
Contents

1	Introduction	1
1.1	The Area of Research	1
1.2	Structure of the Thesis	7
	References	8
2	Construction of Arbitrage-Free Implied Trees:	
	A New Approach	11
2.1	Introduction	11
2.2	Related Literature	12
2.3	Constructing Implied Trees	16
2.3.1	The Model	16
2.3.2	Possible Simplifications	21
2.3.3	Comparison to Existing Approaches	22
2.4	Example	24
2.5	Conclusion	34
2.6	Appendix	34
	References	37
3	Market-Conform Option Valuation: An Empirical	
	Assessment of Alternative Approaches	39
3.1	Introduction	39
3.2	Alternative Option Pricing Models	41
3.2.1	Parametric Option Pricing Models	41
3.2.2	Deterministic Volatility Models	43
3.2.3	Non-Parametric Option Pricing Models	44
3.3	Data	48
3.4	Empirical Results	53
3.4.1	American Call Options	56

VIII Contents

3.4.2	European Knock-Out Options	60
3.5	Conclusion	64
	References	65
4	Market-Conform Valuation of American-Style Options via Monte Carlo Simulation	69
4.1	Introduction	69
4.2	Monte Carlo Methods	71
4.2.1	The Classical Monte Carlo Technique	71
4.2.2	Weighted Monte Carlo Technique	72
4.3	Valuing American Options by Simulation	75
4.3.1	Weighted Threshold Approach	75
4.3.2	Weighted Least-Squares Approach	77
4.3.3	Comparison of the Extensions	80
4.4	Effect of Weighting Monte Carlo Paths	81
4.5	Example	85
4.5.1	Data	85
4.5.2	Model Specification	86
4.5.3	Empirical Results	88
4.6	Conclusions	90
	References	91
5	Synopsis	95
5.1	Thematische Einordnung	95
5.2	Struktur und Inhalt der Arbeit	97
5.3	Ausblick	101
	References	102