

Equity in Higher Education Loan and Bursary Allocations among Diploma Students: Lessons from National Polytechnics in Kenya

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Abstract: An analysis of the composition of Higher Education Loans Board (HELB) loan recipients by socio-economic status has shown that a paltry 23.6% of the recipients were from the low socio-economic status, an indication that HELB serves mainly students from medium and high socio-economic backgrounds. This suggests that HELB funding perpetuates disparities in higher education - a clear indication that the poor are still under-represented in HELB funding. This revelation demands investigation, hence this paper which seeks to examine the level of equity in higher education loans and bursary allocations among diploma students in national polytechnics in Kenya. The paper is anchored on the findings of a study that was carried out in Eldoret Polytechnic, Kisumu Polytechnic, and Kenya Technical Training Collage (KTTC). The target population comprised 8,202 second year diploma students' benefiting from higher education loans and bursaries. Proportionate simple random sampling was used to sample 330 loan recipients. Data was collected using a questionnaire and document analysis for loans and bursaries disbursements. Descriptive and inferential data was analyzed using means, percentages, principal component analysis and Gini coefficient, respectively. The Gini coefficient indicated that there was inequitable distribution of HELB loans and bursary among the three national polytechnic students based on their socio-economic status. The study also revealed that there is inequitable distribution of loans and bursaries among the male and female students, while the distribution of both loans and bursary among the polytechnics was equitable. This paper recommends that HELB should develop a system through which they can be able to triangulate the information given by the students and the referees at the point of loan application.

Keywords: HELB, Equity, Loans, Bursaries, Gender, Socio-Economic Status, Polytechnics.

INTRODUCTION

The attainment of Kenya's Vision 2030 requires middle level training offered by tertiary institutions. However, there has been low enrolment in national polytechnics due to high costs and low rates of returns. The extension of higher education loan awards in national polytechnics is intended to equalize opportunities in tertiary education by equitably allocating loans and bursaries to diploma students. However, government subsidies and loans have been accused of perpetuating the already existing inequalities by awarding loans and bursaries to undeserving students. The criteria, upon which the decisions for awarding these loans and bursaries for diploma students are made is wanting.

Studies done in China for instance have shown that socioeconomic status was more powerful in dictating who accessed higher education loans. For example, Xiao's [1] study revealed that despite Wuhan University of Science and Technology (WUST) in Hubei being located in agricultural and heavy industrial province, the proportion of students with family background as officials and executives increased faster

while the proportion of students with less illustrious family backgrounds decreased about 10% since they were not able to access loans to finance their education.

Besides having low participation rates, access to higher education is highly inequitable. There are three important determinants of inequity: gender, socioeconomic status (SES), and region. In almost all Sub-Saharan Africa countries, with the possible exceptions of Mauritius and South Africa, women have substantially lower participation rates [2]. Other scholars have shown that there are significant disparities in college access and choice among students from different socioeconomic groups [3]. According to Walpole [4] whether to enroll to into private or public university highly depends on SES and that students from low-income background are disproportionately represented in either of the institutions.

According to Lilis and Tian [5], the very real cost of college attendance is also an influential and salient factor in students' (and their parents') decisions about the types of post-secondary institutions they aspire to attend. Conley [6] found that low SES parents

typically have lower levels of education and thus fewer financial resources to support their children in college. Indeed, the higher the tuition, the less likely students from low socioeconomic backgrounds were to apply or enroll, opting instead for less expensive institutions that are often closer to home [5]. This may be exacerbated by the understandable resistance on the part of lower-income families to take out loans to finance their children's education [7]. Perna [8] has suggested that, because they are relative, college costs represent a bigger psychological barrier for low SES students than for higher SES students. Consequently, she questions the ability of high tuition/high aid systems to allow these students access to a full range of college choices.

Other studies like Hawkins' [9] have also compared the effect of family income on access to a national and a provincial university. The results suggested that there are barriers to entry for the lowest income students to the most prestigious and highest quality tertiary education. This also indicates that majority of the students from poor families are not exposed to the financial support in terms of loans and bursary for their education.

While researchers have not only found that the proportion of students from rural family background enrolled in tertiary education is low in the higher quality universities, it is also evident that they tend to study "cold" subjects. Here "cold" means of low social status, less economic return, or even difficult in parlay into employment after graduation. In this regard access to higher education can be viewed as either increasing participation or widening participation. The latter implies that higher education has to effectively reach the traditionally underrepresented and disadvantaged sections such as students from economically backward regions, students from poor households and female students. In other words equal access to higher education surpasses underrepresentation by gender, socioeconomic backgrounds or region [10].

In Kenya, studies done have also shown that inequalities exist in access to higher education. Knight and Sabot [11] study found that in Kenya 36 percent of employees whose fathers had no formal education had secondary or higher education compared to 66% of those whose fathers had primary education and 84% for those whose fathers had secondary or higher education. According to Knight and Sabot, this is an indication that children from well-educated family backgrounds tend to have a higher probability of getting secondary education and progressing to universities than those who are not. It is also clear that the children from well-educated families had an upper hand in accessing education support through government loans and bursary.

A study by Boit [12] investigating who gains access to higher education in Kenya using three institution of higher learning namely a public university, a private university and tertiary institution indicated that students from the middle and upper end of the socio- economic scale were disproportionately represented in higher education and more likely to be enrolled in high prestige courses. In addition, the study found that the government efforts to militate against the effect of socio-economic status to equalize opportunities in the provision of higher education especially to the low socio-economic status were unsuccessful.

A study by Odebero [13] showed that apart from educational and arts based courses, which attracted students from across the board, other programmes had an inclination towards one's social class. Technology related courses had all its registered students drawn from medium SES (66.7%) and high SES (33.3%) only. This is clear evidence that access to competitive programmes like medicine, Bachelor of commerce/business management, engineering and technology related courses were a function of one's socio-economic class. The literature reviewed clearly indicates that SES plays an important role in access to university education. In their studies, Odebero [13] and Wachiye [14] have attempted to establish the level of equity in loan allocations to students.

For instance, Odebero [13] established the level of equity in loan allocation for academic year 2001, 2002, 2003 and 2004 in public and private universities in Kenya. The Gini coefficient results for academic years 2001, 2002, 2003 and 2004 were 0.261(26.1%), 0.33 (33%), 0.18 (18%) and 0.16 (16%) respectively. These coefficients were high especially for the 2001 and 2002 academic year suggesting that loan allocations to public and private universities within the period were inequitable. The gap (17%) between the academic years was relatively high suggesting that great inequalities existed in loan allocations in public and private universities in the academic years studied. On overall loan allocation to public and private universities loan recipients in 2001-2004 the result of the Gini coefficient of 0.261(26.1%)) suggested that the allocations were inequitable. The results further suggested that HELB loan disbursement to loan recipients in public and private universities benefited students from high SES.

A similar study was done by Wachiye [14] on equity in loan disbursement to government sponsored loan recipients in Bungoma district. Using Gini coefficients, the study results showed that loan allocations to recipients in Bungoma district was equitable. Wachiye's Gini coefficient for academic year 2001, 2002, 2003 and 2004 of 0.18 (18%), 0.064

(6.4%), 0.08 (8%) and 0.08 (8%) respectively suggested the allocations for the academic years were equitable. Further, the results showed that the overall Gini coefficient for loan allocation for government sponsored loan recipients in academic year 2001-2004 in Bungoma district was 0.101 (10.1%). This result suggested that loan allocation to government sponsored loan recipients in Bungoma district was equitable. Wachiye's study was however confined to a smaller sample of loan recipients in Bungoma district. Besides, the study only evaluated the level of equity in loan allocation per academic year. This study used a bigger sample of loan recipients in public universities in Kenya. In addition, Wachiye's study established the status of equity in loan allocation to self-sponsored loan recipients in public universities in Kenya by gender, SES, university and programme enrolled.

