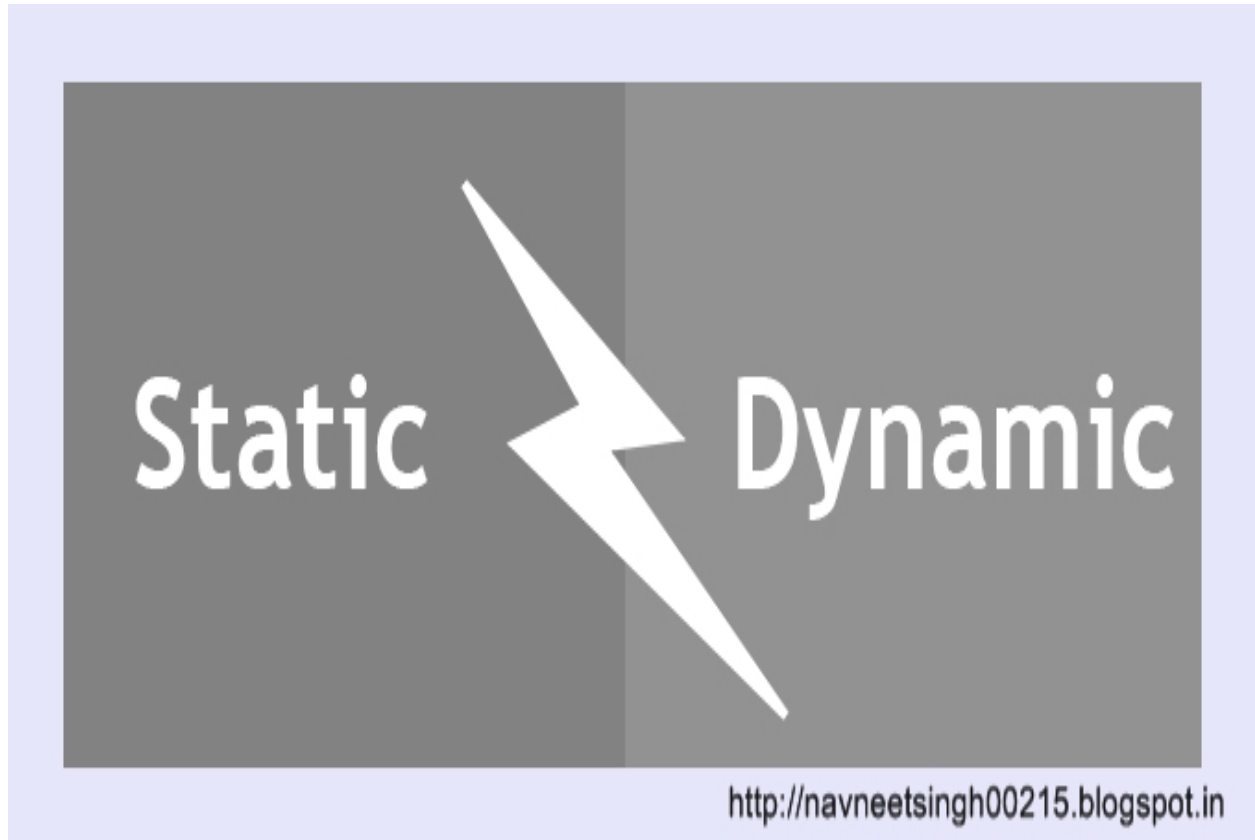# <u>Static and Dynamic Economics</u>

We shall explain below the meaning and nature of economic statics, dynamics and comparative statics and shall bring out the distinction between them. There has been a lot of controversy about their true meaning and nature, especially about economic dynamics.

**<u>Stationary and Changing Phenomena:</u>**

In order to make the difference between the natures of economic statics and dynamics quite clear, it is essential to bring out the distinction between two sorts of phenomena, stationary and changing. An economic variable is said to be stationary, if value of the variable does not change over time, that is, if its value is constant over time. For instance, if price of a good does not change as time passes, price will be called stationary. Likewise, national income is stationary if its magnitude does not change through time. On the other hand, the variable is said to be

changing (non-stationary) if its value does not remain constant through time. Thus, the whole economy can be said to be stationary (changing), if value of all important variables are constant through time (are subject to changes).

