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About Holland's "On the Adequacy of Mitra's Model of the Life Table : A Technical Note

WHILE I sincerely appreciate Holland's (1987) careful reading of my paper on modelling life table functions (Mitra 1983), 1am sorry to say that his major criticisms'about the paper are not well founded.

Let me begin with his observation about the use of multiple correlation as a measure of equivalence between two variables. It is indeed true that in the bivariate regression equation he presents, the equivalence between *y* and *x* is out of the question. But the correlation between *y* and *E(y)* or the expected value of *y* generated from the same equation, surely tests the equivalence between *y* and *E (y)* and that is exactly what was done in that paper.

Next, the method of least squares was used as a convenient tool to estimate the parameters of what I regarded as a mathematical model. If the model is perfect the correlation coefficient would have been exactly equal to one. The same obtained from examples chosen for this study came very close to that state of perfection. In practice, rarely do we come across R^2 values in the neighbourhood of 0.99. To repeat, we are dealing here with a problem of mathematical graduation and to that end, the method based on the principle of least squares which as such does not depend on the validity of the assumption of independence or on the normality of the distribution of errors, is quite appropriate. In examples of statistical modelling the dependence of successive values of the dependent variable has to be taken into account especially when the correlations are moderate in size.

Lastly, the formulation of the model was based on a system of logic that was not in any way dependent upon what Holland regards as 'aggregate table

like the Coale-Demeny system'. In fact, the model was applied on a few real life tables (Bangladesh 1974 ; Morocco 1972 ; Mexico 1969-71 and U.S. 1977) resulting also in R* values of the order of 0.99. These R^2 values and a few additional findings were reported in a subsequent publication (Mitra 1984).

In conclusion, I may add that since *R** may be regarded as a measure of equivalence and therefore of goodness of fit in this exercise of mathematical graduation, failure on the part of the model to reproduce the observed values must be attributed to the difference between one and A^2 which for these life tables turned out to be quite small. That is not to say that we shall not see in the future other models based on / *(x)* or other functions that will do even better. Until then, the model seems to be worth looking into and a closer scrutiny of the same may provide clues for further improvement.

References

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