The literature reviewed on studies on loan schemes in the world and in Kenya indicate that despite the existence of loan schemes inequalities in access to Higher Education (HE) by the low SES persists. In Kenya, literature reviewed on HELB funding reveal mixed results. This signifies that the issue of financing students in HE is tricky and challenging. The situation is complex with the funding of Self Sponsored program (SSP) given that SSP students have been alleged to be a preserve of the rich [15-17]. This is based on the fact that SSPs fees are exorbitant and in many instances potential students applying for these programmes are unable to secure HELB loans in their first year of study, an opportunity which is otherwise made available to those enrolled in the regular programmes [18].

The studies evaluated [13, 14, 19] have mainly attempted to establish the level of equity in higher education loan disbursement to government sponsored students. However, the situation remains unclear based on the results of these studies where some [13, 14] have greatly differed on the level of equity in higher education disbursement. While Wachiye's study indicates low level of inequality, Odebero's results indicate moderate inequality. This paper examines the status of the level of equity in higher education loan disbursement to national polytechnics in Kenya.

Odebero's [13] study results showed that no significant difference existed between HELB loan disbursements and the students' characteristics such as gender and location of university. The test results for equality of means showed that no statistically significant difference existed between HELB loan allocation and students gender ($t = -0.717, p > 0.05$) and HELB loan distribution and the location of the university ($t = 1.748, p > 0.05$). The results revealed that HELB allocations were not differentiated by gender and university location. Odebero's results differ with those of Owino (2003) which showed more females than

males were considered in HELB allocations "and got higher loan awards. The difference may be as a result of several reasons. First, time factor where HELB might have altered their policy to include gender and other variables in funding students; second, differences in the sampling procedures and third, differences in methodology of analysis. Nevertheless, Odebero's study did not clearly distinguish whether the socio-economic status of government sponsored and privately sponsored recipients was significantly different. In addition, the study did not show the difference in loan awards for the two categories.

As regards to HELB disbursement in relation to SES and study program, Odebero's results showed significant relationship between HELB disbursement, students' socio-economic status and programme of study. The numerous assessments results in the year 2001-2004 and composite year 1-4 showed a statistically significant difference in loan allocation and students socio-economic status in favour of Low SES ($p < 0.05$). However, no significant differences existed in the means between the medium SES and the high SES for all the years studied ($p > 0.05$). This result suggested that HELB means testing tool did not effectively discriminate students according to their SES for the differentiated HELB loan allocations. The results further suggested that HELB funding did not sufficiently equalize opportunities in access to university education by socio-economic status.

Odebero's [13] study further analyzed the relationship between loan allocation and program students are enrolled in using ANOVA showed a significant difference in means ($p < 0.05$). The Scheffe multiple comparison tests results for the compo-site year 1-4 revealed statistically significant difference in loan allocation between the art based programmes and the rest of the programmes such as agriculture, engineering, commercial and science related programmes in favour of art related programmes ($p < 0.05$).

Wachiye [14] on the other hand conducted another related study which revealed that HELB funding government sponsored students in Kenyan public universities was inequitable. Using percentages and Gini coefficient the study evaluated the distribution of loans by gender and socio-economic status. The results of the study showed that males (61.4%) dominated the loan recipients compared to females (38.6%). This largely revealed that HELB loans were continuing the already existing gender disparities in access to higher education. The situation may be worse in HELB funding of national polytechnic students given that females require more resources than males to enroll in higher education [13].

Koigi (2006) has also raised concerns on equity in the disbursement of HELB loans. Koigi argued that HELB loans were not equitable such that students from richer families got higher loan allocations. Further, it has also been argued that cheaper programmes get higher allocations than the traditionally known expensive programmes [13].

Other studies conducted on the same line [13, 14, 19] have attempted to establish the characteristics of recipients of higher education loan disbursement. These studies were mainly limited to government sponsored students. However, the situation remained unclear based on the results of these studies where some [13] had significantly differed on loan recipients and highest beneficiaries. Since HELB now funds self-sponsored students; the position may be complex. Yet, most of the studies reviewed [14, 19] had mainly evaluated HELB funding government sponsored students. However, none of these studies had studied the phenomenon of HELB funding national polytechnic students in Kenya, an aspect that prompted this study.

MATERIALS AND METHODS

This study adopted an ex-post facto research design. According to Kerlinger and Howard [20]; Cohen, Manion and Morrison [21] and, Marilyn and Jim [22], an ex-post facto research design is an empirical enquiry where the researcher cannot manipulate the independent variables because their manifestations have already occurred. In this case the HELB recipient SES is a historical condition that has already occurred naturally so is the amount of loan and bursary award.

The study targeted three National Polytechnics in Kenya namely; Kisumu, Eldoret and Kenya Teachers Technical College that existed after the TVET Act 2013. The population of this study involved 8,202 students who at the time of the study were in 2014/15 cohort and were then second year direct entry diploma students in academic year 2015/16. This population involved those who were recipients of higher education loans and bursaries in the three national polytechnics. Therefore, the sample size of diploma HELB recipients in the three national polytechnics used in this study was determined using the formula cited by Murphy *et al.*, [23]; Musera [24] as follows:

$$n = \frac{\left(\frac{p(1-p)}{A^2} + \frac{p(1-p)}{N} \right)}{Z^2 + R}$$

$$n = \left\{ \frac{\frac{0.5(1-0.5)}{0.05^2} + \frac{0.5(1-0.5)}{202}}{1.96^2 + 0.9} \right\} = 330$$

Where: n = sample size required; N = number of people in the population; P = estimated variance in population, as a decimal: (0.5 for 50-50, 0.3 for 70-30); A = precision desired, expressed as a decimal (i.e., 0.03, 0.05, 0.1 for 3%, 5%, 10%); Z = based on confidence level: 1.96 for 95%, 1.6449 for 90% and 2.5758 for 99%; R = estimated response rate, as a decimal

In addition, three (3) Academic Registrars and three (3) Deans of Students from the three national polytechnics were purposively sampled to participate in the study. Therefore, the study sample was 336. This study used a questionnaire, interview schedule and document analysis check list to solicit information for the study.

On equity, the amount of HELB loan and bursary awards to diploma students were generated and segregated by SES tertile, gender and polytechnic. This study used the procedure of calculating Gini Coefficients for loan and bursary allocation as prescribed by Musera [24]. Therefore, the collected data was used to calculate the mean loan and bursary allocation for SES tertile, gender and polytechnic. Thereafter, the mean loan and bursary award, percentage loan and bursary award and cumulative percentage of loan and bursary award for each quintile in each category was calculated and approximated to two decimal places for easier plotting.

The data for the quintile, percentage loan and bursary award to the quintile, cumulative percentage loan and bursary award to the quintile and the line of perfect equality for each quintile was presented in tables

The values of the Gini coefficients for all the categories were used to establish the level of equity in loan and bursary award to HELB recipients in national polytechnics. A low Gini coefficient indicated a more equal distribution, with 0 corresponding to complete equality, while a higher Gini coefficient indicated a more unequal distribution, with 1 corresponding to complete inequality [25]. This interpretation was applied for this study.

