

Financial derivatives are financial instruments which enable investor or a debtor to optimize his/her asset/debt portfolios according to individual needs and acceptable scale of risk. Their importance in financial markets rose enormously in past ten years as well as did their traded volumes. Interest rate derivatives form a large sub-group of financial derivatives, their valuation is a large self-contained chapter within financial mathematics thanks to the unique characteristics of yield- and discount-curve dynamics. In the first part of my thesis I derive the fundamental pricing principles stemming from no-arbitrage pricing theory and introduce the most common approaches in yield curve modeling. In the second part I discuss issues of calibration in a "LIBOR Market Model" with one to three risk factors. These models are used to price swaptions with Monte Carlo simulation within the no-arbitrage framework introduced in the first part. The result of the thesis is that one factor model performs the best in pricing swaptions.