem to have been overshadowed by the increased number of beneficiaries of the loan scheme, both from the private and the public universities. The Board has also introduced loans to postgraduate as well as doctoral students, who were initially not included as beneficiaries. Though the number of students from private universities is much lower than public universities, about half of applicants do get the loans – which is a significant step towards ensuring access to these funds for those students who don't get admission into public universities. The next challenge to the Board is to consider students at the national polytechnics – who constitute a crucial source of skilled manpower for the country, but which has been neglected in providing direct funding despite being among the most expensive higher level training.

Achievements made by the Board in widening access in terms of the number of students is commendable. However, the loans disbursed for the 2002/2003 academic year indicate that only one third of all university students in the country benefited, leaving out a

significant number of students enrolled in the parallel degree programme.<sup>9</sup> The limitation of loans to the regular students only amounts to inequitable distribution of financial assistance since the self-sponsored students account for about 22% of undergraduate enrolment, even though a large majority of the students in the private universities and those in the parallel degree programmes do not apply for the loan.

The establishment of a revolving fund was one of the objectives of the loan program. This was to be possible only after full recovery of loans is realized. However, with the low recovery ratios, the notion of self-sustenance has not become practical due to several factors. Such factors are decreasing government outlays for the loan programme, rapid increase in student enrolment - hence demand for financial support, unemployment and high morbidity due to the HIV/Aids pandemic. In Kenya, it is reported that six teachers succumb to the scourge per day (Otieno, 2002), yet teachers' contribution constitutes more than half of all repayments to the loan scheme.

A second aspect of the loan scheme that impedes the realization of the revolving fund is the bursary<sup>10</sup> component. Besides constraining the flow of funds to the program, it also poses the question of equity. On average, bursaries constitute about 7% of the total funds disbursed (see Table 4.13). This is equivalent to the full cost of tuition in a year. Bursaries are awarded to more than half of those who get loans. Since the very poor constitute a small percentage of university students (about 8%), it implies that even those who do not deserve bursaries finally benefit. It is therefore necessary that the means-testing instruments used minimize benefits to those who do not deserve a bursary, which is by itself a means of

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<sup>9</sup> It is assumed by the Board and the general public that the self-sponsored students are in formal employment or are from rich families hence do not need financial assistance

<sup>10</sup> A bursary is a special grant to poor students to cover their tuition fees and is hence not repayable.

promoting equity. In addition, cost recovery cannot be fully achieved if bursaries continue to take up a significant portion of the available funds.

**Table 4.15: Summary of bursary awards, 1995/96 – 2002/2003**

YEAR	BURSARY (Kshs)	% OF LOANS	LOAN AWARDS	BURSARY AWARDS	
				All	% loan awards
1995/96	53,543,203.00	4.0	33,283	8,148	24.5
1996/97	60,027,555.00	6.3	31,441	8,606	27.4
1997/98	64,628,000.00	7.8	27,882	8,701	31.2
1998/99	64,622,000.00	7.5	28,748	9,026	31.4
1999/00	68,959,000.00	7.3	29,835	12,531	42.0
2000/01	79,980,000.00	8.5	29,019	13,527	46.6
2001/02	73,041,000.00	7.8	28,206	14,381	51.0
2002/03	56,051,000.00	5.6	31,942	10,630	33.3

**Source: HELB**

The loan programme was designed to promote equity in higher education. However, the process by which the loan program can contribute in ensuring equity in higher education is quite beyond the means of the Board in so far as the whole country is concerned. This is because university education in Kenya disproportionately benefits children from the more affluent families, who themselves went to the best primary and hence secondary schools.<sup>11</sup> Addressing such inequalities is therefore necessary right from the primary level of education.

In conclusion, therefore, the efficiency of means testing as a means of promoting equity in access to the loans and bursaries can only slightly change the situation, since the majority of the applicants (50%) already come from the higher income bracket.

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<sup>11</sup> The selection system for students joining secondary schools in Kenya is based on performance at primary level. Therefore, students from the good primary schools consequently join the prestigious secondary schools, which in turn guarantees them qualification for university admission. Those who do not perform well at primary level have little chance of joining the schools that perform well at national exams; hence their chances of joining university are slimmer.

#### **4.5 Other Challenges for the HELB**

The major challenge facing the Board is raising enough funds to meet the demand for the loans. Not every student benefits from the loan program, and even those who benefit complain of the inadequacy of the funds to cater for all their necessary expenses at the university. The result has been that students resort to various coping mechanisms such as doing small-scale businesses, working part time jobs in between classes and semesters and even involving in criminal activities. It has been reported in the public media that university students have been arrested for robbery, prostitution and selling illicit drugs. The Board has taken such reports into consideration, and in turn reviewed the minimum loan award upwards from Kshs 20,000 to Kshs 30,000.<sup>12</sup>

The issue of cost recovery was not given much thought in the previous system. Even though recovery has improved significantly to over 18% of the loans disbursed, a lot can still be achieved. However, several obstacles stand in the way of the Board. First, the Board is empowered to recover loans only from people who are in formal employment. A significant proportion of graduates is self-employed in the informal sector, and therefore cannot be easily reached. Second, the Board lacks adequate manpower to collect information from those employed. Third, the public attitude towards repayment of university loans is negative to say the least. This attitude stems from the fact that many people believe that university education should be free. In addition, many parents and even students are not informed of their obligations in repayment. Coupled with other external factors such as HIV/Aids and a poorly performing economy, the Board requires more than double its current efforts to realize its goals of full recovery of loans.

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<sup>12</sup> This point arises from a conversation held with the Loans Disbursement Manager of the HELB

A major impediment to loan recovery is lack of proper record-keeping. Though the Board now boasts of computerised systems, it still faces the challenge of overcoming scanty records for past loanees before it was set up. Otieno (2002) reports permanently missing records of past loanees from 1983 to 1986. The possibility is that some employees of the former Loans Disbursement and Recovery Unit of the Ministry of Education who were beneficiaries of the loan scheme colluded to escape responsibility of repayment.