RESULTS AND DISCUSSION

To establish the level of equity in higher education loan and bursary disbursement to diploma HELB recipients in national polytechnics in Kenya, Gini Coefficients were used. Therefore, data collected on the amount of loan and bursary awards to diploma HELB recipients in national polytechnics in academic years 2013-14 and 2014-15 was used to draw Lorenz curves for loan and bursary awards to the diploma HELB recipient respondents by gender, SES tertile and national polytechnic.

Level of Equity in Loan Allocation to Diploma Students in National Polytechnics

The level of equity in loan allocation to diploma HELB loan recipient respondents in national polytechnics for academic years 2013-14 and 2014-2015 was determined by gender, SES tertile, national polytechnic and overall loan allocation. The results of the Gini coefficients by gender, SES tertile, national polytechnic and overall loan awards are thematically presented thus:

Level of Equity in Higher Education Loan Allocation by Gender

This study compared the level of equity in overall loan allocation for female and male loan recipients. Figure 1 presents the results plotted on a Lorenz curve for female and male diploma loan recipients.

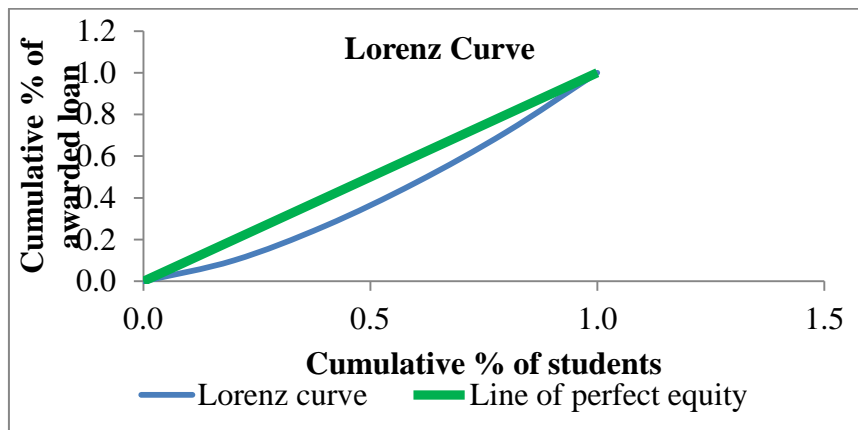


Fig-1: Lorenz Curve for Female Loan Recipients in 2013/14 and 2014/15

The area under the Lorenz curve is $\frac{1}{2}\{[0.20(0+0.10)] + [0.20(0.10+0.27)] + [0.20(0.27+0.47)] + [0.20(0.47+0.72)] + [(0.72+1.00)]\} = 0.412$. The area between the line of perfect equality and the Lorenz curve is $0.5 - 0.412 =$

0.088 . The Gini coefficient is $0.088/0.50 = 0.176$. With a Gini coefficient of 0.176 (17.6%), HELB can be said to have equitably allocated 131 female diploma loan recipients but this study compared this with that for the males as shown in Figure 2.

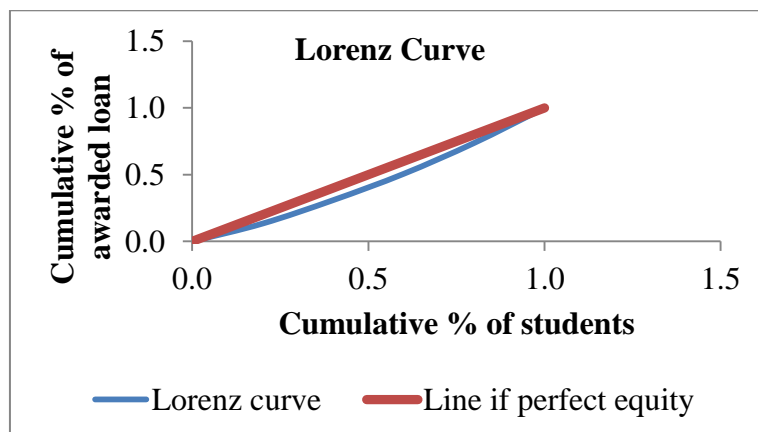


Fig-2: Lorenz Curve for Male Loan Recipients in 2013/14 and 2014/15

The area under the Lorenz curve is $\frac{1}{2}\{[0.20(0+0.13)] + [0.20(0.13+0.31)] + [0.20(0.31+0.51)] + [0.20(0.51+0.74)] + [(0.74+1.00)]\} = 0.438$. The area between the line of perfect equality and the Lorenz curve is $0.5 - 0.438 = 0.062$. The Gini coefficient is $0.062/0.50 = 0.124$. With a Gini coefficient of 0.124 (12.4%), HELB can be said to have equitably allocated 126 male diploma loan recipients.

Comparing the two genders by female and male Gini coefficients of 17.6% and 12.4% respectively, the loan allocation to diploma female and male students in national polytechnics can be said to be equitable. The results are similar to Musera's [24] study which indicates HELB loan allocation to male and female self-sponsored students in public universities being

equitable. However, the difference of 5.2% points between the genders is big. This suggests inequitable distribution between the two genders with male allocation being more equitable than the females. This difference in equity of loan allocation may further widen the already existing gender disparities in access to tertiary institutions in favour of males [26].

Level of Equity in Higher Education Loan Allocation by SES Tertiles

To find out whether loan allocation to diploma students in national polytechnic for the SES tertiles were equitable, Lorenz curves for loan allocation for the high, middle and low SES were drawn based on the data collected. These graphs were then used to calculate the Gini Coefficients for the SES tertiles. The results for the Lorenz curves for the high, middle and low SES are shown in Figure 3, 4 and 5 respectively.

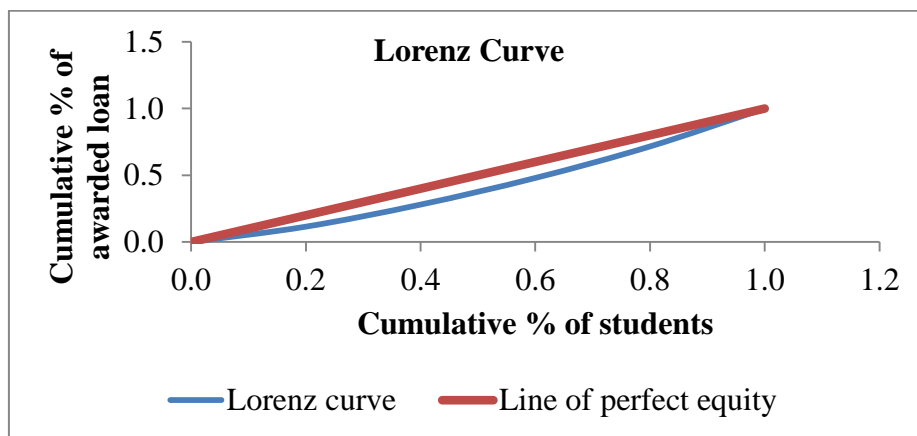


Fig-3: Lorenz Curve for High SES Loan Recipients in 2013/14 and 2014/15

The area under the Lorenz curve is $\frac{1}{2}\{[0.20(0+0.12)] + [0.20(0.12+0.28)] + [0.20(0.28+0.48)] + [0.20(0.48+0.72)] + [(0.72+1.00)]\} = 0.420$. The area between the line of perfect equality and the Lorenz curve is $0.5 - 0.420 = 0.080$. The Gini coefficient is $0.080/0.50 = 0.160$. With a

Gini coefficient of 0.160 (16.0%), HELB can be said to have equitably allocated the 86 diploma loan recipients in the high SES for the academic years 2013/14 and 2014/15 in the sampled national polytechnics. However, we need to compare this with the allocation for the middle and low SES.

