

The SAGE Dictionary of Social Research Methods

ECONOMETRICS

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Definition

The study of economic theory, and the application of economic principles using a mathematical or statistical approach.

Distinctive Features

Traditional classic econometric analysis comprises a number of steps.

Step 1 Stating a hypothesis. The hypothesis can be based upon theory and/or empirical findings. It can be a result of intuition, questions arising from prior reading or work-based findings. However, the aim of econometrics is to address the hypothesis utilizing a quantitative analysis as opposed to a qualitative approach.

Step 2 Stating any prior assumptions about the hypothesis in a mathematical form. Once we have stated the hypothesis we need to give it form. In econometrics this is based around the use of mathematical equations.

Step 3 Specifying the nature of the econometric model. Specifying assumptions about our hypothesis, using equations, assumes that we can exactly model the phenomena we are studying. The complex interrelationships, which exist in the most simplest of economic phenomena, make this assumption highly questionable. Therefore in order to accommodate this we derive an econometric model which allows us to introduce these imperfections into the study. This is done by adding an error term to the equations used in the model.

Step 4 Data collection. Data collection in econometrics is vital for success. Success does not solely mean gaining results from our analysis which support the hypothesis. Success here should be read in broader terms, that is, having confidence in the results, and in the validity and meaning of the conclusions. Econometrics tends to be based upon large amounts of data, although considerable breakthroughs in theory and principles have been found using small data sets. The general rule is 'bigger is better'.

Step 5 Utilization of statistical/mathematical procedures aimed at answering the hypothesis. Once the data have been collected an analysis has to be undertaken. The two most popular forms of analysis in econometrics are multiple regression and time series analysis. However, there are other techniques, and the researcher should strategically choose in advance which techniques are best suited to answer the hypothesis, and the level of confidence required. In the main, econometric models are multivariate models.

Step 6 Utilization of findings. This is for the purposes of forecasting, adding to knowledge or theory and formulating or evaluating policy. In this respect there can be differences between econometrics and other disciplines. Some disciplines are only concerned with finding out whether there is a relationship between the dependent variable and the independent variable(s), and the nature of that relationship. Econometrics takes this further by utilizing this information and predicting events, which may follow as a result of it.

Evaluation

This model of econometrics is known as the classical model. Alternative models or approaches do exist. Wojciech, Charemza and Deadman (1992) highlight the shortcomings of the classical model and suggest a range of alternative approaches which are in line with the evolution of complementary disciplines such as mathematics and statistics and the development of computer hardware and software.

Whatever the type of approach chosen to perform an econometric analysis there are a number of issues that need to be considered. First, there is the question of whether it is possible to reduce economic phenomena to a mathematical or statistical form which reflects reality. Second, there is the issue of whether it is possible to adapt the mathematical form into an econometric model ready for testing. Simply adding an error term to an equation may be viewed as a rather naive approach in attempting to construct an econometric model. Third, there are general research issues regarding the ability to gather data, whether samples are representative and whether results are generalizable. Econometrics places a good deal of importance on the ability of a derived model to accurately forecast and predict what will happen in the future given a certain

set of circumstances. The validity of forecasts and predictions is very much dependent on whether these questions and issues can be addressed successfully.

Associated Concepts:

- [causal model](#)
- [forecasting](#)
- [hypothesis](#)
- [modelling](#)
- [multivariate analysis](#)
- [prediction](#)
- [quantitative research](#)
- [regression analysis](#)
- [SPSS](#)
- [time series design](#)