The Board derives enormous powers from the HELB Act for the prosecution of employees and employers who refuse to comply with their loan repayment obligations. The experience of the Board is that no one has been prosecuted for failure to comply with the provisions of the Act. Even within the universities or public sector employment, there are loanees who have not started paying back their loans. The reluctance on the part of the Board is astonishing. A probable explanation to this reluctance is due to the lack of political will to implement some measures that would be seen as politically sensitive. On the other hand, prosecution of defaulters can send a strong signal to the public that the Board is determined to ensure that all the beneficiaries meet their obligations.

## CHAPTER FIVE

### 5 CONCLUSIONS AND POLICY OPTIONS

#### 5.1 Conclusions

The student loan scheme in Kenya was in several ways regarded as a pilot programme for many developing countries, since it was among the first in the developing countries. Initially all university students admitted through the Joint Admissions Board were beneficiaries, though this was later revised to target only needy students as government financial resources became more constrained. This study tried to determine the relevant and significant factors that determine how much financial assistance in the form of a loan and/or bursary a student would get.

The most significant factors derived from the study are family income and expenditure, residence, region of birth and whether or not a student is an orphan. Other variables that played a significant role are father's education level and the number of siblings that the student has in other institutions of learning. The sex and faculty of the student did not play a crucial role in determining the variations in the loan and bursary award respectively. Though the Board applies the student's socio-economic characteristics in means testing, the information is not always accurate, and this may lead to wrong diagnosis of a student's level of need. Often there are cases of students underreporting their income in a bid to get higher loan awards. This problem has been scaled down recently with the introduction of random inspection of students as well as implementation of severe punishment for those caught cheating.

To ensure that only the needy students benefit, there should be a thorough means-testing instrument in place that will countercheck the information provided in order to detect cheating in the loan application forms. Also, in addition to the personal information that the board obtains from the former secondary schools attended by the applicants, this should be extended to the primary schools as well. This would give a clearer picture of the socio-economic characteristics of students. The experience with the loan scheme in Kenya shows that during the earlier years of the Board, loans were awarded even to those who did not qualify at all for financial assistance or those who were politically connected. For example from this study, some students with an annual family income of over 50,000 shillings obtained the same amount of loan as those with less than 10,000 shillings. If loan awards are to be determined by the income levels, then this should strictly be the case. Selection of loan recipients therefore should be strictly for students who come from poor families if equity is to be achieved.

Though initially the loan scheme was faced with very high default rates amounting to over 90% of loans disbursed, the situation is targeted to change with rigorous measures underway to streamline loan recoveries. The still very high level of subsidy drawn from the study implies the Board has not significantly improved its loan recovery obligations seven years since it was established. To improve efficiency and relieve the government of this burden, loan recovery should be conducted in a more professional way just as commercial banks do. Interest rates must reflect the current market rates so that the real financial implications are accounted for. In addition to improving management through recruitment of qualified staff and continuous training, measures such as prosecution of evaders and attaching their property should not be shied away from if they will improve loan recovery.

## 5.2 Policy Options

The above-mentioned recommendations are not by any chance conclusive. To address the overall setbacks of the loan programme, the following key issues must be considered:

1. Recover the cost of financing higher education through improved loan recoveries and introduction of reasonable tuition fees. It has been argued (Otieno, 2002; Woodhall, 1988) that using more specialized government agencies such as the income tax department could improve loan recovery such as is the case in Ghana. In Kenya, the Kenya Revenue Authority could be contracted since it is an efficient state tax collection agency and has done collection of dues on behalf of other organizations. In addition, it has records of employed graduates, which the HELB does not have.
2. The loan scheme should be used as a means of promoting equity in terms of gender and regional disparities that exist in higher education. The study found that gender and regional differences do not play a significantly role in determining bursary awards. Financial incentives through the loan scheme that encourage female students and those from historically marginalized areas to join and complete higher education should be considered.
3. The loan scheme should be converted to an income contingent plan instead of the current mortgage-type loan repayment system. This system would yield several advantages. First, the loans will be recovered faster, and hence imply less government subsidization (with low interest rates, longer repayment periods translate to higher

government subsidy). Second, the student can pay off his/her debts fast enough to allow for further borrowing in the event that the student intends to pursue masters or doctorate degrees. Third, the Board will insure itself against certain eventualities as death, emigration or even layoffs, which are quite common in Kenya.

4. Decentralize the management of higher education financing and encourage the expansion of private and community-supported universities. Private universities absorb a large number of students (about 22% for the Kenyan case), who cannot find admission into public universities, and therefore they relieve the government of the burden of training a large number of the country's workforce.
5. Change the output mix (reallocation of education facilities to certain fields of study that are currently deprived). For instance, medicine, engineering and architecture students should be awarded full loans plus bursary on the grounds that their courses are not only demanding financially, but they also provide services of national importance. This would entail expansion of some faculties such as science and medicine, and phasing out or merging of some courses that are not considered of national priority.
6. Find alternative sources of funding for higher education, such as the private sector, donors, student alumni and religious bodies. The Board should expand its sources of finance with a view to provide a wider resource base. Already some private donor foundations such as the Visa Oshwal Community have shown an interest in supporting the loan scheme through scholarships, but this is still quite small-scale. An alternative source of student loans is the private commercial banks, which have traditionally shied away from lending to students to finance their education. Such banks should be

encouraged to provide soft loans to students, similar to those offered by the savings and credit co-operative societies, but with the government as the guarantor. The Board is currently negotiating with the Kenya Bankers Association to offer soft loans to students.

7. Reduce allowances and restrict these to poor students. Though not likely to be approved by the students, the reduction of allowances to an acceptable level will reduce extravagance on the part of the students and instil financial discipline.<sup>13</sup> Reduced allowances will ensure that more students get access to the funds, thus widening the coverage of the loan scheme.

The Kenyan student loan program has come a long way. From an institution making a gross loss of over 103% (Albrecht and Ziderman, 1991) to one that recovers 20% of its loans, it is one of the few functioning loan schemes in Africa. Though the recovery rate is still low, it is a significant improvement in less than ten years. Major improvements have been in the areas of loan recoveries, reduced administrative costs including the setting up of an interactive website and increased interaction with the loan beneficiaries, employers and the general public. Avenues for improvement still exist in the means testing procedure in order to ensure that the loans serve the purpose for which they were established – and that is the expansion of higher education through equitable distribution of funds.

