1 Economic Modelling and the Concept of Equilibrium

I THE TRADITIONAL EQUILIBRIUM APPROACH TO ECONOMIC MODELLING

There exist a number of definitions of the concept of economic equilibrium. One idea of equilibrium is that of a situation characterized by 'off-setting forces' – as, for example, when supply equals demand. A somewhat broader conception defines equilibrium as any state of rest which displays no endogenous tendencies to change over time.\(^1\) There also exist a variety of model specific definitions of equilibrium. For example, in certain theories of the business cycle, equilibrium is characterized in terms of the way that individuals form conditional expectations.\(^2\)

In spite of these differences in definition, however, it is possible to identify common methodological traits underlying what may be broadly construed as equilibrium analysis in economics. This 'traditional equilibrium approach' to economic modelling has two outstanding features. First, it involves identifying an array of structural equations, which define relationships determining the values of a set of endogenous variables, and (most importantly) which derive their structure from a set of exogenous variables and coefficients imposed upon the system from without. For example, in neoclassical partial equilibrium analysis of consumer and producer behaviour, individual consumption and production decisions (the endogenous variables) are related to exogenous variables such as relative prices, and coefficients representing preferences and technology.\(^3\) These exogenous variables and coefficients are taken as given, forming what may be referred to as the 'data' of the system, determined independently of individual behaviour by the market, consumer psychology and the state of science respectively.

Second, traditional equilibrium models are typically constructed so as to yield stable equilibria – that is, points of rest to which the system will return following any arbitrary displacement.\(^4\) This concern with stability follows naturally from concern with economic equilibria, since equilibrium configurations are not of general interest unless they are stable.

Stability is also important because it implies that an equilibrium configuration defined in terms of exogenous data may also be reached by the system to which it pertains from any arbitrary starting point. What the
preceding considerations suggest, then, is a definition of the traditional equilibrium approach to economic analysis as one in which the long run or final outcomes of economic systems are seen as being determinate (Kaldor, 1934); they are both defined and reached without reference to the (historical) adjustment path taken towards them.

i) The Use of Traditional Equilibrium Methodology in Keynesian and Neoclassical Macroeconomics

The widespread use of the traditional equilibrium approach in macroeconomics can be illustrated by considering two diverse examples of this methodology, both of which are characterized by stable equilibrium configurations defined in terms of exogenous data. Equations [1.1] and [1.2] below comprise a highly simplified Keynesian income–expenditure model:

\[ Y_t = C_t + I \]  \hspace{1cm} [1.1]

\[ C_t = \alpha Y_{t-1} \quad , \quad \alpha \in (0, 1) \]  \hspace{1cm} [1.2]

where \( Y_t \) represents national income, \( C_t \) represents realized aggregate consumption, \( \alpha \) is the propensity to consume, \( I \) is the (exogenously given) desired level of investment, and \( t \) subscripts denote time periods.

In this system, there are two structural equations in two unknowns \( (Y_t \) and \( C_t) \), with \( Y_{t-1}, I \) and \( \alpha \) taken as given. Substituting equation [1.2] into equation [1.1], we arrive at:

\[ Y_t = \alpha Y_{t-1} + I \]  \hspace{1cm} [1.3]

Setting \( Y_t = Y_{t-1} = Y^E \), we arrive at:

\[ Y^E = \frac{1}{1 - \alpha} \cdot I \]  \hspace{1cm} [1.4]

Equation [1.4] describes an equilibrium income configuration, \( Y^E \), defined in terms of the exogenous data \( I \) and \( \alpha \).

Suppose now that in some period \( t \), a transitory shock gives rise to a once over increase in the value of income, so that \( Y_t > Y_{t-1} = Y^E \). The effects of this are captured by the general solution of the difference equation [1.3], which can be written as:

\[ Y_t = \alpha A b^{t-1} + \frac{I}{1 - \alpha} \]