

CQF Module 3

Martingales Theory: Application to Option Pricing

Black-Scholes All Over Again

CQF

Some references to go deeper into stochastic calculus & martingales...

There is a plethora of stochastic calculus and stochastic analysis books. Most are good, some are better than others, but the great majority share a common feature: they are rather arcane!

Both of Steven Shreve's books ([6] and [7]) are invaluable. They are clearly written and contain all you need to know on stochastic calculus applied to finance... and then some more.

Baxter and Rennie [1] provides a good overview of the key techniques. The book is intuitive: Baxter and Rennie tend to explain the important concepts in plain old English and then show how this translates in math.

Chin, Nel and Ólafsson [2] contains a large number of worked out exercises on probability and stochastic calculus. It is a very good companion book.

Hull [3] is a *tour de force*. It has an overview of pretty much every topic, but the stochastics are covered more from a finance perspective than a quantitative finance perspective. majority share a common feature: they are rather arcane!

Øksendal [5] is the next step. It gives you all of the results you will ever need to manipulate Itô processes, and their proofs.

Neftci [4] is OK, but a bit too much of a bird's eye view and not quite rigorous enough.



M. Baxter and A. Rennie.

Financial Calculus: An Introduction to Derivative Pricing.

Cambridge University Press, 1996.



E. Chin, D. Nel, and S. Ólafsson.

Stochastic Calculus, volume 1 of *Problems and Solutions in Mathematical Finance*.

Wiley, 2014.



J. Hull.

Options, Futures, and Other Derivatives.

Pearson Education, 7 edition, 2010.



S. Neftci.

An Introduction to the Mathematics of Financial Derivatives.

Academic Press, 2 edition, 2000.



B. Øksendal.

Stochastic Differential Equations.

Universitext. Springer-Verlag, 6 edition, 2003.



S. Shreve.

Stochastic Calculus for Finance I: The Binomial Asset Pricing Model.

Springer Finance. Springer, 2 edition, 2008.



S. Shreve.

Stochastic Calculus for Finance II: Continuous-Time Models.

Springer Finance. Springer, 2 edition, 2008.