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<sup>13</sup> A large number of the students especially in the old system spent their allowances on drinking beer and purchasing other luxuries such as radios and television sets.

#### **7.4 Suggestions for future research**

This study is by no means exhaustive. There are a number of issues which are crucial but which have not been tackled by researchers. The following are possible research directions:

1. Incidence of student characteristics by programmes, involving analysis of externality effects such as concentration of ethnic or economic subgroups in certain programme types
2. A model to be developed to analyse the characteristics of students who default, or who are likely to promptly pay back their student loans
3. Internal institutional budget analysis. That is, evaluation of differential costs by university and by program, and how allocation of resources among programs affects their performance.
4. Demand for higher education finance. Research should be designed to estimate aggregate as well as program-specific adjustments that would occur from selected changes in form and level of public subsidization of higher education.

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**Web Sites:**

[www.gse.buffalo.edu/org/IntHigherEdfinance](http://www.gse.buffalo.edu/org/IntHigherEdfinance) (Student loans in general)

[www.hecs.gov.au](http://www.hecs.gov.au) (student loans in Australia)

[www.hrdc-drhc.gc.ca](http://www.hrdc-drhc.gc.ca) (student loans in Canada)

[www.helb.co.ke](http://www.helb.co.ke) (Student loans in Kenya)

[www.worldbank.org](http://www.worldbank.org) (Student loans in other developing countries)

[www.imf.org](http://www.imf.org)

[www.unicef.org](http://www.unicef.org)

[www.canlearn.ca](http://www.canlearn.ca)

[www.info.gov.hk](http://www.info.gov.hk) (student loans in Hong Kong)

[www.academics-india.com](http://www.academics-india.com) (Student loans in India)

<http://star.hsrc.ac.za>

[www.tefsa.co.za](http://www.tefsa.co.za)

[www.slc.co.uk](http://www.slc.co.uk)

**APPENDIX I**

**LOAN RECOVERY AND DISBURSEMENT (KSHS)**

<b>ACADEMIC YEAR</b>	<b>LOANS DISBURSED</b>	<b>LOANS RECOVERED</b>
1974/75	33,290,000	0
1975/76	36,465,800	0
1976/77	38,709,000	0
1977/78	67,218,000	0
1978/79	48,306,580	0
1979/80	57,830,520	0
1980/81	103,769,820	5,240,320
1981/82	0	648,560
1982/83	98,655,480	3,716,740
1983/84	98,544,600	4,060,740
1984/85	101,191,860	6,047,540
1985/86	105,130,040	6,572,580
1986/87	153,520,000	6,812,920
1987/88	305,123,280	8,017,940
1988/89	314,293,360	5,167,963.2
1989/90	400,535,520	7,477,984.25
1990/91	723,972,480	21,312,362.55
1991/92	771,992,000	27,109,362.55
1992/93	634,487,953	23,172,363.4
1993/94	709,480,470	32,837,397.2
1994/95	1,043,252,960	57,486,980.55
1995/96	1,323,622,436	59,200,820.15
1996/97	954,790,022.3	83,677,691.35
1997/98	832,771,142.9	205,698,386.2
1998/99	857,234,477	28,139,4613
1999/2000	947,292,300	397,398,175.6
2000/2001	939,991,750	513,862,847
2001/2002	938,267,450	548,808,139.2
2002/2003	1,074,017,000	335,772,883.5
<b>TOTAL</b>	<b>13,713,756,301</b>	<b>2,641,495,310</b>

**APPENDIX II**

**STUDENTS LOAN APPLICATION FORM**  
**CONFIDENTIAL**

**HELB ACT (1995)**

**HIGHER EDUCATION LOANS BOARD**

University Way  
Anniversary Towers, 18<sup>th</sup> Floor  
P O Box 69489  
Tel:251877/246590  
Email: helb@helb.co.ke  
Website: <http://www.helb.co.ke>

IF YOU ARE APPLYING FOR HELB LOAN FOR THE FIRST TIME PLEASE AFFIX TWO PASSPORT SIZE PHOTOGRAPHS AND WRITE YOUR FORM SERIAL NUMBER ON THE BACK OF THE PHOTOS

SERIAL NO.

REG. NO.

NAME:

**PART A: STUDENT GUIDANCE NOTES**

Before filling this loan application form please read these guidelines carefully. You are required to fill in all appropriate spaces.

1. The Higher Education Loans Board issues this loan application form free of charge.
2. Any student or person who is filling a loan application form and knowingly makes a false statement whether orally or in written form relating to any matter affecting the request for loan shall be guilty of an offence and shall be liable to a fine of not less than Kenya shillings thirty thousand (Kshs 30,000) or to imprisonment for a term of not less than three years (Section 13 (3) of the Higher Education Loans Board Act (1995)).
3. Incomplete loan application forms (e.g. leaving blank spaces) will not be processed.
4. Where documentary evidence is required and not provided, the form will not be processed. Copies of national ID of self, parents and guardians must be attached.
5. Any application form wholly completed with 'not applicable' (N/A) shall not be processed. Items that need coding must be coded correctly (see last pages).
6. Approved loans will only be credited into individual applicants bank accounts as indicated in PART B number 12.
7. A loan granted on the basis of false information shall be withdrawn/cancelled and the applicant may be subject to prosecution thereafter by the Board.

