

in China and the activities and organization of the National Science Foundation of China (NSFC). He reported difficulties with language and visibility. Nevertheless, some 30 high-quality journals are supported by the NSFC, and the number of citations and downloads increases steadily. The Foundation attaches importance to developing good relationships with international journals. Zu Guang'an also presented a paper by Liu Xiwen of the Library of the Chinese Academy of Sciences, who could not attend the meeting. In his paper Xiwen traced recent developments in China, especially the conferences held and the portals and repositories developed. This presentation was followed by a series of important papers and discussions from South Africa in which, Eve Gray (an OSI Fellow), and Susan Veldsman (Soros-supported eIFL-OA organization) discussed the publishing situation in the region and the importance of open access in making progress. D. K. Sahu (MedKnow, Mumbai) provided valuable statistical information on the impact of open access on the journals using the MedKnow services. He described the economic sustainability of the system that provides open access to all contents and yet recovers costs. Submissions, subscriptions and impact were all increasing each year since converting to open access. The role of INASP in supporting regional publications was presented by Pippa Smart (INASP), and interesting contributions were also made from the viewpoint of IDRC, Topaz software organization and others. A. R. D.

Prasad (ISI) mentioned about the many training programmes that have been conducted in India to help build capacity to set up and maintain OA archives. Muthu Madhan of the National Institute of Technology, Rourkela, the only Indian institution to have mandated self-archiving of all faculty and student research publications, mentioned that after the mandate more than 90% of papers are being deposited by the authors. S. Krishnan (National Chemical Laboratory, Pune) emphasized the need for archiving data. Sunil Abraham (a member of the Open Source Initiative (OSI) board) suggested that citizens, as tax payers and consumers, have a right to get free access to results of publicly-funded research. A rounded series of contributions set the scene for discussions on the way ahead.

The workshop ended with a discussion chaired by M. R. N. Murthy (IISc) on a proposed national policy document that could be used to promote acceptance of the open access strategies outlined in the Budapest Open Access Initiative and based on the Salvador Declaration for Open Access for Developing Countries. The proposed policy document was discussed by all participants and a number of suggestions were made for improvement. These were noted and after the workshop the document was revised and re-circulated to all participants for approval. The final document was prepared incorporating further recommendations received through e-mail and was circulated widely. It may be accessed from the workshop website: <http://www.ncsi.iisc.ernet.in/OAworkshop2006>.

It is hoped that this National Open Access Policy for Developing Countries will provide a major step forward to adopting open access as a way to release all publicly funded research publications from financial and other barriers, thus creating a level playing field for scientific development worldwide. Without the free and full exchange of scientific information, the solving of the major problems affecting countries – tsunamis, avian flu, HIV/AIDS, global warming, emerging infectious diseases – will forever be delayed. The development of the World Wide Web, donated free to all by its inventor, Tim Berners-Lee, provides a magnificent opportunity for scientists everywhere to share their experimental output with colleagues around the world.

The indefatigable energy of Subbiah Arunachalam (M.S. Swaminathan Research Foundation, Chennai) allowed this important workshop to take place, bringing together representatives of some of the most scientifically advanced developing nations to consider and agree upon a common policy for progress. IISc with its sylvan surroundings, provided a magnificent setting.

Presentations, a list of participants, open access resources, the OA Policy Document and other information are all available at: <http://www.ncsi.iisc.ernet.in/OAworkshop2006/presentations.htm>

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MEETING REPORT

Mathematical finance*

Mathematical finance has been one of the most active research areas among the probability and statistics community in recent years. The main objective of the meeting on mathematical finance held recently, was to bring together interested scientists from India and boost this acti-

vity, which has so far been rather sporadic in our country. Twenty-four persons participated in the meeting: 15 faculty members from various institutions, five students, two-postdoctoral fellows, and two professionals from the finance industry.

During the meeting twelve lectures and two discussion sessions were held. Three main topics covered were: Risk processes, Interest rate models, and Volatility estimation.

Risk processes play a significant role in insurance and other areas. S. Ramasubramanian (ISI, Bangalore) gave a series of lectures on this topic. In his lectures basic framework of the Cramer–Lundberg model and the renewal model of insurance risk were reviewed. Ruin problem in both models was described. Renewal-type equations and Pollaczek–Khinchin formula for ruin/survival probability were discussed. Exponential decay or ruin probability in small claims case, and

*A report on the discussion meeting on 'Mathematical Finance' organized by the Indian Academy of Sciences, Bangalore at Orange County, Coorg during 29 November–3 December 2006.

power-law decay in case of sub-exponential claim sizes were elaborated upon for the Cramer–Lundberg model. Minimizing ruin probability through investment in risky asset and/or through reinsurance was outlined in the case of the Cramer–Lundberg model. Asymptotics of optimally controlled risk processes were surveyed.

K. Suresh Kumar (IIT, Bombay) gave a series of lectures on interest rate models. These lectures were focused on modelling and pricing of interest rate derivatives. He first gave a brief description of the basic notions like money market account, T-bond, stochastic discount factor, swaps, caps, floors and short rate, etc. He devoted a substantial part of his lectures on short rate model approach, also known as the Vasicek methodology for term structure. An affine formula for the T-bond was derived using no arbitrage argument. The pricing of interest rate derivatives was obtained using the forward measure approach. The final part of his talks was devoted to the Heath–Jarrow–Morton (HJM) methodology. Suresh Kumar explained this methodology in

some detail, and showed the importance of volatility structures of forward rates in the pricing scenario. As an illustration he discussed the Hull–White model for short rate to show how the short-rate modelling approach is a special case of the HJM methodology in the context of derivative pricing.

A. Subramanyam (IIT Bombay) gave a series of lectures in volatility estimation. He first explained the importance of the estimates of volatility in the pricing of options and other derivatives. He discussed estimating volatility interpreted as the standard deviation of the returns obtained in unit time. Various estimators based on high, low, open and close prices were described, assuming the Black–Scholes model. Subsequently, he described models in which volatility is allowed to be random. The product price model of Taylor and ARCH/GARCH models were discussed. A method of estimating volatility assuming it can take on only finitely many values was outlined. Finally Subramanyam presented a model in continuous time for the returns by subordinating a Brownian motion. Estimation of ‘actual

volatility’ using the ‘realized volatility’ was also discussed.

Srikanth K. Iyer gave two lectures on credit risk. He first explained the basic problems in credit risk. Then he elaborated upon the Credit + model.

Two discussion sessions were held. The first one was initiated and moderated by Vijay Phansalkar (Financial Consultant, Pune). He described a trading strategy based on the directional change in volatility of the underlying stock. He mentioned that this particular strategy has been immensely successful for a certain company. This led to an intense discussion. The second discussion session was initiated and moderated by Sanjeevan Kapshe (SEBI, Mumbai). He described ten challenging problems in finance. This led to a useful discussion.

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