

A Note on Induced Multiplier

T. T. Raa and D. Chakraborty

The object of the present note is to establish a relationship that exists between the direct and indirect income multiplier and the direct, indirect and induced income multiplier in an input-output model.

A unit change in sales to final demand for industry 'i' generates particular productions and thus, given value added coefficients, a particular income : y_i^* . As soon as a consumption function is introduced, a particular second round of direct and indirect requirements will follow. The income y_i^* requires directly particular consumption changes and indirectly particular productions and thus income, ad infinitum. In short, a second income change is induced. It is important to note that the second round of requirements is driven by a particular amount of income, independent of its source. To make this point clear, we consider the household sector as an industry, 'n+1', whose output is income and whose input structure is described by the consumption function. The income change induced in the second round is now determined by the income multiplier for industry 'n+1' : Y_{n+1}^{**} . We call this the induced income multiplier. The second round was driven by the amount of income Y_i^* . The induced income multiplier blows it up to $Y_{n+1}^{**} Y_i^*$, thus yielding the total direct, indirect and induced income multiplier for industry 'i' (Y_i^{**}) :

$$Y_i^{**} = Y_{n+1}^{**} Y_i^* \quad (i = 1, \dots, n)$$

This is the constant relationship between the income multipliers. Not surprisingly, the proportionality factor is the induced multiplier (Y_{n+1}^{**}). This factor may depend on consumption determinants, i.e., prices and income. However, it is constant with respect to 'i'.

In the previous analysis it is essential that, given value added coefficients, a particular income change implies particular, i.e., unique consumption changes. In input-output there is a one-to-one relationship between value added coefficients and prices. Hence, the crux is that given prices, a particular income implies unique consumptions. Mathematically¹ the consumption vector must be a