**PART B: STUDENT’S PERSONAL DETAILS**

1. FULL NAME: (As used in the Identity Card)  
Mr./Mrs./Miss.....
2. Sex Male ( ) Female ( )  
Last First Middle
3. a) Date of birth.....I.D. No.  
PIN No (optional)  
b) Are you handicapped Yes ( ) No ( ). If yes tick the appropriate box.  
Visual ( ) Physical ( ) Hearing ( ) Mental ( )  
Any other (specify).....  
c) Are you employed Yes ( ) No ( ). If yes given the name of employer, address  
and your employment number  
.....
4. **PLACE OF BIRTH**  
Village/Town/Estate of Birth..... Sub location.....  
Location..... Division.....  
District..... District Code.....
5. **MARITAL STATUS**  
Single ( ), Married ( ), Divorced ( ), Separated ( ), Widowed ( )
6. If married, a) Name of your spouse.....  
b) Name and address of employer of your spouse  
.....
7. Number of children.....
8. Are you a single parent? Yes ( ) No ( )
9. Present mailing address.....  
Post Office Box No. ....Town/District.....  
Nearest Trading Centre/School/Street/Plot/House No.....
10. Permanent home address .....  
Post Office Box No. ....Town/District.....  
Nearest Trading Centre/School/Street/Plot/House No.....
11. Name of District of Residence.....  
Code..... Division.....  
Location..... Sub location.....  
Estate/village..... House/Plot No.....

**12. BANK DETAILS (PUBLIC UNIVERSITIES ONLY)**

(For KCB, NBK and Cooperative Bank of Kenya codes read pages 11 and 12)

I) For KCB, NBK and Cooperative Bank of Kenya  
 Name of your Bank.. .....Branch (where a/c is opened).....  
 Personal account no..... Branch code (where applicable).....

II) Postbank

Branch	Office Code	A/C No	Check Digit

13. Is your father alive? Yes ( ) No ( )  
 If yes, give his age.....(Attach a copy of his National I.D card if applying for the first time)  
 If no give date of death.....

14. Is your mother alive? Yes ( ) No ( )  
 If yes, give his age.....(Attach a copy of his National I.D card if applying for the first time)  
 If no give date of death.....

(If no in either 13 or 14 or both attach copies of death certificates which should be certified by only one of the following: Commissioner of Oaths, District Officer or Magistrate for validity)

15. Are you a child of a single parent? Yes ( ) No ( )  
 If yes, tick the appropriate box in No. 16 below

16. Unmarried Parent   
 Divorced Parent   
 One parent is deceased   
 Separated Parent

17. If both parents are not alive, who has been paying for your education?

Guardian ( ) Sponsor ( ) Public Trustee or Estate Administrator ( )

Full name, telephone number and address of the above.....

.....

18. If yes in 15 above, the information should be certified by either a chief, Kadhi, pastor or priest

I know the applicant and certify that the information given I 15-17 above is true/false to the best of my knowledge  
 Local chief/Kadhi/Pastor

Name.....signature/stamp.....

19. **FATHER’S DETAILS (WHETHER LIVING/DECEASED)**

- Name .....
- 20. I.D. No.....PIN No.....
- 21. Highest level of education.....
- 22. Occupation/profession.....
- 23. Name and address of employer.....Tel No.....
- 24. If retired, name and address of last employer.....Tel No.....

25. **MOTHER’S DETAILS (WHETHER LIVING/DECEASED)**

- 26. Name .....
- 27. I.D. No.....PIN No.....
- 28. Highest level of education.....
- 29. Occupation/profession.....
- 30. Name and address of employer.....Tel No.....
- 31. If retired, name and address of last employer.....Tel No.....

32. **GUARDIAN’S DETAILS (WHETHER LIVING/DECEASED)**

- 33. Name .....
- 34. I.D. No.....PIN No.....
- 35. Highest level of education.....
- 36. Occupation/profession.....
- 37. Name and address of employer.....Tel No.....
- 38. If retired, name and address of last employer.....Tel No.....

**PART C: UNIVERSITY/COLLEGE DETAILS**

- 1.
  - a) Name of University/College.....Code.....
  - b) Campus Name.....Campus Code.....
- 2. Faculty..... Reg. No.....
- 3. Tick the year of study for which you are applying for the loan.

1	2	3	4	5	6	7

- I) Year of admission to the university.....
- II) Are you repeating the year indicated in 3 above? Yes/No.....

III) Is this your final year of study? Yes/No.....

CERTIFICATION BY THE UNIVERSITY/COLLEGE/INSTITUTION DEAN OF STUDENTS (ONLY FOR CONTINUING STUDENTS)

NAME OF COURSE

Pre-University  Certificate  Diploma  Degree

I certify that the information given above is true and that the applicant is a bona fide student of this university/college.

.....  
Name of Dean of students                      Signature and Official Rubber Stamp

**PART D: EDUCATIONAL BACKGROUND OF APPLICANT**

**NB** (Only students applying for the loan for the first time should fill this part)

Full KCSE Index No..... year of KCSE.....

Name as used in School/college (If not as part B1)

.....  
Last    First    Middle

Secondary level

Name of school.....

Address.....

Tel. No.....

Last primary school attended

Name of school.....

Address.....

Tel. No.....

**PART E: INFORMATION ABOUT YOUR FINANCIAL ARRANGEMENTS**

NOTE: HELB can give a loan of up to Kshs 42,000 per year but the amount is not guaranteed and you should be able to raise part of the MONEY ON YOUR OWN. Please indicate the amount of the loan being applied for.

1. How much loan are you applying for from the Higher Education Loans Board this academic year? Kshs.....
2. Indicate the amount you expect to raise from your own family/parental sources including harambee and donors/sponsors/charities for your university education this academic year: Kshs.....

**3. FINANCIAL STATUS**

GROSS INCOME IN THE LAST 12 MONTHS - (KSH)

	SELF	SPOUSE	PARENTS		TOTAL
			FATHER	MOTHER	
GROSS INCOME FORM EMPLOYMENT (SALARY OR PENSION) ATTACH LATEST COPY OF PAYSIP CERTIFIED BY EMPLOYER					
INCOME FROM BUSINESS E.G. SHOP/HOTEL/RENT/BAR E.T.C					
INCOME FROM FARMING (CROPS, LIVESTOCK PRODUCTS) OR FISHING, etc.					
INCOME FROM OTHER SOURCES/SHARES/DIVIDENDS/INTEREST etc.					
<b>SUBTOTAL KSHS</b>					
INCOME FROM LOANS (e.g. CO-OPERATIVE AND BANK)					
INCOME FROM HARAMBEE AND DONATIONS					
<b>TOTAL KSHS</b>					
<b>GRAND TOTAL KSHS</b>					

4. What type of house does your family own/live in?

- a. Permanent stone/brick-walled
- b. Mud-walled and grass thatched
- c. Semi-permanent
- d. Rental (state rent per month)

Kshs.....