Economic Statics:

The task of economic theory is to explain the functional relationships between systems of economic variables. These relationships can be studied in two different ways. If a functional relationship is established between two variables whose values relate to the same point of time or to the same period of time, the analysis is said to be static. In other words, the static analysis or static theory is the study of static relationship between relevant variables. A functional relationship between variables is said to be static if values of the economic variables relate to the same point of time or to the same period of time.

Generally, economists are interested in the equilibrium values of the variables which are attained as a result of the adjustment of the given variables to each other. That is why economic theory has sometimes been called equilibrium analysis. Thus, according to the price theory, equilibrium at a given moment of time under perfect competition is determined by the intersection of given demand function and the supply functions (which relate the values of variables at the same point of time). Thus in Figure 4.1 given a demand function as demand curve DD and a supply function SS, the equilibrium price OP is determined.
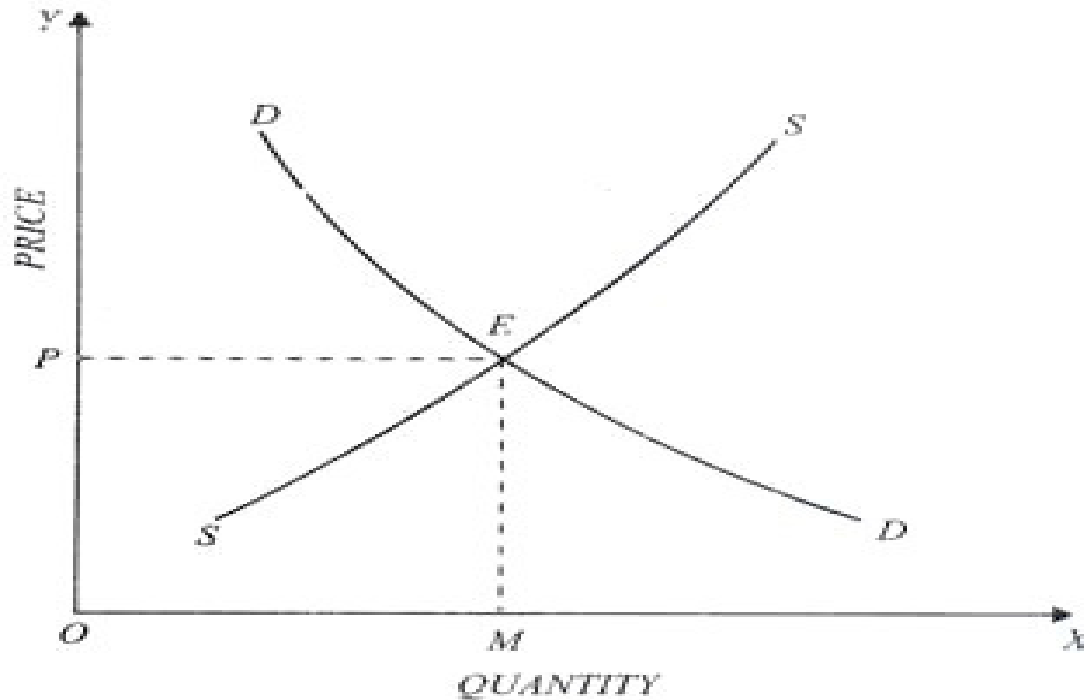
Fig. 4.1. *Static Equilibrium*

The equilibrium amount supplied and demand so determined is OM. This is a static analysis of price determination, for all the variables such as, quantity supplied, quantity demanded and the price refer to the same point or period of time. Moreover, the equilibrium price and quantity determined by their interaction also relate to the same time as the determining variables.

Economic Dynamics:

Now, we turn to the method of Economic Dynamics which has become very popular in contemporary economics. Economic dynamics is a more realistic method of analysing the behaviour of the economy or certain economic variables through time. The definition of economic dynamics has been a controversial question and it has been interpreted in various different ways. We shall try to explain the standard definitions of economic dynamics.