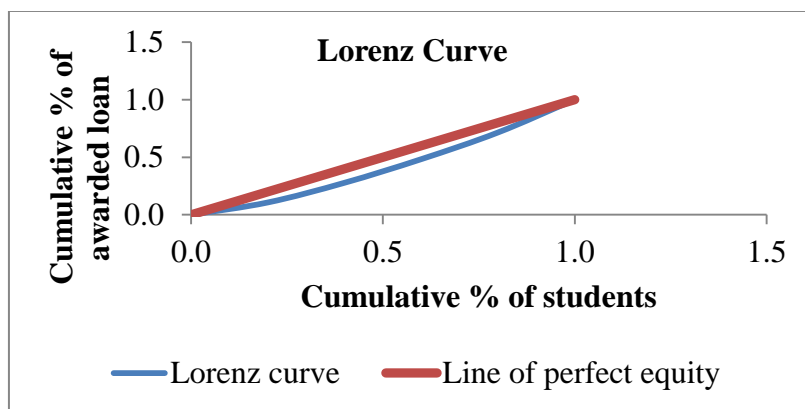


Fig-4: Lorenz Curve for Middle SES Loan Recipients in 2013/14 and 2014/15

The area under the Lorenz curve is $\frac{1}{2}\{[0.20(0+0.12)] + [0.20(0.12+0.28)] + [0.20(0.28+0.48)] + [0.20(0.48+0.72)] + [(0.72+1.00)]\} = 0.420$. The area between the line of perfect equality and the Lorenz curve is $0.5 - 0.420 = 0.080$. The Gini coefficient is $0.080/0.50 = 0.160$. With a Gini coefficient of 0.160 (16.0%), HELB can be said to

have equitably allocated the 86 diploma loan recipients in the middle SES for the academic years 2013/14 and 2014/15 in the sampled national polytechnics. These results however needed to be compare this with the allocation for the high and low SES. Figure 5 shows the low SES results.

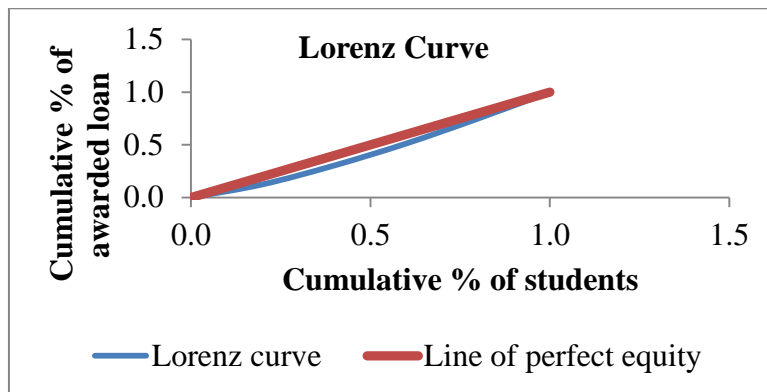


Fig-5: Lorenz Curve for Low SES Loan Recipients in 2013/14 and 2014/15

The area under the Lorenz curve is $\frac{1}{2}\{[0.20(0+0.13)] + [0.20(0.13+0.30)] + [0.20(0.30+0.51)] + [0.20(0.51+0.75)] + [(0.75+1.00)]\} = 0.438$. The area between the line of perfect equality and the Lorenz curve is $0.5 - 0.438 = 0.062$. The Gini coefficient is $0.062/0.50 = 0.124$. With a Gini coefficient of 0.124 (12.4%), HELB can be said to have equitably allocated the 85 diploma loan recipients in the low SES for the academic years 2013/14 and 2014/15 in the sampled national polytechnics.

Comparing the Gini coefficients of 16.0%, 16.4% and 12.4% for the high, middle and low SES tertiles respectively, the results indicate that the low SES tertile had the least Gini coefficient suggesting that the loan disbursement to this group was the most equitable. This is expected given that loans are supposed to benefit the neediest. However, the big gap of 4% in equity in loan allocation between the low SES tertile and the other SES tertiles suggest that loans may be benefiting those who least need them in the middle and high SES tertiles. This may also suggest that SES is not important in explaining differences in HELB loan allocation to diploma students in national polytechnics in Kenya. If SES tertile was important the wider gap in equity as indicated by the Gini Coefficients would not be seen. The results support those of the regression analysis indicating that SES tertile is not important in

explaining differences in loan allocation to diploma students.

Similar results have also been shown by a study by Odebero [13] on the level of equity in loan allocation for academic year 2001, 2002, 2003 and 2004 in public and private universities in Kenya. The Gini coefficient results for academic years 2001, 2002, 2003 and 2004 were 0.261(26.1%), 0.33 (33%), 0.18 (18%) and 0.16 (16%) respectively suggesting that loan allocations to public and private universities within the period were inequitable. However, the study results disagree with those of Musera [24] indicating marginal differences in Gini coefficients between the SES quintiles in loan allocation to undergraduate self-sponsored students in public universities in Kenya.

Level of Equity in Higher Education Loan Allocation by Polytechnic

An inquiry to in the equitability of loan allocation to diploma students in national polytechnic was sought. The study drew Lorenz curves for loan allocation for the KTTC, Kisumu and Eldoret polytechnics as shown in figures 6, 7 and 8 respectively. These graphs were used to calculate the Gini Coefficients for the three national polytechnics in order to establish how they were equitably allocated.

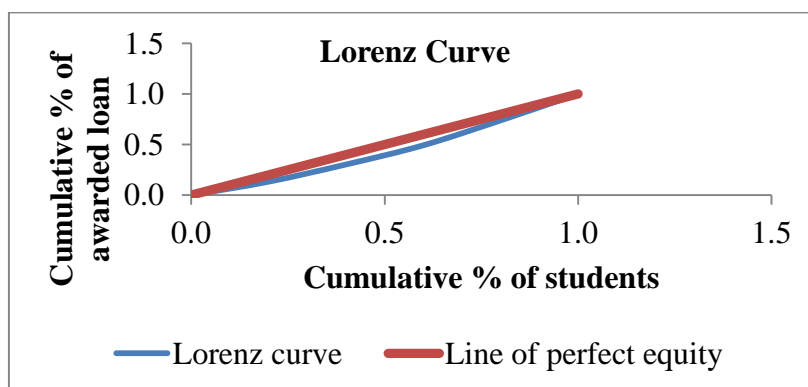


Fig-6: Lorenz Curve for KTTC Loan Recipients in 2013/14 and 2014/15

The area under the Lorenz curve is $\frac{1}{2}\{[0.20(0+0.13)] + [0.20(0.13+0.30)] + [0.20(0.30+0.49)] + [0.20(0.49+0.74)] + [(0.74+1.00)]\} = 0.432$. The area between the line of perfect equality and the Lorenz curve is $0.5 - 0.432 = 0.068$. The Gini coefficient is $0.068/0.50 = 0.136$. With a

Gini coefficient of 0.136 (13.6%), HELB can be said to have equitably allocated the 83 diploma loan recipients in KTTC for the academic years 2013/14 and 2014/15. In comparison, the data for Kisumu are presented in figure 7.

