

It can be seen that the residential distribution of families depends on two main factors: a spatial factor (distance function) and a factor measuring family welfare (function of the utility differentials).

The relative importance of these factors and thus the level of competitiveness which is likely to exist between them is expressed by the parameters TETA and CSI.

In addition, family utility depends, among other factors, on the residential accessibility [from eq.(1)], the exponential term of which appears also in the distribution function of DPOTO [eqs. (4) - (5)].

2.2. The calibration procedure

The methodology for the calibration of the residential location submodel was based on the maximum likelihood principle which is discussed in Bertuglia, Galilino, Gualco, Occelli, Rabino, Salomone, Tadei (1982b). According to this principle two equations of maximum likelihood for TETA and CSI, FTETA and FCSI respectively, were derived and resolved using a Newton-Raphson estimation procedure.

The solution of FTETA and FCSI is given solving the system

$$-FTETA = \frac{\partial FTETA}{\partial TETA} \epsilon_1 + \frac{\partial FTETA}{\partial CSI} \epsilon_2 \quad (6)$$

$$-FCSI = \frac{\partial FCSI}{\partial TETA} \epsilon_1 + \frac{\partial FCSI}{\partial CSI} \epsilon_2, \quad (7)$$

where FTETA and FCSI are defined as