3. SPECIFICATION OF THE ECONOMETRIC MODEL OF CONSUMPTION:

The purely mathematical model of the consumption function is of limited interest to the econometrician, for it assumes that there is an *exact* or *deterministic* relationship between consumption and income. But relationships between economic variables are generally inexact.
Thus, if we were to obtain data on consumption expenditure and disposable (i.e., aftertax) income of a sample of, say, 500 American these data on a graph paper with consumption expenditure on the vertical axis and disposable income on the horizontal axis, we would not expect all 500 observations to lie exactly on the straight line of Eq. (I.3.1) because, in addition to income, other variables affect consumption expenditure. For example, size of family, ages of the members in the family, family religion, etc., are likely to exert some influence on consumption.

To allow for the inexact relationships between economic variables, the econometrician would modify the deterministic consumption function (I.3.1) as follows:

$$Y = \beta 1 + \beta 2X + u \qquad \text{where} \qquad \textbf{(I.3.2)}$$

u, known as the **disturbance,** or **error, term,** is a **random (stochastic) variable** that has well-defined probabilistic properties. The disturbance term u may well represent all those factors that affect consumption but are not taken into account explicitly.

Equation (I.3.2) is an example of an **econometric model.** More technically, it is an example of a **linear regression model,** which is the major concern of this book. The econometric consumption function hypothesizes that the dependent variable Y (consumption) is linearly related to the explanatory variable X (income) but that the relationship between the two is not exact; it is subject to individual variation.

4. OBTAINING DATA:

To estimate the econometric model given in (I.3.2), that is, to obtain the numerical values of $\beta 1$ and $\beta 2$, we need data.

5. ESTIMATION OF THE ECONOMETRIC MODEL:

Now that we have the data, our next task is to estimate the parameters of the consumption function. The numerical estimates of the parameters give empirical content to the consumption function. The actual mechanics of estimating the parameters. For now, note that the statistical technique of **regression analysis** is the main tool used to obtain the estimates.

6. HYPOTHESIS TESTING:

Assuming that the fitted model is a reasonably good approximation of reality, we have to develop suitable criteria to find out whether the estimates obtained are in accord with the expectations of the theory that is being tested. According to "positive" economists like Milton Friedman, a theory or hypothesis that is not verifiable by appeal to empirical evidence may not be admissible as a part of scientific enquiry.

7. FORECASTING OR PREDICTION:

If the chosen model does not refute the hypothesis or theory under consideration, we may use it to predict the future value(s) of the dependent, or **forecast, variable** Y on the basis of known or expected future value(s) of the explanatory, or **predictor, variable** X.

8. USE OF THE MODEL FOR CONTROL OR POLICY PURPOSES:

On the basis of the models developed, and after testing the hypothesis, the models can be put into use for policy purposes. At macro level, the government can use the model in economy to determine the exact solution to the basic economic problems.