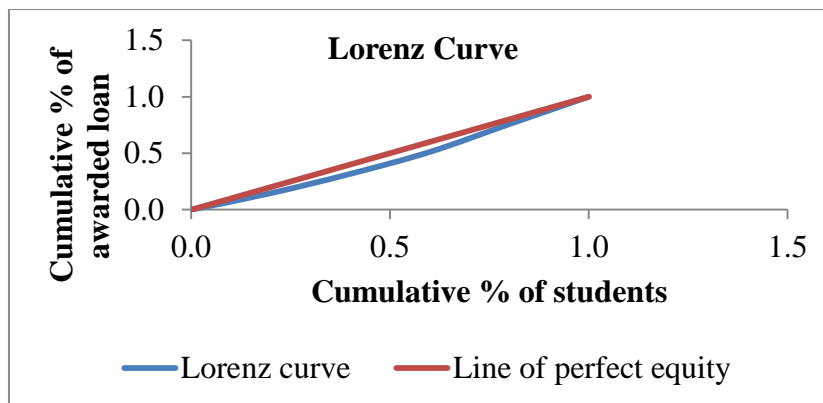


Fig-7: Lorenz Curve for Kisumu Polytechnic Loan Recipients for 2013/14 and 2014/15

The area under the Lorenz curve is $\frac{1}{2}\{[0.20(0+0.15)] + [0.20(0.15+0.32)] + [0.20(0.32+0.51)] + [0.20(0.51+0.76)] + [(0.76+1.00)]\} = 0.448$. The area between the line of perfect equality and the Lorenz curve is $0.5 - 0.448 = 0.052$. The Gini coefficient is $0.052/0.50 = 0.104$. With a

Gini coefficient of 0.104 (10.4%), HELB can be said to have equitably allocated the 83 diploma loan recipients in Kisumu polytechnic for the academic years 2013/14 and 2014/15. However, we need to compare this with the allocation for KTTC and Eldoret polytechnic.

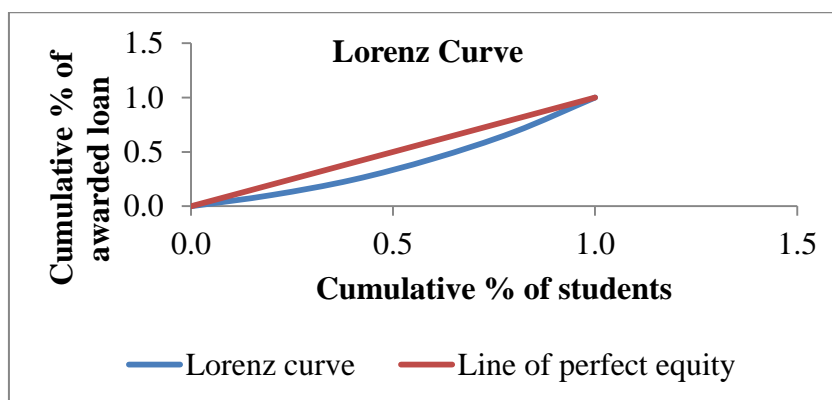


Fig-8: Lorenz Curve for Eldoret Polytechnic Loan Recipients in 2013/14 and 2014/15

The area under the Lorenz curve is $\frac{1}{2}\{[0.20(0+0.10)] + [0.20(0.10+0.24)] + [0.20(0.24+0.44)] + [0.20(0.44+0.68)] + [(0.68+1.00)]\} = 0.392$. The area between the line of perfect equality and the Lorenz curve is $0.5 - 0.392 = 0.108$. The Gini coefficient is $0.108/0.50 = 0.216$. With a Gini coefficient of 0.216 (21.6%), HELB can be said to have equitably allocated the 91 diploma loan recipients in Eldoret polytechnic for the academic years 2013/14 and 2014/15.

loan allocation to the diploma recipients in the three polytechnics was equitable. The results also indicate that the allocation was most equitable for loan recipients at Kisumu polytechnic and least equitable for loan recipients at Eldoret polytechnic with a gap of 11.2 between the two. This clearly suggests that disparities in HELB loan allocation exist in national polytechnics. As much as the allocations are equitable this disparities may disadvantage students who are enrolled in specific polytechnics. This may in the long run widen disparities in access to national polytechnics in Kenya yet HELB loans are meant to ensure all students irrespective of their SES background join any polytechnic of their choice. The results match those of Musera [24] which

Comparing the Gini coefficients of 13.6%, 10.4% and 21.6% for KTTC, Kisumu and Eldoret polytechnic respectively, the results indicate that HELB

also indicated disparities in loan allocation to self-sponsored students in public universities in Kenya.

Level of Equity in Overall Loan Allocation to Diploma Students in National Polytechnics

The study further sought to establish the level of equity in overall loan allocation to diploma students in national polytechnics in Kenya. Figure 9 presents the Lorenz curve for loan allocation to diploma loan recipients.

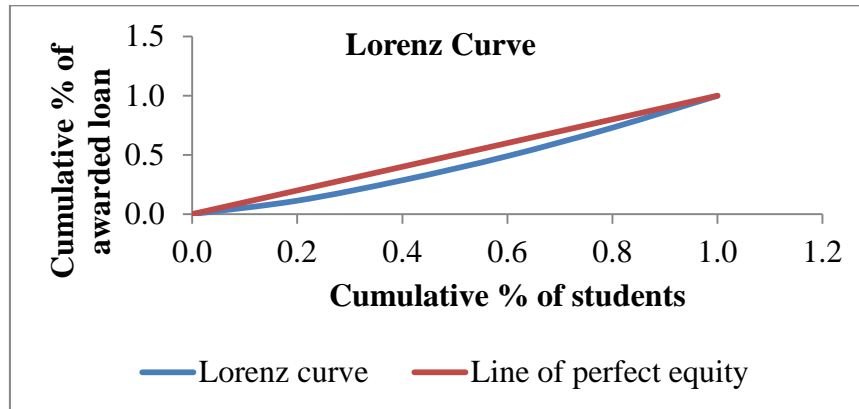


Fig-9: Lorenz Curve for Overall Loan to Diploma Students in 2013/14 and 2014/15

The area under the Lorenz curve is $\frac{1}{2}\{[0.20(0+0.11)] + [0.20(0.11+0.29)] + [0.20(0.29+0.49)] + [0.20(0.49+0.73)] + [(0.73+1.00)]\} = 0.424$. The area between the line of perfect equality and the Lorenz curve is $0.5 - 0.424 = 0.076$. The Gini coefficient is $0.076/0.50 = 0.152$. With a Gini coefficient of 0.152 (15.2%), HELB can be said to have equitably allocated the 257 diploma loan recipients in the three national polytechnics for the academic years 2013/14 and 2014/15. The results suggest that loan allocation to diploma students in national polytechnics is equitable. The results are also similar to those of Musera [24] and Wachiye [14] studies which indicate that HELB loans to university students are equitable. However, this is contrary to the common belief and findings of other studies [17, 19, 27] that subsidies in education such as HELB loans disproportionately benefit the rich and are inequitable. Similarly, Odebero [13] Gini coefficient results of 0.261 (26.1%) on equity in overall loan allocations to public and private universities loan recipients in 2001-2004 suggested that the allocations were inequitable. The results further suggested that HELB loan disbursement to loan recipients in public and private universities benefited students from high SES.