5. Please fill in the following if owned by your family

ITEM	NO OF UNITS	REGISTRATION NO	MONTHLY INCOME IN KSHS
Saloon car			
Matatu			
Bus			
Tractor			
Posho Mill			
Any Other			

6. EXPENSES

**APPLICANT'S CHILDREN IN EDUCATIONAL INSTITUTIONS**

CHILD'S NAME	INSTITUTION'S NAME	YEAR OF STUDY/CLASS	INSTITUTION TYPE (PRIMARY/SEC/COLLEGE/UNIV)	EDUCATIONAL EXPENDITURE IN THE LAST 12 MONTHS (KSHS)
<b>GRAND TOTAL</b>				

Please enclose documentary evidence such as school fees structure, receipts/invoices e.t.c

7. **PARENT'S CHILDREN (OTHER THAN THE APPLICANT) IN EDUCATIONAL INSTITUTIONS**

CHILD'S NAME	INSTITUTION'S NAME	YEAR OF STUDY/CLASS	INSTITUTION TYPE (PRIMARY/SEC/COLLEGE/UNIV)	EDUCATIONAL EXPENDITURE IN THE LAST 12 MONTHS (KSHS)
<b>GRAND TOTAL</b>				

Please enclose documentary evidence such as school fees structure, receipts/invoices e.t.c

8. **To be filled by students with brothers/sisters in universities applying for the HELB loan this academic year**

NAME OF BROTHERS/SISTERS	ID NO	REG NO	UNIVERSITY	SER. NO. OF LOAN APPL.FORM

9. Other family expenditure in the last 12 months in Kshs

ITEM	APPROX. AMOUNT IN KSHS
Food (estimate)	
Medical (attach evidence)	
Clothing (estimate)	
Rent (attach evidence)	
Travel/commuting & fuel expenses (estimate)	
Tax i.e. PAYE, NHIF, Service charge (attach evidence)	
Mortgage and loans repayments (attach evidence)	
Other	
<b>Grand Total</b>	

**PART F: DECLARATION. (This part should be filled before a Commissioner of Oaths/District Officer/Magistrate**

**1. Applicant's Declaration**

I declare that the information given herein is true to the best of my knowledge. I also understand that this is a loan that must be repaid.

Applicant's full  
Name.....

I D No..... Reg. No.....

Date.....Signature.....

**2. Parent's/Guardian's Declaration**

I declare that I have read this form/this form has been read to me, and I hereby confirm that the information given herein is true to the best of my knowledge

Parent's Name.....

I D No..... Date.....Signature/Thumb print.....

3. **Commissioner of Oaths/District Officer/Magistrate**

The above named applicant and his/her parent/guardian appeared before me and made the solemn declaration that the information given herein is correct.

.....Date.....  
Name                      Signature/Official Rubber Stamp

## APPENDIX III

### Hidden Subsidies and Government Losses on Selected Student Loan Programmes

Country	Nominal interest rate (%)	Real interest rate (%)	Maximum repayment period (years)	Hidden grants (% of loan)	Government loss with default (%)	Government loss with default and admin costs (%)	Average loan recovery ratio (% of loan)	Year	Estimates
<b>Mortgage</b>									
Colombia I	11.0	-10.6	8	73	76	87	13	1978	Admin 2%
Colombia II	24.0	3.0	5	29	38	47	53	1985	Admin 2%
Sweden I	4.3	-3.0	20	61	62	70	30	1988	Admin 1%
Indonesia	6.0	-2.3	10	57	61	71	29	1985	Default 10% Admin 2%
USA	8.0	3.8	10	29	41	53	47	1986	Admin 2%
Hong Kong	0.0	-6.3	5	43	43	47	53	1985	Admin 2%
UK	6.0	0.0	7	26	30	41	59	1989	Default 5% Admin 1%
Denmark	8.0	1.6	10	52	56	62	38	1986	Admin 1%
Finland	6.5	-0.6	10	45	46	52	48	1986	Default 2% Admin 1%
Barbados	8.0	4.1	12	13	18	33	67	1988	Default 20% Admin 2%
Kenya	2.0	-6.9	10	70	94	103	d	1989	Admin 2%
Quebec	10.0	5.2	10	31	31	37	63	1989	Admin 1%
Chile	Varies	1.0	10	48	69	82	18	1989	Admin 2%
Japan	0.0	-1.4	20	50	51	60	40	1987	Admin 1%
Venezuela	4.0	-23	20	93	98	108	d	1991	Admin 3%
Honduras	12.0	3	8	51	53	73	27	1991	Admin 5%
Brazil I	15.0	-35.0	5	91	94	98	2	1983	Default 0% Admin 2%
Brazil II	318.0	-14.9	8	62	65	71	29	1989	Default 0% Admin 2%
Jamaica I	6.0	-10.7	9	74	84	92	8	1987	Admin 2%
Jamaica II	12.0	-5.6	9	56	62	70	30	1988	Default 20% Admin 2%
<b>Income contingent</b>									
Australia	Varies	0.0	17	48	52	57	43	1990	Evasion 3% Admin 0.5%
Sweden II	Varies	1.0	10	28	30	33	67	1990	Evasion 3% Admin 0.5%

**Notes:**

1. Countries with II and I refer to situations where the loan program underwent reform.
2. Nominal interest rate refers only to the rate during repayment period.
3. Real interest rates use Purchasing Power Parity formula, where inflation is based on the average of the 1980-88 period as reported in the World Bank Development Reports.
4. The repayment length is the maximum prescribed in the loan, except in the two income contingent loans where it is the repayment length that is implied by the average income profile of the graduate.
5. The hidden grant percentage is calculated as a discounted cash flow of the student account and excludes default and administrative costs.
6. The loss with default and administrative costs subtracts an annual administrative cost related to outstanding debt each year.
7. The government loss due to default subtracts the percent of default from each year of the repayment stream; d denotes no net generation of revenue.
8. Year is date from which loan information was collected and from which inflation calculations were made.

