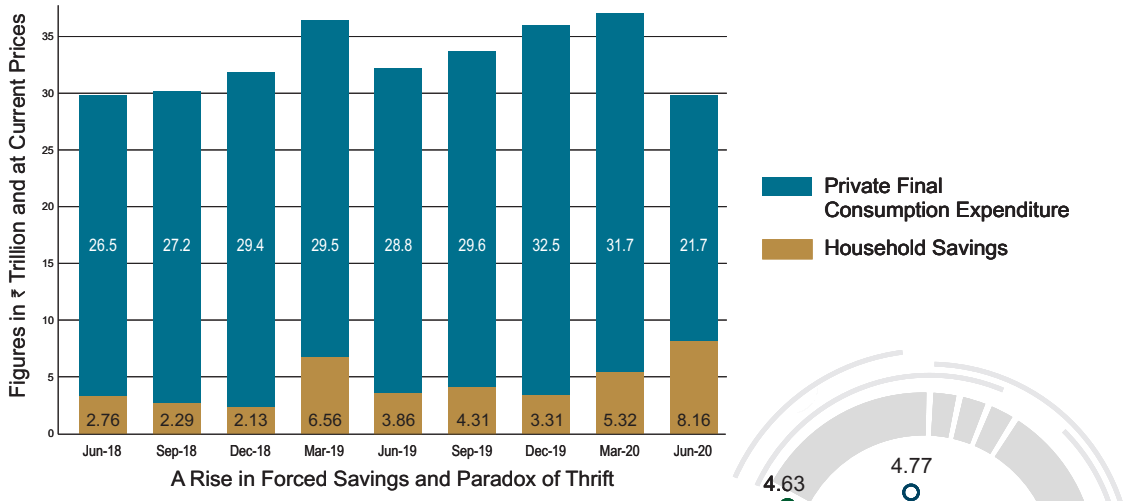
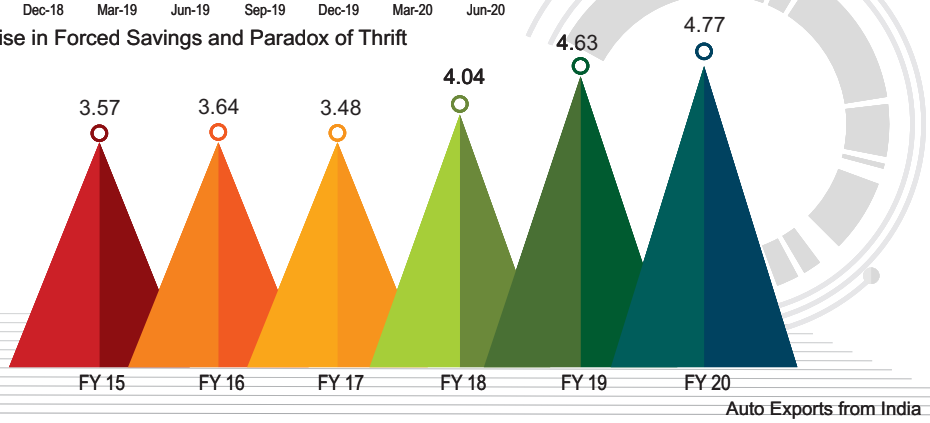
46th Edition

Dr. S.P. GUPTA

# STATISTICAL METHODS

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# Preface

### To the Forty Sixth Edition

This is a thoroughly revised and enlarged edition of the book. Approprate changes practically in all the chapters have been made wherever found necessary.

I take this opportunity to thank all the readers in India & Abroad who have spared their valuable time in making suggestions for improving the quality of the book.

I an specially thankful to Prof. Abad Ahmad, Prof. B.S. Sharma, Dr. Sarika & Rajeev Gulhar and Sameer who have been a source of great inspiration.

My very special thanks to M/S Sultan Chand & Sons 23, Darya Ganj New Delh–2 for their efforts and co-operation in publishing the book in an elegant from.

I firmly believe that the road to improvement is never ending. I shall look forward and gratefully acknowledge all suggestions received.

Last but not the least, I am indebted to the Almighty, the supreme Architect of the Universe, for infusing in me life and blood for the work I have been doing.

**Dr. S.P. Gupta**

### To the First Edition

Statistical Methods are plying an ever-increasing role in framing suitable policies in a large number of diversified fields covering natural, physical and social sciences. Statistics today has become indispensable in all phases of human endeavour.

This book is primarily meant for undergraduate students of Commerce and Economics. I have gone through the syllabi and examination papers of almost all universities where the subject is taught so as to make it as comprehensive as possible. A large number of properly graded questions and problems, mainly from examination question papers of various universities, are given at the end of each chapter. Answers to the problems, along with the hints, where necessary, have also been provided.

The lucidity of style and simplicity of expression have been my twin objects to remove the awe which is usually associated with most mathematical and statistical textbooks. The only mathematical background needed for understanding the entire book is a little arithmetic and elementary algebra. In order that the students may not feel any difficulty in following the text, steps in calculation along with every formula have also been given.

I am deeply indebted to my distinguished teacher, Dr. C.B. Gupta, Head of the Deptt. of Commerce, Shri Ram Collage of Commerce, who has always been a source of help, guidance and inspiration to me. I also owe a great deal to my teachers: Dr. R.L. Gulati of the Faculty of Mathematics, University of Delhi; Mr. K.R. Rao (Statistics), Delhi Cloth Mills; Sri J.K. Gautam, Head of Deptt. of Commerce, Rajdhani College, and Ss Vidya Rattan and R.L Lele of S.R. College who have taught me thet subject. I acknowledge with thanks the valuable suggestions of my friends, Mr. R.N. Goel of S.R. College and Mr. Y.P. Sabharwal, Dr. N.K. Kakkar and Dr. D.B. Gupta of Ramjas Collage and Mr. Davendira Gupta of Rajdhani College.

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Ist Jan., 1969 **S.P. GUPTA**

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**Dr. S.P. Gupta** (born 1942) has a brilliant academic record of teaching more than 4 decades in Indian and foreign Universities. He was a student of Shri Ram College of Commerce, University of Delhi. He obtained B.Com. (H) and M. Com. Degree with "Advanced Statistics" as specialization and taught for more than a decade in SRCC.

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