Level of Equity in Bursary Allocation to Diploma Students in National Polytechnics

Data was generated on the overall amount of bursary awarded to diploma HELB bursary recipients in national polytechnics in academic years 2013/14 and 2014/2015. Lorenz curves for females, males, high SES, middle SES, low SES, KTTC, Kisumu polytechnic, Eldoret polytechnic and overall bursary award to diploma HELB bursary recipients in national polytechnics in academic years 2013/14 and 2014/2015 were drawn. These curves were used to calculate Gini Coefficients to establish the level of equity in bursary allocation to diploma HELB bursary recipients in national polytechnics in academic years 2013-14 and 2014-2015 by gender, SES tertile, national polytechnic and overall bursary allocation. The results of the Gini coefficients by gender, SES tertile, national polytechnic and overall bursary awards in academic years 2013/14 and 2014/15 are presented under the following themes.

Level of Equity in Higher Education Bursary Allocation by Sex

Figure 10 and 11 presents the Lorenz curve for female and male diploma bursary recipients, respectively.

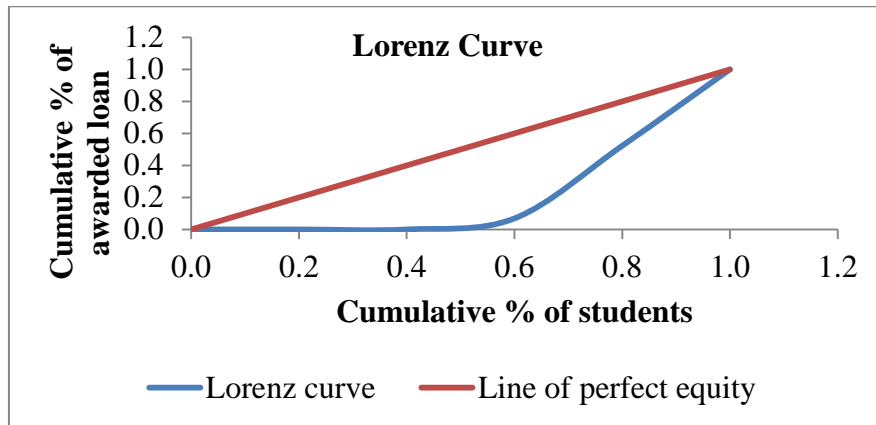


Fig-10: Lorenz Curve for Bursary Allocation for Females in 2013/14 and 2014/15

The area under the Lorenz curve is $\frac{1}{2}\{[0.20(0+0.00)] + [0.20(0.00+0.00)] + [0.20(0.00+0.07)] + [0.20(0.07+0.45)] + [(0.45+1.00)]\} = 0.218$. The area between the line of perfect equality and the Lorenz curve is $0.5 - 0.218 =$

0.282 . The Gini coefficient is $0.282/0.50 = 0.564$. With a Gini coefficient of 0.564 (56.4%), HELB can be said to have inequitably allocated 131 female diploma bursary recipients but this study compared this with that for the males shown in Figure 11.

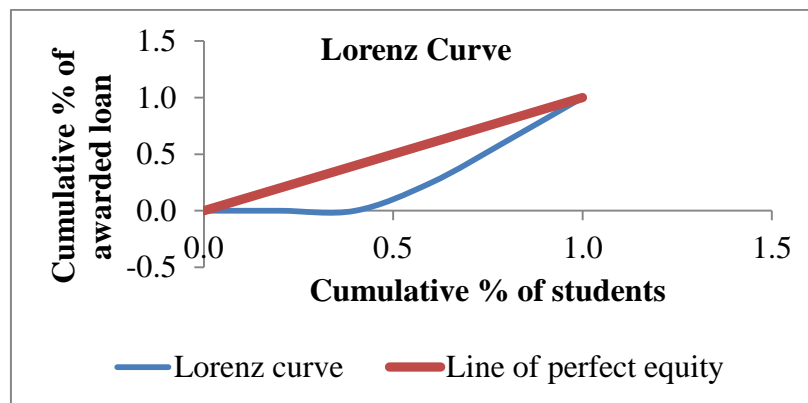


Fig-11: Lorenz Curve for Male Bursary Recipients in 2013/14 and 2014/15

The area under the Lorenz curve is $\frac{1}{2}\{[0.20(0+0.00)] + [0.20(0.00+0.25)] + [0.20(0.25+0.37)] + [0.20(0.37+0.38)] + [(0.38+1.00)]\} = 0.274$. The area between the line of perfect equality and the Lorenz curve is $0.5 - 0.274 = 0.226$. The Gini coefficient is $0.226/0.50 = 0.452$. With a Gini coefficient of 0.452 (45.2%), HELB can be said to have inequitably allocated bursaries to the 126 male diploma recipients.

inequitable. However, with a difference of 11.2%, we argue that bursary allocation among female recipients is less equitable compared with their male counterparts.

Level of Equity in Higher Education Loan Allocation by SES Tertiles

In establishing the level of equity in bursary allocations to diploma students in national polytechnic among the SES tertiles, Lorenz curves for bursary allocation for the high, middle and low SES tertiles were drawn and used to calculate the Gini Coefficients. The results for the Lorenz curves for the high, middle and low SES are shown in Figure 12, 13 and 14 respectively.

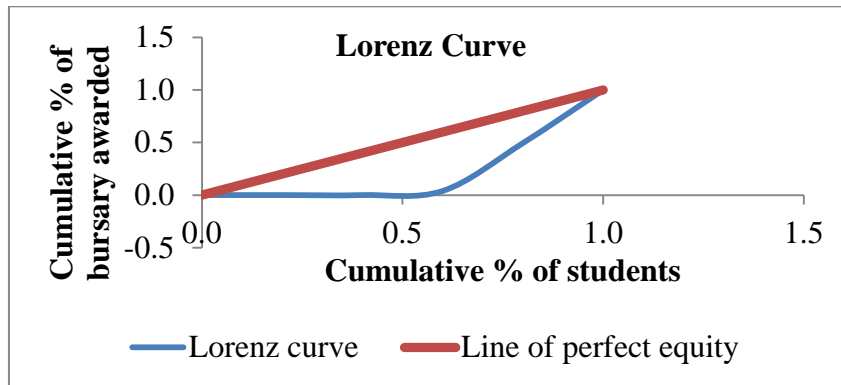


Fig-12: Lorenz Curve for High SES Bursary Recipients in 2013/14 and 2014/15

The area under the Lorenz curve is $\frac{1}{2}\{[0.20(0+0.00)] + [0.20(0.00+0.00)] + [0.20(0.00+0.04)] + [0.20(0.04+0.49)] + [(0.49+1.00)]\} = 0.206$. The area between the line of perfect equality and the Lorenz curve is $0.5 - 0.206 = 0.294$. The Gini coefficient is $0.294/0.50 = 0.588$. With a

Gini coefficient of 0.588 (58.8%), HELB can be said to have inequitably allocated bursaries to the 86 diploma students in the high SES for the academic years 2013/14 and 2014/15. However, this needed to be compared with bursary allocations for the middle and low SES.

