NRC-ICSSR
sponsored
TWO DAYS WORKHOP
on
TIME SERIES ANALYSIS WITH R
organized by
ECONOMICS DEPARTMENT
DYAL SINGH COLLEGE
under the ageis of
IQAC, DYAL SINGH COLLEGE

2nd & 3rd December 2024
Venue: Seminar Hall /Committee Room,
Dyal Singh College

PROF.V.K. PALIWAL
PRINCIPAL
DYAL SINGH COLLEGE

MR. SANJAY KUMAR
TEACHER IN-CHARGE
ECONOMICS DEPARTMENT
DYAL SINGH COLLEGE

Dyal Singh College

UNIVERSITY OF DELHI
NAAC GRADE A
NIRF RANKING#34
LODHI ROAD,
PRAGATI VIHAR,
NEW, DELHI 110003

WHO WE ARE?

Dyal Singh College owes its origin to the extreme generosity and foresight of Sardar Dyal Singh Majithia, founder of 'The Tribune', Punjab University and 'Punjab National Bank', who willed his vast wealth in 1895 for the setting up of an Education Trust for a truly secular college. Consequently, Dyal Singh College was established at Lahore in 1910. After the Partition of India, Dyal Singh College was established in Karnal and in 1952 at Delhi. It started functioning in the capital at Rouse Avenue as a constituent College of the University of Delhi w.e.f 05.08.1959 and at present location since 16.10.1962. During 1963-1967, it functioned in 2 units from 8.30 am to 4.30 pm. The University of Delhi took it over as a University Maintained institution in 1978. The college has been accredited NIRF (HRD) 2020 – 21st Rank (All India) and NAAC (UGC) Grade "A"

OBJECTIVES

-To introduce fundamentals, concepts and terminology for time series analysis.
-To provide comprehensive understanding of applications of time series techniques.
-To provide hands on training on R

PROGRAM OVERVIEW

The two-day workshop will be an interactive amalgam of lectures and discussions on time series econometrics and hands-on session with R. The initial sessions shall build the foundations on which the advanced time series analysis will be built on in later sessions. On day one participants shall be introduced to time series analysis followed by understanding stochastic process, stationarity etc.

The basic univariate time series models such as Autoregressive (AR) and Moving Average (MA) model, Autoregressive Moving Average Model (ARMA) and Autoregressive Integrated Moving Average Model (ARIMA) shall be discussed thoroughly. The target of these sessions would be to make participants understand the model as well as get its application on the data utilising R. Box Jenkins model selection and its estimation and forecasting using R will be followed next. Day one will be concluded with elaboration on deterministic and stochastic trend, understanding primarily random walk, stationarity and spurious regression. Three most widely used unit root tests namely Dickey Fuller test, Phillips Perron Test and KPSS test for stationarity shall be taken up in the last session of day one where theory and application with R shall be taught to the participants.

Next day of the workshop/hands on training will be opened with more advanced time series analysis. We begin with Vector Auto Regressive models followed by Granger Causality Test, forecast error variance decomposition (Choleskey and structural decomposition) with R. Third session of day two will be on cointegration and Error Correction Model in which Engle-Granger Approach for testing cointegration in single equation and Johansen approach for testing cointegration in multiple equation using R shall also be practiced. This workshop/hands-on training on time series will be concluded with learning univariate time series models with stochastic volatility primarily ARCH and GARCH Models.

The certificates of participation shall be awarded to all the participants who complete the workshop/hands-on training by attending all the sessions of both days and complete all the assignments as well.

PEDAGOGY

During each session firstly the topic would be introduced making the participants familiar with the concepts followed by the practical lessons on R. Each day will be explorative and is designed to maintain a mindful balance between concepts and their applications using R. Participants will work on the sample datasets and practice the various tests and regression techniques learned during the theoretical sessions.

WHO CAN PARTICIPATE?

- An early enthusiast for time series analysis.
- Research Scholars, Faculty of any disciplines
- Professionals / Executives from Industry engaged in Financial, Economical and Econometrics related Analytics

PRE-REQUISITES

- *Participants should have some background in multiple regression analysis/Econometrics.*
- *Basic working knowledge of R software.*
- *Participants must carry laptops and have R software installed on it.*

PROGRAM CONTENT

Day 1, Session 1 and Session 2
-Introduction to time series, stochastic process, stationarity, ergodicity etc.
-Understanding Autoregressive (AR) and Moving Average (MA) model
-Understanding Autoregressive Moving Average Model (ARMA) and Autoregressive Integrated Moving Average Model (ARIMA)
- Estimation of AR, MA, ARMA and ARIMA models using R
-Box-Jenkins model selection: Estimation and Forecasting using R

Day 1, Session 3
-Random Walk and Stationarity
-Unit Root Tests: Dickey Fuller test, Phillips Perron Test and KPSS test using R

DAY 2, Session 1 and Session 2
-Introduction to VAR models
-Estimation of VAR model using R
-Granger Causality Test, impulse response function, forecast error variance decomposition(Choleskey and structural decomposition) with R

Day 2, Session 3
-Understanding Cointegration and Error Correction Model (ECM)
-testing for cointegration in single equation: Engle-Granger Approach using R
-testing for cointegration in multiple equation: Johansen Approach using R

Day 2, Session 4
Univariate Time Series Models with Stochastic Volatility: ARCH and GARCH Model
-Understanding the conditional variance
-Detection of 'calm' and 'wild' periods in a stationary time series
-Estimation of ARCH and GARCH model using R

REGISTRATION

Registration fee for the workshop Faculty and Industry Professionals: Rs.1000.
Research Scholars: Rs.500.

Participants are required to register at:
https://forms.gle/Mr1wofXZopbU7WGf7

and make the payment at:
Bank Name: State Bank of India
Account No. 66013734119
IFSC Number: SBIN0060321
Agency Name in Bank: DSC College Fund Maintenance

(Mention 'two-day workshop' under purpose of transaction)

The registration will not be considered complete without the fee payment.

The registration would be on first come first serve basis.

RESOURCE PERSONS

DAY 1, SESSION 1 AND SESSION 2

DR.REETIKA GARG
ASSISTANT PROFESSOR
DELHI SCHOOL OF ECONOMICS
UNIVERSITY OF DELHI

DAY 1, SESSION 3

DR.APICA SHARMA
ASSISTANT PROFESSOR
IILM UNIVERSITY
GURGAON

DAY 2, SESSION 1 AND SESSION 2

DR.LOKENDRA KUMAWAT
ASSOCIATE PROFESSOR
RAMJAS COLLEGE
UNIVERSITY OF DELHI

DAY 2, SESSION 3 AND SESSION 4

PROF. NARAIN
PROFESSOR
FACULTY OF MANAGEMENT STUDIES
UNIVERSITY OF DELHI

Organising Team Members
Mr. Sanjay Kumar, Dr. Sandhya Varshney, Ms. Vandana Tulsyan, Dr. Ruchi Gupta, Ms. Bhavna Seth, Dr. Sandeep Dubey, Mr. Anil Kumar, Mr. Madhurendra Singh, Ms. Madhuri Singh (Economics Department)