

A TRIBUTE TO PROFESSOR A.L. NAGAR



A.L. Nagar (1930-2014)

Anirudh Lal Nagar (popularly and affectionately known as “Nagar Saheb”) passed away on February 4, 2014, in Pune, India at the age of 83. He was born in 1930 in Allahabad, India, and was one of the most internationally known and influential Indian econometricians of the 20th century. After obtaining a Master's in Statistics from Lucknow University in 1951, he taught there until 1957, and went to The Netherlands School of Economics (NSE), Rotterdam and completed his Ph.D. there in 1959 under the supervision of Henri Theil. During the years 1959-63, he first served as a research associate till 1961 at NSE, then taught at Purdue University (1961-62) followed by a short stint at IIT, Kanpur (1962-63), at which point he moved to The Delhi School of Economics (DSE) where he taught for over three decades (1963-1995). During this period he was a visiting professor at various universities including Brookings Institution, University of Pennsylvania, University of Western Ontario, University of Waterloo, Concordia University, University of Windsor, York University, and Australian National University. This was clear evidence of him being internationally recognized as an authority in Econometrics, especially in Finite Sample Econometrics. After this period he was associated as a visiting professor at Jawaharlal Nehru University (JNU) as well as being an Honorary Fellow at National Institute of Public Finance and Policy during 2001-11. Subsequently he moved to Pune to live with his son. He is survived by his wife, Meera Nagar, a daughter Anshu Kaushal, and two sons, Amit Nagar and Ashiesh Anirudh Nagar.

Nagar Saheb was the founding pillar of the development of Econometrics in India and published in top journals of Econometrics and Statistics. This included *Econometrica*, *Journal of American Statistical Association (JASA)*, *International Economic Review (IER)*, *Journal of Econometrics*, among others. His research career began with the most fundamental and pioneering work in the area of Finite Sample Econometrics resulting in the paper “The bias and moment matrix of the general k-class estimators of the parameters in simultaneous equations”, which appeared in *Econometrica* (1959). This contribution of Nagar Saheb, along with his paper in *IER* (1962) on the finite sample properties of double k-class estimators, using an innovative application of a Taylor-type stochastic expansion, laid the foundation for future generations of econometricians, including many of his students, for developing the finite sample moments of a

class of estimators in various econometric models. In fact this is now known in the profession as "Nagar's Expansion" as coined in Sargan (1974). Since then there were research developments in Finite Sample Econometrics literature by T. W. Anderson and his students at Stanford University, D. Sargan and his students at LSE, R. L. Basmann and his students at Texas A & M, G.D.A Phillips and his students at Exeter, P.C. B Phillips and his students at Yale University, V. K. Srivastava and his students at Lucknow University, and A. Ullah and his students at University of Western Ontario and University of California, Riverside. See Ullah (2004) for details. The beginning of the 90s saw a turn in which Nagar's theoretical results on bias and MSE of k-class estimators became a focal point because of its use in explaining the problem of high bias of the IV estimators under weak instruments (Bound, Jaeger, and Baker (1995) and Angrist and Krueger (1991)) in many empirical studies. His other major theoretical work, among others, was with Henri Theil and it is popularly known as the Theil-Nagar (1961) test, also as the adjusted Durbin-Watson test, for testing serial correlation; and with Goldberger and Odeh on deriving covariance matrices of both reduced form coefficients and of forecasts in structural models to study their efficiencies. The evidence of the impact of his theoretical contributions in Econometrics is clearly evident in the edited book in his honor by Carter, Dutta, and Ullah (1990) which included contributed papers from world leading econometricians such as R. L. Basmann, P.J. Dhrymes, J. Dreze, M. Mouchart, H. Theil, and Nobel Laureate L. Klein, among others.

Nagar Saheb's contributions extended beyond theoretical Econometrics. He had been engaged in doing empirical research in collaboration with Nobel Laureate Lawrence Klein on understanding policy changes and forecasting within the framework of the Brookings quarterly Macro Econometric models in the mid-1960s. From 1990 he began a new wave of research activities in the measurement of human development and quality of life (Nagar and Basu (2002)) and in forecasting tax revenue (e.g. Nagar, Kumar, and Samanta (2007)). He continued to have unending new ideas and research till the last moments of his constructive and productive life. Towards the end he was still working on the econometric analysis of health and pollution issues in India (e.g. Nagar, Ray, Sawhney, and Samanta (2009)), and was thinking about ways to construct a structural model which would incorporate economic, social and environmental issues and provide a better understanding of their linkages in making proper policy predictions on the current global economy.

Apart from contributing to frontier Econometrics research, Nagar Saheb was truly a great mentor, teacher, and PhD dissertation supervisor to legions of students around the world and he always found time to passionately discuss research matters. He was truly a GURU whose door was always open for giving "Shiksha" (education) to his "Shishyas" (students). Also, he was an extremely kind and generous human being who provided unfailing intellectual and moral support to his students. For all, he was not only a great teacher and a visionary researcher but, above all, a humble and caring humanist.

Along with his fundamental research advances and dedication to teaching and mentoring, Nagar Saheb's contributions to the profession have been invaluable and have made a lasting impact. He was one of the founding members of TIES, its first Vice President (1972-76), and then served as its President (1977-81). Also, he made numerous contributions as the Editor-in-Chief of the Society's Journal of Quantitative Economics until the end and was also associated with Sankhya D, Indian Economics Review, and Mathematical Reviews. He was elected as Fellow of the Econometric Society in 1971. In addition, he was awarded UGC Lecturer (1972-73), Jawahar

Lal Nehru award for Social Sciences (1972), UGC Fellowship (1983-85), Australian Vice Chancellor's Committee Fellowship (1992), and J.P.Naik National Fellowship of ICSSR (1998-2000), among others. Also, he participated in several Indian, European, and World Econometric Conferences. Apart from these professional services, Nagar Saheb's contributions to the university service had been phenomenal. He served as the Head of Department of Economics, DSE (1973-76), Director of DSE (1973-76 & 1984-89), Dean of Social Sciences, Delhi University (1974-76), and Pro-Vice Chancellor, Delhi University (1990-95) and its officiating Vice Chancellor (1994-95).

In summary, Nagar Saheb was a born teacher who guided us all, made tremendous contributions to both the Indian and the international econometric profession, worked till his last moment, and has left a great and inspiring legacy for all of us and the future generation of econometricians. With his death the Economics, Econometrics, and Statistics professions have lost one of their most influential and pioneering member, a man who was loved and revered by so many of us.

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