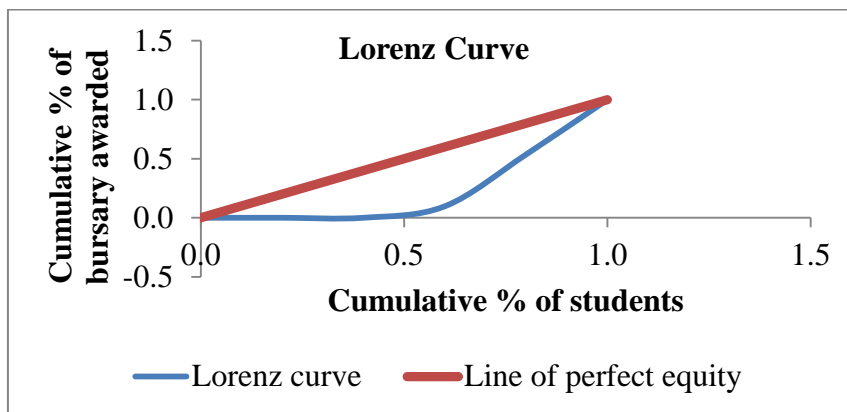


Fig-13: Lorenz Curve for Middle SES Bursary Recipients in 2013/14 and 2014/15

The area under the Lorenz curve is $\frac{1}{2}\{[0.20(0+0.00)] + [0.20(0.00+0.00)] + [0.20(0.00+0.10)] + [0.20(0.10+0.54)] + [(0.54+1.00)]\} = 0.228$. The area between the line of perfect equality and the Lorenz curve is $0.5 - 0.228 = 0.272$. The Gini coefficient is $0.272/0.50 = 0.544$. With a

Gini coefficient of 0.544 (54.4%), HELB can be said to have inequitably allocated bursaries to the 86 diploma students in the middle SES in the academic years 2013/14 and 2014/15. For comparison, the Lorenz curve in Figure 14 is presented.

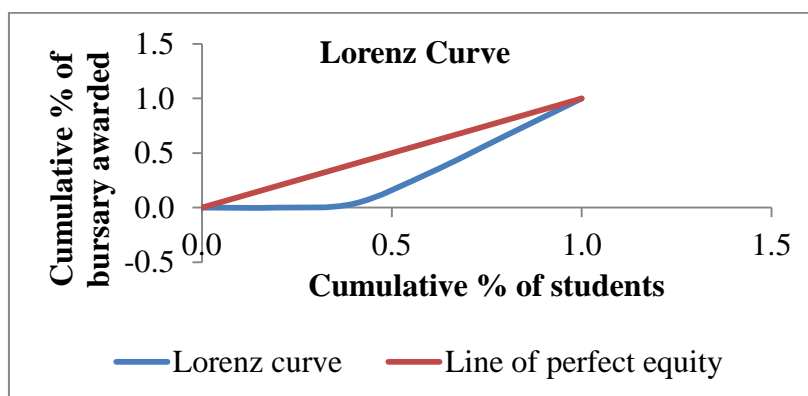


Fig-14: Lorenz Curve for Low SES Bursary Recipients in 2013/14 and 2014/15

The area under the Lorenz curve is $\frac{1}{2}\{[0.20(0+0.00)] + [0.20(0.00+0.04)] + [0.20(0.04+0.32)] + [0.20(0.32+0.66)] + [(0.66+1.00)]\} = 0.304$. The area between the line of perfect equality and the Lorenz curve is $0.5 - 0.304 = 0.196$. The Gini coefficient is $0.196/0.50 = 0.392$. With a Gini coefficient of 0.392 (39.2%), HELB can be said to have inequitably allocated bursaries to the 85 diploma loan recipients in the low SES for the academic years 2013/14 and 2014/15.

Comparing the Gini coefficients of 58.8.0%, 54.4% and 39.2% for the high, middle and low SES tertiles respectively, the results indicate that the low SES tertile had the least Gini coefficient suggesting that the bursary disbursement to this group was the most equitable. This is expected given that bursaries are

supposed to benefit the neediest. However, gap (19.6% and 15.2%) in inequity in bursary allocation between the low SES tertile and the high and middle SES tertiles suggests that bursaries may be benefiting those who least need them in the middle and high SES tertiles.

Level of Equity in Higher Education Bursary Allocation by Polytechnic

Besides, this study sought to establish equity in bursary allocation to diploma students across the national polytechnics by drawing Lorenz curves after which the graphs were used to calculate the Gini Coefficients for bursary allocation for diploma students in the national polytechnics. The results for the Lorenz curves for the KTTC, Kisumu and Eldoret polytechnics are shown in Figure 15, 16 and 17 respectively.

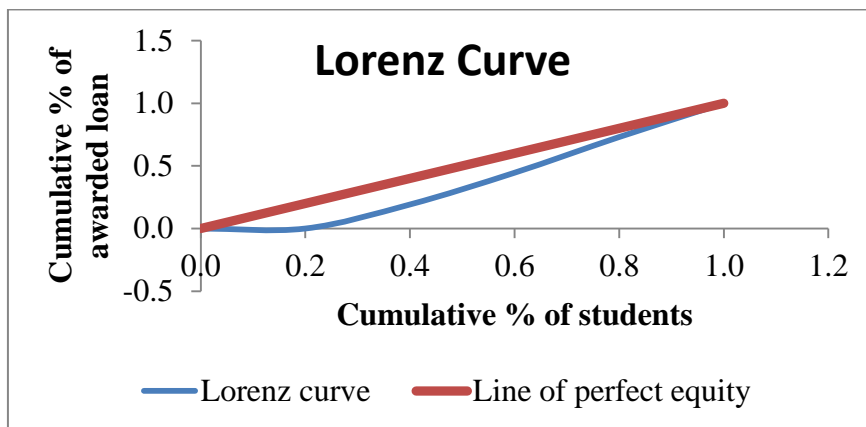


Fig-15: Lorenz Curve for KTTC Bursary Allocation in 2013/14 and 2014/15

The area under the Lorenz curve is $\frac{1}{2}\{[0.20(0+0.00)] + [0.20(0.00+0.19)] + [0.20(0.19+0.45)] + [0.20(0.45+0.73)] + [(0.73+1.00)]\} = 0.374$. The area between the line of perfect equality and the Lorenz curve is $0.5 - 0.374 =$

0.126 . The Gini coefficient is $0.126/0.50 = 0.252$. With a Gini coefficient of 0.252 (25.2%), HELB can be said to have equitably allocated bursaries to the 83 diploma students in KTTC for the academic years 2013/14 and 2014/15.

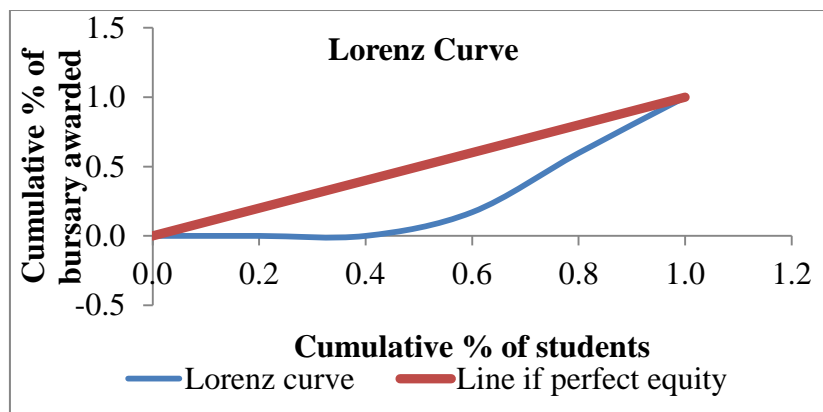


Fig-16: Lorenz Curve for Kisumu Polytechnic Bursary Allocation in 2013/14 and 2014/15

The area under the Lorenz curve is $\frac{1}{2}\{[0.20(0+0.00)] + [0.20(0.00+0.00)] + [0.20(0.00+0.17)] + [0.20(0.17+0.60)] + [(0.60+1.00)]\} = 0.448$. The area between the line of

perfect equality and the Lorenz curve is $0.5 - 0.448 = 0.052$. The Gini coefficient is $0.052/0.50 = 0.104$. With a Gini coefficient of 0.104 (10.4%), HELB can be said to have equitably allocated bursaries to the 83 diploma students in Kisumu Polytechnic for the academic years 2013/14 and 2014/15.

perfect equality and the Lorenz curve is $0.5 - 0.448 = 0.246$. The Gini coefficient is $0.246/0.50 = 0.492$. With a Gini coefficient of 0.492 (49.2%), HELB can be said to

have inequitably allocated bursaries to the 83 diploma students in Kisumu polytechnic for the academic years 2013/14 and 2014/15.

