

Florian Cornelis Wolff

Employee Stock Option Compensation

A behavioral finance approach

With a foreword by Prof. Dr. Peter-J. Jost

Deutscher Universitäts-Verlag

Table of contents

1. Introduction to the topic.....	1
1.1. Relevance of the topic.....	2
1.2. Questions posed	11
1.3. Summary conclusions	11
1.4. Outline of the structure of the book	13
2. Theoretical & empirical assessment.....	15
2.1. Definition of a stock option plan.....	15
2.2. Review of stock option plan use	20
2.2.1. <i>The principal/agent problem in the publicly traded firm</i>	20
2.2.2. <i>Appropriateness of stock options to reduce agency costs</i>	26
2.2.3. <i>Dynamic model of stock option plans</i>	28
2.2.4. <i>Impact on systemic risk premium</i>	33
2.3. Empirical analysis of the use of stock option plans	37
2.3.1. <i>Level of stock option compensation in the US and Europe</i>	38
2.3.2. <i>Impact on pay-performance intensity</i>	42
2.3.3. <i>Impact on performance</i>	46
2.3.4. <i>Impact on corporate policies</i>	50
2.4. Conclusion.....	52
3. Review of risk-neutral valuation models	53
3.1. Importance of valuing stock options	53
3.2. Valuing stock options from the company perspective	56
3.2.1. <i>Principle of risk-neutral valuation</i>	56
3.2.2. <i>Outline of some risk-neutral valuation models</i>	58
3.2.3. <i>Implication for estimating the cost of stock options to companies</i>	65
3.3. Valuing stock options from the executive's perspective	67
3.3.1. <i>Limitations of risk-neutral valuation</i>	67
3.3.2. <i>Modified risk-neutral models</i>	69
3.4. Conclusion.....	76

4. Utility-based stock-option valuation	79
4.1. General introduction to expected utility models.....	80
4.2. Hall-Murphy model	84
4.2.1. Introduction... ..	84
4.2.2. "Executive Value" lines.....	90
4.2.3. Critique of the Hall-Murphy papers	97
4.3. Modifications to the 'traditional' EU model.....	109
4.3.1. Violations of expected utility theory.....	109
4.3.2. Developments towards a non-traditional theory of utility.....	119
4.4. Implications for a new model of subjective valuation	142
5. A new model to value executive stock option	145
5.1. Model specification and implementation.....	146
5.1.1. Fundamental idea and specification	147
5.1.2. Model for the expected future movement of the underlying stock price.....	150
5.1.3. Framing of outcomes	154
5.1.4. Estimating the value function.....	158
5.1.5. Estimating the decision-weighting process.....	162
5.2. Model outputs	169
5.2.1. Exemplary data settings.....	171
5.2.2. Subjective Value Line of a stock option grant.....	174
5.2.3. Pay-Performance Intensity	180
5.2.4. Pay-Volatility Intensity	185
5.3. Summary of model findings and first hypotheses.....	190
6. Experimental test of subjective valuations	195
6.1. Purpose of the experiment	195
6.2. Experimental design.....	196
6.3. Experimental results.....	205
6.4. Implications for the valuation model	211
7. Conclusion and outlook	217
7.1. Summary conclusions	217
7.2. Future research agenda	221

Appendix I	223
Appendix I	229
Bibliography.....	231