

## **SKEWNESS BASED COMMON CURRENCY INDEX METHOD FOR UNIVERSITY SELECTION IN SRI LANKA**

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The G.C.E. (A/L) examination is a highly competitive examination in Sri Lanka which is used to select students to government universities. In order to select students for university courses, students are ranked based on their overall performance on this examination. Different selection methods based on selection indices have been used for ranking by combining the results of three major subjects. The average score method (mean aggregate marks) is the first method adopted, and from 2001 the Z-score method is considered for university selection. Although the Z-score method is introduced to reduce some anomalies in the average method, it has revealed that the Z-score method also does not correctly represent the performance of students at G.C.E. (A/L) examination. Since the shape of the distribution of marks is different for each subject, averaging Z scores gives an unfavourable advantage to subjects which have low variability in subject raw marks compared to the other subjects in the same stream. Generally a raw mark of a subject includes both the student ability (student effect) and subject effect. Only the student effect should be used in any ranking method by eliminating the subject effect, since subject effect is increasing or decreasing based on the difficulty level of the subject. When consider the subject effect, it can be calculated as an absolute effect of that subject or a relative effect with compared to the other subjects. In Z score method the absolute subject effect is considered which is not appropriate when ranking student who follow different courses including different subject combinations.

Yatapana and Sooriyarachchi (2006) proposed a new method called Common Currency Index (CCI) method based on an additive model, and compared it with the Z-Score method and the average score method. In CCI method the subject effect was taken as equal for all subjects within a course, and it is defined as the relative course effect. Then the differences between subjects within a course are not considered as in the average score method, and hence it is not appropriate when ranking student who follow the same course including the same subject combinations.

In this study a new method called Skewness based Common Currency Index (SCCI) is introduced by adding a shape parameter to eliminate the relative subject effect. Raw marks of the students were simulated by using a multiplicative model which contains student effect (student ability), subject effect, and a random error term to incorporate the other variations related to the raw marks. Then for ranking of students, subject effect is removed to eliminate the relative subject effect. A comparison of ranks of students was done among the three methods, Z-Score, CCI and SCCI. It was found that there is a significance difference of ranks between the three methods at 5% significance level, and the rank differences between the ranks of the SCCI method with the ranks of true student effects show smaller deviations than the rank differences of the ranks of the other two methods. Based on the results of Wilcoxon rank sum test, it was revealed that the ranks of SCCI method are much closer to the ranks of the student effects than the other methods.