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Chau-Nan Chen; Tien-Wang Tsaur; Tong-Shieng Rhai

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THE GINI COEFFICIENT AND NEGATIVE INCOME: REPLY

By CHAU-NAN CHEN, TIEN-WANG TSAUR *and* TONG-SHIENG RHAI

BERREBI and Silber are correct in pointing out our error in footnote 3 in our previous paper. The error comes from our carelessness in wrongly putting $G^* = [1+2(A-C)]/(1+A)$.

Berrebi and Silber's alternative algorithm, however, is not simpler in any way. Write x_i for the income share of the ith family of the new population and notice that

$$y_j = \sum_{i=1}^{m} x_{(j-1)m+i} = m x_{(j-1)m+i}$$

It can be proved that

$$\sum_{j=1}^{k} y_j = \sum_{j=1}^{k} \sum_{i=1}^{m} x_{(j-1)m+i} = \sum_{q=1}^{mk} x_q; \qquad \sum_{j=1}^{k} j y_j = \frac{1}{m} \sum_{1}^{mk} q x_q + \frac{m-1}{2m} \sum_{1}^{mk} x_q$$

Thus

$$A = \frac{1}{nm}\left[\sum_{1}^{mk} q x_q + \frac{[(mk+1)+(mk+f)]\left(-\sum_{1}^{mk} x_q\right)}{2}\right]$$

But in view of

$$-\sum_{1}^{mk} x_q = \sum_{mk+1}^{mk+f} x_q = f x_{mk+f}; \qquad \frac{[(mk+1)+(mk+f)] f x_{mk+f}}{2} = \sum_{mk+1}^{mk+f} q x_q$$

A can be rewritten as

$$A = \frac{1}{nm}\left(\sum_{1}^{mk} q x_q + \sum_{mk+1}^{mk+f} q x_q\right) = \frac{1}{nm} \sum_{1}^{mk+f} q x_q$$

Thus, Berrebi and Silber's alternative version of G^* should be written as

$$G^{**} = \frac{1 + \frac{2}{nm} \sum_{1}^{mk+f} q x_q - \frac{1}{nm} \sum_{mk+f+1}^{nm} x_q[1+2(nm-q)]}{1 + \frac{2}{nm} \sum_{1}^{mk+f} q x_q}$$

$$= \frac{\frac{2}{nm} \sum_{1}^{nm} j x_j - \frac{nm+1}{nm}}{1 + \frac{2}{nm} \sum_{1}^{mk+f} q x_q}$$

To use G^{**}, one has to compute m and f. But if one knows the value of m

and f, one would rather directly use the corrected version of G^* in Berrebi and Silber's comment, since

$$\frac{f}{m} = \frac{-\sum_{1}^{k} y_j}{y_{k+1}}$$

is already there.

Institute of the Three Principles of the People, Academia Sinica, Taipei
National Taiwan University, Taipei