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MATHEMATICS

Statistical Analysis of Financial Time Series
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In the vacation period of 2006-07, I was fortunate enough to receive a scholarship from ICE-EM and AMSI. Initially I would like to thank them for this opportunity in furthering my studies. The project I undertook involved the Statistical Analysis of Financial Time Series and Dr. Ajay Chandra was my supervisor.

First I collected relevant material from the internet and library, gaining background knowledge from many papers written on this topic. I then took a more specific interest in the autoregressive conditional heteroskedastic (ARCH) model, since it successfully models the behaviour of financial data.

I also investigated the downfalls of this model under the assumption of either normal or log-normal distribution. This led me to discover various reasons for the success of the ARCH type models; their fat tailed distributions and also the explanation of the volatility clustering seen in financial data.

For analysis of financial data, such as stock exchange rate data, ARCH type models have received a considerable amount of attention, given they model the data accurately. I worked on a number of successful simulations for the ARCH and GARCH (generalized ARCH) models using the R statistical package.

The ICE-EM/AMSI scholarship was a great opportunity for me to obtain a base knowledge on financial mathematics in particular the modelling of financial time series data. It also provided a chance to gain experience with statistical software packages. The time spent over the vacation period working in this area of statistical analysis has helped me greatly in deciding on an honours year and more particularly a thesis topic.