Source: Albrecht and Ziderman (1995)

## APPENDIX IV

### UNIVERSITY ENROLMENT IN SOME AFRICAN COUNTRIES

COUNTRY	1980	1987-1990	GROWTH IN %
Benin <sup>2</sup>	4,000	8,883	+122
Burkina Faso <sup>3</sup>	1,600	4,760	+108
Burundi <sup>2</sup>	1,900	2,715	+45
Cameroon <sup>5</sup>	11,500	34,000	+196
Central African Republic <sup>2</sup>	1,700	2,600	+53
Chad <sup>1</sup>	2,000	2,048	+2
Congo <sup>4</sup>	7,300	11,310	+55
Cote d'Ivoire <sup>5</sup>	19,600	22,000	+12
Gabon <sup>2</sup>	2,000	2,741	+37
Kenya <sup>5</sup>	7,945	38,848	+389
Madagascar <sup>5</sup>	22,600	37,181	+65
Mali <sup>1</sup>	5,100	4,715	-8
Niger <sup>3</sup>	1,400	3,317	+137
Senagal <sup>4</sup>	13,600	18,550	+36
Zaire <sup>4</sup>	28,500	16,239	-43

Source: Wandiga (1996)

**Note:**

- 1 Small no growth systems
- 2 Small but expanding systems
- 3 Small rapid expanding systems
- 4 Medium size systems
- 5 Large multi-institution systems

## APPENDIX V

### ENROLMENT AT PUBLIC UNIVERSITIES (1993-2000)

YEAR	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000
Undergraduates	37019	37694	40231	36188	33894	3394	33404
Postgraduates	1652	2107	2129	1764	2559	3200	2597
Other	572	1267	1549	1395	551	3147	2412
TOTAL	39243	41068	42909	39347	37004	40268	38413

Source: Government of Kenya, Statistical Abstract (2001)

## APPENDIX VI

### ENROLMENT AT PRIVATE ACCREDITED UNIVERSITIES (1995-2001)

YEAR	1995/96	1996/97	1997/98	1998/99	1999/2000	2000/2001
DAYSTAR	1123	1250	1292	1681	2278	1812
BARATON	883	922	842	952	1044	1306
CATHOLIC	758	1207	1304	1402	1617	1477
USIU	1252	1753	1808	1901	1960	2311
SCOTT	58	78	82	96	103	93
TOTAL	4074	5210	4024	6032	7002	6999

Source: Government of Kenya, Statistical Abstract (2001)

## APPENDIX VII

### SOME EXISTING STUDENT LOAN PROGRAMMES

Country	Repayment Mechanism	Administering Institution	Purpose of Support	Average Loan Value	Students with Loans	Data Year
<b>LATIN AMERICA AND CARIBBEAN</b>						
Argentina	Mortgage Loan	Autonomous body	Living			
Barbados	Mortgage Loan	Autonomous body	Living	\$11000	12%	1989
Brazil	Mortgage Loan	Commercial banks	T and L	\$400	10%	1987
Chile	Mortgage Loan	Universities	Tuition		21%	
Colombia	Mortgage Loan	Autonomous body	Tuition	\$280	9%	1987
Costa Rica	Mortgage Loan	Commercial banks	T and L		6%	
Jamaica	Mortgage Loan	Autonomous body	T and L	\$405	20%	1987
Mexico	Mortgage Loan	Commercial banks	T and L			
Nicaragua	Mortgage Loan	Autonomous body			6%	1987
Peru	Mortgage Loan	Autonomous body				
Venezuela	Mortgage Loan	Other	T and L	\$2200	1%	1991
<b>ASIA</b>						
China	Mortgage Loan	Universities	T and L		30%	1987
India	Mortgage Loan	Other	T and L	\$85	1%	1989
Korea	Mortgage Loan	Commercial banks	T and L			
Malaysia	Mortgage Loan	Commercial banks	T and L	\$1300		
Pakistan	Mortgage Loan	Commercial banks	T and L			
Philippines	Mortgage Loan		T and L		1%	
<b>MIDDLE EAST AND AFRICA</b>						
Jordan	Mortgage Loan				12%	
Morocco	Mortgage Loan	Commercial banks	T and L		<1%	
Ghana	Inc contingent*	Government dept	Living	\$200	68%	1990
Kenya	Mortgage Loan	Autonomous body	Living	\$845	100%	1990
Nigeria	Mortgage Loan		Living			
Rwanda	Mortgage Loan					
Malawi	Mortgage Loan			\$80	50%	1989
<b>INDUSTRIAL COUNTRIES</b>						
Australia	Mortgage Loan	Commercial banks	Tuition	\$1750	81%	1990
Denmark	Mortgage Loan	Commercial banks	Living	\$3700		1985
Canada	Mortgage Loan	Commercial banks	T and L	\$2800	59%	1990
France	Mortgage Loan		Living		1%	
Norway	Mortgage Loan	Autonomous body	Living	\$4000	80%	1986
Japan	Mortgage Loan	Autonomous body	T and L	\$2500	19%	1987
UK	Mortgage Loan	Autonomous body	Living	\$750	28%	1992
USA	Mortgage Loan	Commercial banks	T and L	\$2176	28%	1987
Sweden	Inc contingent*	Autonomous body	Living	\$5828		

Source: Albrecht and Ziderman (1995)

Note:

1. Blanks imply information was not available
2. Programmes in Indonesia, Israel, Sri Lanka, Tanzania and Burundi have been abandoned
3. T and L = Tuition and Living
4. \*Inc contingent = income contingent loan repayment method