Frisch's Time Period Analysis:

The course thorough time of a system of economic variables can be explained in two ways. One is the method of economic statics described above, in which the relations between the relevant

variables in a given system refer to the same point or period of time. On the other hand, if the analysis considers the relationship between relevant variables whose values belong to different points of time is known as Dynamic Analysis or Economic Dynamics.

The relations between certain variables, the values of which refer to the different points or different periods of time are known as dynamic relationships. Thus, Professor Schumpeter says, "We call a relation dynamic if it connects economic quantities that refer to different points of time. Thus, if the quantity of a commodity that is offered at a point of time (-+) is considered as dependent upon the price that prevailed at the point of time (t – 1), this is a dynamic relation." In a word, economic dynamics is the analysis of dynamic relationships.

We thus see that in economic dynamics we duly recognise the element of time in the adjustment of the given variables to each other and accordingly analyse the relationships between given variables relating to different points of time.

Professor Ragnar Frisch who is one of the pioneers in the use of the technique of dynamic analysis in economics defines economic dynamics as follows: "A system is dynamical if its behaviour over time is determined by functional equations in which variables at different points of time are involved in an essential way."

In dynamic analysis, he further elaborates, "We consider not only a set of magnitudes in a given point of time and study the interrelations between them, but we consider the magnitudes of certain variables in different points of time, and we introduce certain equations which embrace at the same time several of those magnitudes belonging to different instants. This is the essential characteristic of a dynamic theory. Only by a theory of this type we can explain how one situation grows out of the foregoing."

Many examples of dynamic relationships from both micro and macroeconomic fields can be given. If one assumes that, the supply (S) for a good in the market in the given time (t) depends

upon the price that prevails in the preceding period (that is, t − 1) the relationship between supply and price is said to be dynamic.

This dynamic functional relation can be written as:

$S_t = f (P_{t-1})$

Where S_t stands for the supply of a good offered in a given period t and P_{t-1} for the price in the preceding period. Likewise, if we grant that the quantity demanded (D) of a good in a period t is a function of the expected price in the succeeding period (t + 1), the relation between demand and price will be said to be dynamic and the analysis of such relation would be called dynamic theory or economic dynamics.

Similarly, examples of dynamic relationship can be given from the macro field. If it is assumed that the consumption of the economy in a given period depends upon the income in the preceding period (t − 1) we shall be conceiving a dynamic relation.

This can be written as:

$C_t = f (Y_{t-1})$

When macroeconomic theory (theory of income, employment and growth) is treated dynamically, that is, when macroeconomic dynamic relationships are analysed, the theory is known as "Macro dynamics". Paul Samuelson, J.R. Kalecki, Post-Keynesians like R.F. Harrod, J.R. Hicks have greatly dynamised the macroeconomic theory of Keynes.

It should be noted that the change or movement in a dynamic system is endogenous, that is, it goes on independently of the external changes in it; one change grows out of the other. There may be some initial external shock or change but in response to that initial external change, the dynamic system goes on moving independently of any fresh external changes, successive changes growing out of the previous situations. In other words, the development of a dynamic process is self- generating. Thus, according to Paul Samuelson, "It is important to note that each

dynamic system generates its own behaviour over time either as an autonomous response to a set of "initial conditions" or as a response to some changing external conditions.

This feature of self-generating development over time is the crux of every dynamic process.' Likewise, Professor J. K. Mehta remarks, 'In simple words, we can say that an economy can be said to be in a dynamical system when the various variables in it such as output, demand, prices have values at any time dependent on their values at some other time. If you know their values at one moment of time, you should be able to know their values at subsequent points of time. Prices of goods in a causal dynamic system do not depend on any outside, exogenous forces. A dynamic system is self-contained and self-sustained."

The concept or technique of economic dynamics which we have presented above was first of all put forward by Ragnar Frisch in 1929. According to his view, like static analysis, economic dynamics is a particular method of explanation of economic phenomenon; economic phenomena themselves may be stationary or changing. Although technique of dynamic analysis has great scope in a changing and a growing system but it may also be applied even to stationary phenomena.