THE BASIC STRUCTURE OF NEOCLASSICAL GENERAL EQUILIBRIUM THEORY*

0. INTRODUCTION

It is the aim of this paper to present a structuralist reconstruction of a type of neoclassical economic theory that is predominantly used as point of departure in the neoclassical analysis, especially in that of international trade. We have chosen to call it "general equilibrium of a closed economy" (GECE).

We have tried to bring out as clearly as possible the meaning of that structure for the particular research-strategy employed by scientists in the field: the structure of the theory's models already indicates how economists will proceed in order to find the models.¹

To avoid misconceptions, we shall always concisely illustrate the concept to be reconstructed in the economist's way. This will clarify to the reader what exactly we want to describe in the language of structuralism, and thus will enable him to check whether or not we are right. Also, this will reveal the reader something that structuralism pur sang cannot reveal: the spirit of the discipline.

Only minor modifications will be necessary to make the structure fit other forms of neoclassical general equilibrium analysis.²

1. THE PARTIAL POTENTIAL MODEL

In economics, a "model" is given by a set of assumptions. A "two by two model", for instance, is an imaginary economic region ("country") where there are two goods (γ₁, γ₂) to be produced and two factors ("means of production") to produce with (φ₁, φ₂).

Primary concepts are therefore

(1) kinds of goods: γ ∈ Γ, and a function q_output such that

\[ q_{\text{output}} : Γ \to R^+ \]

assigns a nonnegative³ real number y_γ to goods γ (y_γ = q_{\text{output}}(γ)).

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kinds of factors: \( \phi \in \Phi \), used in the production of each of the goods \( \gamma \), and a function \( q_{\text{input}} \) such that

\[
q_{\text{input}}: \Phi \times \Gamma \rightarrow R^+
\]

assigns a nonnegative real number \( \alpha_{\phi, \gamma} \) to every combination of a factor with a good in the production of which the factor is used, \( \alpha_{\phi, \gamma} = q_{\text{input}}(\phi, \gamma) \) representing the amount of factor \( \phi \) used in the production of good \( \gamma \).

We shall use the expression "industry \( \gamma \)" to refer to the production of good \( \gamma \). So, in a two by two model, there are two industries in the country: industry \( \gamma_1 \), and industry \( \gamma_2 \). We shall use "\( n \)" to denote the number of industries and "\( m \)" to denote the number of factors. "With each commodity... is associated a real number, its price." The second type of nontheoretical concepts in the economists' model are the prices of the \( \phi \)'s and \( \gamma \)'s. There are therefore

(3) the prices of goods \( \gamma \in \Gamma \), a function \( p \) such that

\[
p: \Gamma \rightarrow R^+
\]

assigns a nonnegative real number \( p_\gamma \) to goods \( \gamma \).

(4) the prices of factors \( \phi \in \Phi \), a function \( w \) such that

\[
w: \Phi \rightarrow R^+
\]

assigns a nonnegative real number \( w_\phi \) to factors \( \phi \).

This is what constitutes the theory's partial potential model:

D1 \( x \) is a partial potential model of GECE (\( x \in M_{pp} \)) if there exist \( \Gamma, \Phi, q_{\text{input}}, q_{\text{output}}, w, p \) such that

(1) \( x = (\Gamma, \Phi, q_{\text{input}}, q_{\text{output}}, w, p) \)
(2) \( \Gamma \) is a finite, nonempty set \( \Gamma = \{ \gamma_1, \ldots, \gamma_n \} \)
(3) \( \Phi \) is a finite, nonempty set \( \Phi = \{ \phi_1, \ldots, \phi_m \} \)
(4) \( q_{\text{input}}, q_{\text{output}}, p \) and \( w \) are functions as defined above.

It is about these "things" that GECE analysts speak. It is important here to understand the verb "exist" in D1 in the right way. A naive understanding here might allow only for those items which can be "read off" from "real" countries, and according to such a narrow interpretation of "existence" it might be objected that, for instance, there "exist" no countries with \( m = n = 2 \) (i.e., there "exist" no two by two