1125-49-1486  Michael McAsey* (mcasey@bradley.edu), 1501 W Bradley Ave, Bradley University, Peoria, IL 61625, and Libin Mou. Tax Policy to Minimize the Gini Index. Preliminary report.

The Gini index is a simple measure of inequity in the distribution of income (or other attributes) in a society. The index is a number between 0 and 1 measuring the area in the $1 \times 1$ square between the line $y = x$ (perfect equity) and the Lorenz curve of the society. The Lorenz curve $L(p)$ is the fraction of the total income that the holders of the lowest $p$th fraction of income possess. The goal is to find a tax scheme to minimize the Gini index, $G = 2 \int_0^1 [p - L(p)] dp$, by raising the Lorenz curve. The re-distribution function $q(x)$ of incomes normalized on $[0, 1]$ gives the after-tax income; it satisfies (1) $Bx \leq q(x) \leq Ax$, (2) $q'(x) \geq r \geq 0$, and (3) $q(x)/x$ is decreasing. The optimal $q$ is a piecewise linear function that allows lower incomes to be most preserved ($q(x) = Ax$ for $x$ small), higher incomes to be least preserved ($q(x) = Bx$ for $x$ large) and has a linear transition between the two. (Received September 17, 2016)