Title:	Calibration of option pricing models with emphasis on stochastic calculus
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Abstract:	The thesis aims to discuss various models for option pricing and their calibration in the Global and Indian market. Construction of Ito integral with respect to Brownian motion has been carried out rigorously. In discrete-time models, single and multiple period binomial Model, CRR model, and multinomial model has been discussed. For continuous time, Bachelier and BSM model has been discussed. The solution of BSM PDE has been discussed using two methods, first by converting BSM PDE to heat equation and then solved it by Fourier transform technique and second is by changing probability measure. Further implementation and calibration of Apple and Google Stock in Bachelier and geometric Brownian motion model have been carried out. It has been shown that GBM Model is a better fit for the stock path rather than the Bachelier model. It has also been demonstrated that GBM Model also deviates from the real stock path because of the assumption of the log-normal distribution of return, constant mean, and constant volatility. Finally, simulation of Infosys option for CRR and BSM Model has been carried out and it has been shown that the CRR model is a very good estimate for the BSM model for a large number of time steps.
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