

N. Kiriakidou. [Interest Rate Derivatives Pricing Models](#) . *Master Thesis*, University of Piraeus, 2020.



**Abstract** - The purpose of this M.Sc. dissertation is the analysis and presentation of the stochastic models of Vasicek, Cox Ingersoll & Ross and Ho-Lee, which consist some of the most significant models for forecasting the evolution of market interest rates. These models are also used in order to evaluate interest rate derivatives. Furthermore, the interest rate derivatives Cap, Floor and Swap are presented and described, while their price is defined by the evolution of interest rates through time. Finally, the approximate evaluation of Cap derivatives is performed using Monte-Carlo simulation.

This MSc dissertation is organized as follows: Chapter 1 presents the definitions and the mathematical tools, which are needed for pricing interest rate derivatives. Chapter 2 presents the pricing models of Vasicek, Cox Ingersoll & Ross and Ho-Lee. Chapter 3 briefly presents the interest rate derivatives Cap, Floor and Swap. Finally, Chapter 4 presents the numerical results via Monte-Carlo simulation of interest rate pricing models and the prices of Cap contract for each case. The results concern the Libor USD, Libor GBP and Libor EU interest rates. All the simulations are performed using R.