## APPENDIX VIII

### MARGINAL EFFECTS AFTER MULTINOMIAL LOGISTIC REGRESSION

Note: (\*) dy/dx is for discrete change of dummy variable from 0 to 1

$$y = \text{Pr}(\text{Loan}=0-20,000) = 3.585e-12$$

Variable	dy/dx	Std. Err.	Z	P> z	[95% C.I. ]		X	RRR
Sex*	1.06e-12	.	.	.	1.1e-12	1.1e-12	.690751	1.06401
Faculty*	6.79e-13	.	.	.	6.8e-13	6.8e-13	.36416	1.04829
Residence*	-2.12e-12	.	.	.	-2.1e-12	-2.1e-12	.80058	.355976
Income	2.22e-17	.	.	.	2.2e-17	2.2e-17	73362.2	.999996
Expenditure	2.88e-18	.	.	.	2.9e-18	2.9e-18	54181.9	.999985
Mother's education	-9.06e-13	.	.	.	-9.1e-13	-9.1e-13	7.73988	0.98878
Father's educ	5.48e-13	.	.	.	5.5e-13	5.5e-13	9.26879	1.00658
Siblings	7.99e-13	.	.	.	8.0e-13	8.0e-13	2.75723	1.00021
Bursary	-6.39e-14	.	.	.	-6.4e-14	-6.4e-14	2473.99	0.67685
Father absent*	.9999945	.	.	.	.999994	.999994	.445087	0.96996
D <sub>2</sub>	-3.78e-12	.	.	.	-3.8e-12	-3.8e-12	.161850	1.00087
D <sub>3</sub>	-7.92e-10	.00000	-1.25	0.210	-2.0e-09	4.5e-10	.141618	0.99121
D <sub>4</sub>	-3.36e-12	.	.	.	-3.4e-12	-3.4e-12	.245665	0.99917
D <sub>5</sub>	-6.05e-10	.00000	-1.25	0.210	-1.6e-09	3.4e-10	.132948	1.00014
D <sub>6</sub>	-4.07e-12	.	.	.	-4.1e-12	-4.1e-12	.248555	1.00042
D <sub>7</sub>	1.67e-11	.	.	.	1.7e-11	1.7e-11	.020231	1.00002

$$y = \text{Pr}(\text{Loan}=25,000-27,500) = .02963482$$

Variable	dy/dx	Std. Err.	Z	P> z	[95% C.I. ]		X	RRR
Sex*	.0162933	.01301	1.25	0.210	-.009206	.041793	.690751	.644728
Faculty*	-.0132757	.01313	-1.01	0.312	-.039008	.012456	.364162	1.12136
Residence*	-.0383048	.02935	-1.31	0.192	-.095831	.019221	.800578	.606836
Income	2.06e-07	.00000	1.02	0.309	-1.9e-07	6.0e-07	73362.2	.999971
Expenditure	7.49e-08	.00000	0.68	0.494	-1.4e-07	2.9e-07	54181.9	.999993
Mother's education	-.0072287	.00273	-2.65	0.008	-.012573	-.001885	7.73988	1.01934
Father's educ	.0028912	.00267	1.08	0.278	-.002336	.008119	9.26879	1.03714
Siblings	-.000232	.00382	-0.06	0.952	-.007717	.007253	2.75723	1.10542
Bursary	3.54e-06	.00001	0.41	0.680	-.000013	.00002	2473.99	
Father absent*	-.0453612	.03568	-1.27	0.204	-.115296	.024574	.445087	1.00026
D <sub>2</sub>	-.0312619	.01067	-2.93	0.003	-.052184	-.01034	.161850	2.33235
D <sub>3</sub>	-.0307604	.01016	-3.03	0.002	-.050681	-.01084	.141618	2.40942
D <sub>4</sub>	-.0272663	.01088	-2.51	0.012	-.048591	-.005941	.245665	2.37891
D <sub>5</sub>	-.0287269	.00964	-2.98	0.003	-.047612	-.009842	.132948	2.4599
D <sub>6</sub>	-.028042	.01097	-2.56	0.011	-.049541	-.006543	.248555	2.3799
D <sub>7</sub>	-.0686855	.01915	-3.59	0.000	-.10621	-.031161	.020231	2.6999

$$y = \text{Pr}(\text{Loan}=30000) = .69986195$$

Explanatory variables	dy/dx	Std. Err.	Z	P> z	X
Sex Male=D <sub>m</sub> =1	.016293	.01301	1.25**	0.210	.041793

	Female= $D_f=0$	Left	Left	Left	Left	Left
Faculty	Science= $D_s=1$	-.0132757	.01313	-1.01	0.312	.012456
	Arts= $D_a=0$	Left	Left	Left	Left	Left
Residence	Rural= $D_r=0$	-.0383048	.02935	-1.3**	0.192	.019221
	Urban $D_u=1$	Left	Left	Left	Left	Left
Income	Continuous	2.06e-07	.00000	1.02	0.309	6.0e-07
Expenditure	Continuous	7.49e-08	.00000	0.68	0.494	2.9e-07
Mother's educ	Continuous	-.0072287	.00273	-2.65*	0.008	-.001885
Father's educ	Continuous	.0028912	.00267	1.08	0.278	.008119
Siblings	Continuous	-.000232	.00382	-0.06	0.952	.007253
Bursary	Continuous	3.54e-06	.00001	0.41	0.680	.00002
Father absent	Father absent= $F_a=1$	-.0453612	.03568	-1.27**	0.204	.024574
	Father present= $F_p=0$	Left	Left	Left	Left	Left
Region	$D_1 =$ Nairobi	Left	Left	Left	Left	Left
	$D_2 =$ Central	-.0312619	.01067	-2.93*	0.003	-.01034
	$D_3 =$ Nyanza	-.0307604	.01016	-3.03*	0.002	-.01084
	$D_4 =$ Rift Valley	-.0272663	.01088	-2.51*	0.012	-.005941
	$D_5 =$ Western	-.0287269	.00964	-2.98*	0.003	-.009842
	$D_6 =$ Eastern	-.028042	.01097	-2.56*	0.011	-.006543
	$D_7 =$ Coast	-.0686855	.01915	-3.59*	0.000	-.031161

