

---

# CONTENTS

---

<b>1</b>	<b>Introduction</b>	<b>3</b>
<b>2</b>	<b>The Stochastic Finance Economy</b>	<b>9</b>
2.1	Equilibrium . . . . .	11
2.2	The No-Arbitrage Principle . . . . .	14
2.3	No Arbitrage Valuation in the Complete Market . . . . .	16
2.4	No Arbitrage Valuation in the Incomplete Market . . . . .	21
<b>3</b>	<b>The Continuous Stochastic Finance Economy</b>	<b>29</b>
3.1	The Limit Model . . . . .	29
3.2	No-Arbitrage Valuation in Complete and Incomplete Markets . . . . .	31
3.3	Binomial Models as Approximations . . . . .	36
<b>4</b>	<b>The Random-Time Binomial Model</b>	<b>41</b>
4.1	Randomization of the Binomial Model . . . . .	41
4.2	Valuation . . . . .	45
4.3	Incorporating Extreme Jumps . . . . .	49
<b>5</b>	<b>A Worst Case Analysis</b>	<b>53</b>
5.1	European-style Call and Put Options . . . . .	55
5.2	The American-style Put Option . . . . .	59
<b>6</b>	<b>Efficiency Improvements</b>	<b>61</b>
6.1	Decreasing Errors Properly . . . . .	61
6.2	Smoothing European-style Call and Put Options . . . . .	64
6.3	Smoothing the American-style Put Option . . . . .	69

---

---

**CONTENTS**

<b>Appendix</b>	<b>79</b>
<b>A Proofs of Chapter 4</b>	<b>81</b>
<b>B Proofs of Section 5.1</b>	<b>85</b>
<b>C Proofs of Section 5.2</b>	<b>93</b>
<b>Bibliography</b>	<b>103</b>