

[Summary]

Autoregressive and Distributed Lag Models

Subject:

Business Economics

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Unit No. & Title:

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Unit – 3 Time Series Models

Lecture – 1 Autoregressive and Distributed Lag Models

Summary

In this study, first of all we want to examine about the type, nature and applications of lag models by means of introducing Distributed Lag model (DLM) and Autoregressive model (ARM). There are certain reasons for lag structure in practical applications. We also want to know about adhoc estimation of DL models and have caution in applying ordinary least squares method.

Next we understand how Koyck's approach can transfer an infinitely distributed lag model into an autoregressive model. We also define terms like rate of decline, speed of adjustment etc. Since DL model is converted into AR model, we want to know about some features of Koyck's transformation. A brief study of Durbin's h statistic test is shown to detect autocorrelation in AR models.

Some specific applications of Koyck's model are presented briefly by means of introducing <u>Adaptive Expectation Model</u> (AEM), <u>Partial Adjustment Model</u> (PAM) and a combination of both AEM and PAM. (Which is referred to as Friedman's income hypothesis) When we take the problems of estimating AR models there can be certain difficulties which are briefly presented.

Due to the limitation of using OLS estimation to lag models, some new methods may be necessary to introduce. Here <u>Instrumental Variables Method (IVM)</u> leading to IV estimators is shown by an illustration.

To develop higher theories relating to the lag models. Some preliminary concepts for lag operator, Mean lag and Median lag are introduced. An introduction of triangular or Arithmetic lag represents how one can fit a proper lag structure of a model with its limitations. In our presentation all higher theories and more complex methods are not considered.