Financial markets can be very dynamic. Many theoretical financial models are based on constant parameters, but financial market conditions are constantly changing. Therefore, this thesis examines the impact of time-varying market parameters on financial derivatives.

The research focuses on the following three topics. The first part of the research examines the impact of different time-varying correlation scenarios on basket option pricing, hedging, and risk management. The second part focuses on the implications of time-varying market liquidity for static hedging of barrier options. The last part contains a comparative study of time-varying correlation models.

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