MATHEMATICAL MODEL FOR THE GROSS NATIONAL EXPENDITURE OF SRI LANKA

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The purpose of this study was to formulate a Mathematical Model to forecast the Gross National Expenditure at current market prices (GNE).

Testing for a kth year, the GNE as t_k, private consumption c_k, public consumption g_k and gross domestic capital formation i_k (with $t_k = c_k + g_k + i_k$), the variables were scaled by dividing with t_o the value of a base year (taken as 1971) to give T_k, C_k, G_k and I_k respectively.

Following assumptions were made $C_k = A\ T_{k-1}$; $I_k = B\ (C_k - C_{k-1})$

with A, B constants. Relavant data from 1971 to 1979, gave fair constant values for A, B and G_k was found as a linear function of k, by means of the least squares method, giving rise to the difference equation.

$$T_k - 2.218\ T_{k-1} + 1.35 T_{k-2} = G_k = 0.116 + 0.027.$$

An analytic technique was used to obtain a solution to the difference equation, in the term.

$$T_k = 0.339\ k^{1.109}\ \text{Sin}\ 0.347\ (k+11.236) + 0.204k + 1.626.$$

This equation gives an estimate of the GNE for 1980 as Rs. 81,143 million whereas the actual figure is Rs. 83,550 million.

Forecasts of the four items for the decade upto 1990 was made by the use of the computer.