

Operational Risk

Regulation, Analysis and Management

edited by

CAROL ALEXANDER

 Prentice Hall
FINANCIAL TIMES

An imprint of Pearson Education

London • New York • Toronto • Sydney • Tokyo • Singapore * Hong Kong • Cape Town
New Delhi • Madrid • Paris • Amsterdam • Munich • Milan • Stockholm

Contents

<i>Foreword</i>	xix
<i>Preface</i>	xxi

PART I

Regulation

1 The three pillars of operational risk <i>Ralph Andrew Nash</i>	3
1.1 Introduction	3
1.2 Pillar 1	4
1.3 Pillar 2	9
1.4 Pillar 3	11
1.5 Insurance	12
1.6 Conclusion	12
2 A qualitative operational risk framework: guidance, structure and reporting <i>Kenneth Swenson</i>	14
2.1 Introduction	14
2.2 Guidance	15
2.3 Management structure	20
2.4 Reporting	23
2.5 Conclusion	29
3 Measurement of operational risk: the Basel approach <i>Victor Dowd</i>	31
3.1 Introduction	31
3.2 Development of the Basel Accord	32
3.3 Definition of operational risk	36
3.4 The Basic Indicator Approach	40
3.5 The Standardized Approach	42

3-6	Quantification of management quality	45
3.7	Conclusion	47
4	A constructive review of the Basel proposals on operational risk	
	<i>Jacques Pezier</i>	49
4.1	Introduction	49
4.2	Critical examination of the Basel proposals	50
4.3	Analysis of reported operational loss data	60
4.4	Other supervisory proposals and conclusions	69
5	Legal risks and fraud: capital charges, control and insurance	
	<i>Christos Hadjiemmanuil</i>	14
5.1	The Basel definitions of operational risk and legal risk	74
5.2	The varied meanings of 'legal risk'	76
5.3	Banks and the risk of fraud	85
5.4	Implications for the proposed capital charges for operational risk	88
5.5	Containing and managing legal risks and fraud	92
5.6	Insurance and the mitigation of losses from legal risks and fraud	95
6	Operational risk and insurance	101
	<i>Thomas Michael Leddy</i>	
6.1	Introduction	101
6.2	Definition of insurance: a working draft	102
6.3	Definition of operational risk	104
6.4	The mechanics and nature of insurance contracts	108
6.5	The present and future role of insurance in financial institutions	121
6.6	Conclusion	126

PART II

Analysis

	Statistical models of operational loss	129
	<i>Carol Alexander</i>	
7.1	Introduction	129
7.2	Operational risk types	130
7.3	Bayesian estimation	137
7.4	Introducing the Advanced Measurement Approaches	142
7.5	Analytic approximations to unexpected annual loss	148

7.6	Simulating the annual loss distribution	156
7.7	Aggregation and the total loss distribution	158
7.8	Conclusion	167
	Appendix 7.1 Some remarks on the use of copulas in operational risk	168
8	The Loss Distribution Approach <i>Michael Haubenstock and Lloyd Hardin</i>	111
8.1	What is the Loss Distribution Approach?	171
8.2	Basel requirements	172
8.3	Why use historical loss data?	173
8.4	Steps to modelling with LDA	174
8.5	Case study	178
8.6	Key assumptions	189
8.7	Advantages and limitations of the LDA	190
8.8	Issues for further research	191
8.9	Summary	192
9	A general simulation framework for operational loss distributions	
	<i>Diane Reynolds and David Syer</i>	193
9.1	Introduction	193
9.2	The regulatory landscape	195
9.3	Setting the stage	196
9.4	A simulation approach for operational risk	200
9.5	Example applications	203
	Appendix 9.1 Loss models	208
	Appendix 9.2 Model distributions	210
	Appendix 9.3 More on actuarial models	211
10	The path to operational risk economic capital <i>Ulrich Anders</i>	215
10.1	Introduction	215
10.2	What is economic capital?	215
10.3	How to compute economic capital	216
10.4	How to derive a good economic capital model	217
10.5	Where to obtain good-quality input data	221
10.6	How to validate input data	224
10.7	How to validate the economic capital number	225
10.8	Summary	225

PART III

Management

11	Scorecard approaches <i>Tony Blunden</i>	229
11.1	Introduction	229
11.2	Why use a scorecard model?	230
11.3	Risks and controls	230
11.4	The scorecard approach	233
11.5	Model simulations	234
11.6	Quantification of gross and net risks	236
11.7	Risk appetite	238
11.8	Stress testing and scenario analysis	239
11.9	Conclusion	240
12	The operational risk management framework <i>Michael Haubenstock</i>	241
12.1	Introduction	241
12.2	Defining operational risk	243
12.3	Strategy	244
12.4	The operational risk process	246
12.5	Infrastructure	257
12.6	Environment	257
12.7	The role of internal audit	259
12.8	Tying risk management into the business process	259
12.9	Success factors	260
12.10	Summary	261
13	Using operational risk models to manage operational risk <i>Anthony Peccia</i>	262
13.1	Introduction	262
13.2	Operational risk and reward	263
13.3	The integrated operational risk framework	265
13.4	Risk and control self-assessment	267
13.5	Exposures and losses	270
13.6	Gamma and the measure of operational risk	273
13.7	Sufficiency, relevancy and completeness of loss data	274
13.8	Scenario analysis	275
13.9	Operational risk classes and key risk drivers	276
13.10	Management applications of an operational risk model	280

13.11	Modelling and the new regulatory requirements	281
13.12	Summary	283
14	Managing operational risks with Bayesian networks <i>Carol Alexander</i>	285
14.1	Introduction	285
14.2	Bayesian networks: useful references and web links	286
14.3	Introducing Bayesian networks	287
14.4	Application of Bayesian networks in banking and finance	288
14.5	Bayesian decision networks	293
14.6	Conclusion	295
15	Operational risk management <i>Jacques Pezier</i>	296
15.1	Introduction	296
15.2	Risk management - an integral part of good management	296
15.3	Nominal, ordinary and exceptional operational risks	299
15.4	An ordinary operational risk case study	302
15.5	Understanding exceptional operational risks	307
15.6	An exceptional operational risk case study	310
15-7	Conclusions	320
Appendix 15.1	A primer on utility theory	322
	<i>References</i>	325
	<i>Index</i>	328