$$y = \text{Pr}(\text{Loan}=35,000) = .23193363$$

Variable	dy/dx	Std. Err.	Z	P> z	[95% C.I. ]	X	RRR
Sex*	-.0653948	.06206	-1.05	0.292	-.187028 .056238	.69075	.75880
Faculty*	-.0077281	.05707	-0.14	0.892	-.119593 .104137	.36416	1.0683
Residence*	-.1138113	.08911	-1.28	0.202	-.288461 .060838	.80058	.69588
Income	-1.67e-06	.00000	-2.64	0.008	-2.9e-06 -4.3e-07	73362.	.99999
Expenditure	1.37e-06	.00000	2.18	0.029	1.4e-07 2.6e-06	54182	1.0005
Mother's education	.013486	.00994	1.36	0.175	-.005989 .032961	7.7399	1.0684
Father's educ	.0083538	.01065	0.78	0.433	-.012525 .029233	9.2688	1.0353
Siblings	.0053539	.01546	0.35	0.729	-.024955 .035663	2.7572	1.1338
Bursary	-.0000702	.00003	-2.53	0.011	-.000125 -.000016	2473.9	
Father absent*	-.0600216	.02757	-2.18	0.030	-.114067 -.005976	.44509	1.0002
$D_2$	-.2078474	.03875	-5.36	0.000	-.28379 -.13191	.16185	.76553
$D_3$	-.2273266	.03928	-5.79	0.000	-.304313 -.15034	.14162	.76591
$D_4$	-.2388022	.04982	-4.79	0.000	-.336442 -.14116	.24566	.89886
$D_5$	-.2424263	.03959	-6.12	0.000	-.320014 -.16484	.13295	.65554
$D_6$	-.2144256	.04664	-4.60	0.000	-.305832 -.12302	.24856	.86887
$D_7$	-.1397869	.1333	-1.05	0.294	-.401043 .12147	.02023	.99997

$$y = \text{Pr}(\text{Loan} = 40,000) = .02555029$$

Variable	dy/dx	Std. Err.	Z	P> z	[95% C.I. ]		X	RRR
Sex*	-.0090112	.01306	-0.69	0.490	-.034618	.016596	.690751	1.90678
Faculty*	.0021547	.01099	0.20	0.845	-.019377	.023686	.364162	1.01498
Residence*	-.0095035	.02041	-0.47	0.641	-.049498	.030491	.800578	.31696
Income	-7.53e-07	.00000	-2.31	0.021	-1.4e-06	-1.1e-07	73362.2	1.0004
Expenditure	-1.58e-07	.00000	-0.51	0.611	-7.7e-07	4.5e-07	54181.9	1.0004
Mother's education	.0003151	.0018	0.18	0.861	-.003206	.003836	7.73988	.7792
Father's educ	.0012625	.00202	0.62	0.532	-.002702	.005227	9.26879	1.1482
Siblings	.0002363	.0029	0.08	0.935	-.005446	.005918	2.75723	.99393
Bursary	-3.38e-06	.00000	-0.75	0.452	-.000012	5.4e-06	2473.99	1.0000
Father absent*	-.0069616	.00611	-1.14	0.255	-.018937	.005013	.445087	.99995
D <sub>2</sub>	-.0299805	.02046	-1.47	0.143	-.070073	.010112	.161850	.89998
D <sub>3</sub>	-.028279	.0194	-1.46	0.145	-.066311	.009752	.141618	.76998
D <sub>4</sub>	-.0351545	.02441	-1.44	0.150	-.083006	.012697	.245665	.75432
D <sub>5</sub>	-.0288264	.0194	-1.49	0.137	-.066857	.009204	.132948	.720958
D <sub>6</sub>	-.0389211	.02667	-1.46	0.144	-.091193	.013351	.248555	.754390
D <sub>7</sub>	.0094237	.05953	0.16	0.874	-.107256	.126103	.020231	1.00067

$$y = \text{Pr}(\text{Loan} = 42,000) = .0130193$$

Explanatory variables		ODDS RATIO <sup>14</sup>	dy/dx	Std. Err.	Z	P> z	X
Sex	Male=D <sub>m</sub> =1	1.089245	.0030025	.00531	0.57	0.572	.690751
	Female=D <sub>f</sub> =0	Left	Left	Left	Left	Left	Left
Faculty	Science= D <sub>s</sub> =1	1.059213	.0040303	.00605	0.67	0.505	.364162
	Arts= D <sub>a</sub> =0	Left	Left	Left	Left	Left	Left
Residence	Rural= D <sub>r</sub> =0	Left	Left	Left	Left	Left	Left
	Urban D <sub>u</sub> =1	0.330999	-.02195	.01493	-1.47**	0.141	.800578
Income	Continuous	0.005092	-1.40e-08	.00000	-0.16	0.877	73362.2
Expenditure	Continuous	0.999985	-1.86e-07	.00000	-1.40**	0.162	54181.9
Mother's education	Continuous	0.82062	-.0030592	.00126	-2.43*	0.015	7.73988
Father's educ	Continuous	1.256298	.0029635	.00127	2.33*	0.020	9.26879
Siblings	Continuous	2.331815	.0003213	.00148	0.22	0.829	2.75723
Bursary	Continuous	3.12264	3.96e-06	.00000	1.72**	0.086	2473.99
Father absent	Father absent=F <sub>a</sub> =1	2.3864822	-.010392	.00627	-1.66 **	0.097	.445087
	Father present=F <sub>p</sub> =0	Left	Left	Left	Left	Left	Left
Region	D <sub>1</sub> = Nairobi	Left	Left	Left	Left	Left	Left
	D <sub>2</sub> = Central	18.20731	.9992641	.00052	1936*	0.000	.161850
	D <sub>3</sub> = Nyanza	18.7074	.9990542	.00088	1130*	0.000	.141618
	D <sub>4</sub> = Rift Valley	17.8487	.9997334	.00003	38064*	0.000	.245665
	D <sub>5</sub> = Western	18.9879	.9989534	.00099	1010.5*1	0.000	.132948
	D <sub>6</sub> = Eastern	18.7132	.9998086	.00003	34248.3*	0.000	.248555
	D <sub>7</sub> = Coast	-24.9623	-.0204	.00705	-2.89 *	0.004	.020231

**Outcome Loan =30,000 is the comparison group**

<sup>14</sup> Some authors refer to this as the relative risk ratio