

A Note on Decomposing Measures of Social Welfare According to Sources of Income

B. Debroy

Measures of social welfare have been decomposed according to sources of income (Chakrabarty, 1983 and Debroy, 1986). By measures of social welfare we mean Sen's (1974) welfare measure, Kakwani's (1980) welfare measure and Kakwani's (1981) generalized welfare measure. We write Sen's welfare measure as W^S , Kakwani's welfare measure as W^K and Kakwani's generalized welfare measure as W . The theoretical decomposition of W^S was carried out in Chakrabarty (1983) and the theoretical decompositions of W^K and W were carried out in Debroy (1986).

Let the mean income obtained from the j^{th} income source be written as m_j and let P_j stand for the Pseudo-Gini coefficient of the j^{th} income source. Let G stand for the Gini coefficient of the distribution of total income and let t ($0 \leq t \leq 1$) be the parameter in the expression for W . t is thus the weight that society attaches to mean income as compared to the weight that society attaches to income inequality. It can easily be shown that W reduces to W^S when $t = 0$ and that W reduces to W^K when $t = 1$. It was proved in Debroy (1986) that the following relationship holds.

$$W = \sum_{j=1}^k m_j \left[1 - P_j + t P_j - t P_j \cdot (1 - G + t G) / (1 + t G) \right]$$
$$= \sum_{j=1}^k m_j \left[1 - P_j / (1 + t G) \right]$$

This relationship gives the decomposition of W according to sources of income. The decompositions of W^S and W^K emerge as special cases when $t = 0$ or $t = 1$. The j^{th} term in the above summation was called the welfare component of the j^{th} income source.

Chakrabarty (1983) used data from the NCAER study *Household Income And Its Disposition* to carry out the decomposition of W^S and Debroy (1986) used data from the