PLANNING FOR FULL EUROPEAN COMMUNITY MEMBERSHIP*

THE EFFECTS OF CHANGES IN INDIRECT TAXATION USING AN INPUT-OUTPUT APPROACH AND APPLICATION TO THE GREEK ECONOMY

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1. Introduction

A number of countries among them Greece, Portugal, Spain and Turkey have expressed interest in joining the European Community. The effects of substituting one tax regime for another then becomes of particular concern to economists and policy makers alike. In particular, the effect on the domestic price structure and level has been a question of some importance. The object of this paper is to develop an input-output methodology for projecting the price effects of postulated changes in tax regimes, and to illustrate the methodology with an application to the Greek Economy for 1971. The particular scenario under examination will be a “constant revenue” substitution of existing indirect taxes by Value Added Tax (VAT).

The disposition of this paper is as follows: Section 2 presents a theoretical framework for the analysis of alternative patterns of constant revenue VAT substitution. Section 3 provides an empirical application, with projections of price responses for the Greek Economy in 1971. Section 4 concludes the paper.

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2. Input-Output analysis of Prices and VAT substitution

(a) Prices in an open input-output model

For simplicity, we will be concerned only with an open input-output model. In an open input-output system prices are determined from a set of equations which state that the price, which each productive sector of the economy receives per unit of output must be equal to the total outlays incurred in the course of production. These outlays comprise not only payments for inputs purchased from the same and from the other sectors, but also the value added (Leontief [6]). Value added comprises payments for primary inputs, viz. for inputs not produced by the economic system, such as wages, salaries, dividends, interest and similar payments made to households, depreciation, payments made to government, and imports. That is, value added essentially represents payments made to the exogenous sectors (see Chenery and Clark [1]). Therefore,

\[ p_j = \frac{1}{n} \sum_{i=1}^{n} a_{ij} p_i + v_j \]  
\[ v_j = w_j + r_j + m_j + t_j \]

where

- \( p_j \) = the price per unit of the \( j \)th sector
- \( a_{ij} \) = domestic input-output coefficients
- \( v_j \) = the coefficient of value added in the \( j \)th sector
- \( w_j \) = coefficient of wages and salaries in the \( j \)th sector
- \( r_j \) = coefficient of profits in the \( j \)th sector
- \( m_j \) = coefficient of imports in the \( j \)th sector
- \( t_j \) = coefficient of taxes in the \( j \)th sector

In matrix notation, (1) becomes

\[ p = pA + v \]
\[ or \]
\[ p (I-A) = v \]  
\[ or \]
\[ p = v (I-A)^{-1} \]