The subject of the thesis is the estimation of the parameters of the Hull-White model. The formula for the time-dependent parameter  $\theta$  is derived. The constant parameters  $\alpha$  and  $\sigma$  are first calibrated on the prices of the chosen interest rate derivatives in the forward-looking approach and secondly on the historical yield curves in the backward-looking approach. Calibrated Hull-White models are simulated and then the approaches used are compared in terms of available data.