Determining the Premiums of General Health Insurance by Fuzzy Rule Base1

ABSTRACT

As of 2008, under the name of Social Security Reform, Health Transformation program has been launched in Turkey and nobody has been aimed to remain out of the system. Even though this system provides comprehensive advantages to citizens, it also has some drawbacks about premium calculations. In the current system, premiums are calculated by using fixed ratios for different income levels. However, this causes inequalities among the citizens. Therefore, in this article, the elimination of inequalities and the establishment of fairer premium system that provides an interdisciplinary perspective about the general health insurance was aimed to present. As a methodology fuzzy logic that provides fuzzy grading among individuals was determined. The scope of the application has been limited to individuals who are considered as poor, who have no social security and who are insured on a voluntary basis. Premiums were calculated by fuzzy rules based on expert opinion with the help of MATLAB Fuzzy Logic Designer Toolbox for 4,650 people participating in the TURKSTAT's income survey. Then, total premium will be paid by the number of 9,749,855 people was estimated by weighting the calculated premiums. As a result, the premiums were calculated more fairly and the situations that create inequalities among the citizens were abolished. In addition, besides income and expenses, age was used for equitable calculation in order not to make voluntarily insured be advantageous. When literature was examined, it was thought that this article will contribute to the interdisciplinary literature since fuzzy logic applications are very rare in social sciences.

Keywords: General Health Insurance, insurance premium, fuzzy logic, approximate reasoning