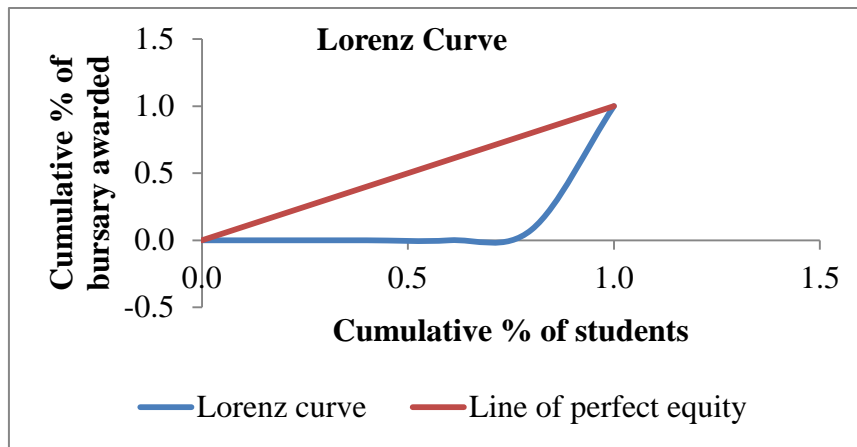


Fig-17: Lorenz Curve for Eldoret Polytechnic Bursary Allocation in 2013/14 and 2014/15

The area under the Lorenz curve is $\frac{1}{2} \{ [0.20(0+0.00)] + [0.20(0.00+0.00)] + [0.20(0.00+0.00)] + [0.20(0.00+0.08)] + [(0.08+1.00)] \} = 0.116$. The area between the line of perfect equality and the Lorenz curve is $0.5 - 0.116 = 0.384$. The Gini coefficient is $0.384/0.50 = 0.768$. With a Gini coefficient of 0.768 (76.8%), HELB can be said to have inequitably allocated bursaries to the 91 diploma students in Eldoret polytechnic for the academic years 2013/14 and 2014/15.

bursary allocations exist in national polytechnics. These disparities may disadvantage students who are enrolled in specific polytechnics. This may in the long run widen disparities in access to national polytechnics in Kenya yet HELB bursaries should ensure students are enrolled and retained in national polytechnics irrespective of the polytechnic they are enrolled in. The results match those of Musera [24] which also indicated disparities in loan allocation to self-sponsored students in public universities in Kenya.

Comparing the Gini coefficients of 25.5%, 49.2% and 76.8% for KTTC, Kisumu and Eldoret polytechnics respectively, the results indicate variation in equity in HELB bursary allocation to diploma students in the three polytechnics. The results indicate that while the bursary allocation for KTTC students was equitable it wasn't for Kisumu and Eldoret polytechnic students. This clearly suggests that disparities in HELB

Level of Equity in Overall Bursary Allocation to Diploma Students in National Polytechnics

The study finally established the level of equity in overall bursary allocation to diploma students in national polytechnics in Kenya in academic year 2013/14 and 2014/15. Figure 18 presents the Lorenz curve for overall bursary allocation to diploma students.

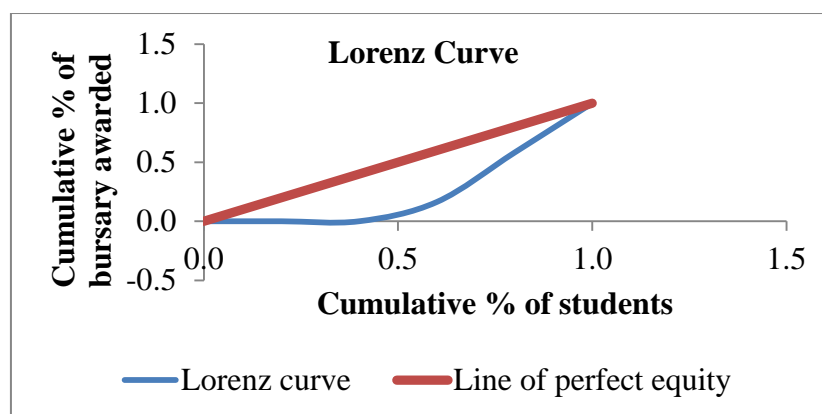


Fig-18: Lorenz Curve for Overall Bursary Allocation to Diploma Students in 2013/14 and 2014/15

The area under the Lorenz curve is $\frac{1}{2} \{ [0.20(0+0.00)] + [0.20(0.00+0.00)]$

$+ [0.20(0.00+0.16)] + [0.20(0.16+0.58)] + [(0.58+1.00)] \} = 0.248$. The area between the line of

perfect equality and the Lorenz curve is $0.5 - 0.248 = 0.252$. The Gini coefficient is $0.252/0.50 = 0.504$. With a Gini coefficient of 0.504 (50.4%), HELB can be said to have inequitably allocated bursaries to the 257 diploma students in the three national polytechnics for the academic years 2013/14 and 2014/15. The results suggest that loan allocation to diploma students in national polytechnics is inequitable. This findings match those of Otieno, [19]; Ngolovoi, [17]; Deolalikar, [27] that indicate subsidies in education disproportionately benefit the rich and are inequitable.

CONCLUSION

The Gini coefficients results for loan allocation for females, males; high SES tertile, middle SES tertile, low SES tertile, KTTC, Kisumu polytechnic and Eldoret polytechnic implies that HELB loan allocation to diploma students in national polytechnic are equitable between genders and across SES tertiles and polytechnics. The results also indicated gaps in the level of equity in loan allocation. Differences in the level of equity in loan allocation between and within genders, SES tertiles and polytechnics exist.

For bursary allocations, the Gini coefficients for females, males; high SES tertile, middle SES tertile, low SES tertile, KTTC, Kisumu polytechnic and Eldoret polytechnic indicated that HELB bursary allocation to diploma students in national polytechnic are inequitable between genders and across SES tertiles and polytechnics. The results also indicated gaps in the level of inequity in bursary allocation. There are differences in the level of inequity in bursary allocation between and within sexes, SES tertiles and polytechnics.

RECOMMENDATIONS

1. There is need for HELB to tighten their criteria to eliminate differences in the level of equity in loan allocation to recipients. This can still be achieved using a national database that captures the background information of all Kenyan children at birth which can aid HELB in vetting prospective applicants.
2. Besides, there is need for HELB to seriously revisit their bursary award criteria and consider an elaborate criterion that considers home visits to establish who should benefit from HELB loans.

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