

**RISK EVALUATION TECHNIQUES**  
**IN A**  
**GENERAL INSURANCE ENVIRONMENT**

by

**RUDOLF JOHANNES VAN DEN HEEVER**

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Supervisor: **PROFESSOR G L MARX**

**Department of Insurance and Actuarial Science**

**Abstract**

This dissertation considers the management of risks in a general insurance environment.

This dissertation first aims to set a framework whereby business strategies can be evaluated in order to ensure that the business enterprise functions optimally. The process is set in motion through the use of a control cycle:

Understand the risk framework

Specify the problem. These problems will vary.

Develop a solution for the problem. Test the solution and implement the optimal solution.

Monitor the experience to ensure that the solution is indeed optimal.

As all business strategies function in a framework of risk and eventually lead to a balance between risk and return, this study concerns itself with risk evaluation techniques.

The results can give managers and regulators alike additional insight how to optimise business procedures. An example of this would be to optimise the return on shareholders' capital given the constraints laid down by regulators.

As a starting point the general economic and commercial environment in which a general insurance company operates is considered. This is done from the basis of a model insurance company. The business procedures within an insurance company are replicated in the model insurance company. Certain key risk areas relating to such a company are then emphasised and methods appropriate to evaluate risks pertaining to these areas are considered.

A collective risk model is considered whereby the performance of the model insurance company can be compared to benchmarks set within the general economic and commercial environment. Subsequently, the model office can be applied to solve the problem of maximising shareholders' return. This is an iterative process which involves the evaluation of a change in business procedures. Optimal business procedures are identified to meet the criteria specified.

Due to the ever changing nature of insurance business, the general insurer would need to be monitored on a continuing basis in order to ensure that the business procedures remain optimal. The emphasis is on risk evaluation and quantification rather than audit procedures though these two disciplines do overlap.

Once this framework has been set up to ensure proper risk evaluation techniques, the framework can be made available to the relevant stakeholders.

*"We are striving for a framework whose underlying goals and broad strategies can remain relatively fixed, but within which changes in application can be made as both bankers and supervisors learn more. It is the framework we must get right. The application might initially be bare-boned but over time can become more sophisticated."* – Alan Greenspan, October 1999

Though not the banking industry, this drive is the basis for this study.

**Keywords**

*Optimisation, Return on Capital, General Insurance, Model office*

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## TABLE OF CONTENTS

<b>ABSTRACT</b> .....	<b>II</b>
KEYWORDS.....	III
<b>ACKNOWLEDGMENTS</b> .....	<b>IV</b>
<b>0. PREFACE</b> .....	<b>12</b>
<b>1. INTRODUCTION</b> .....	<b>15</b>
1.1 THE REASONS FOR THIS STUDY .....	15
1.2 A STRUCTURED APPROACH TO RISK MANAGEMENT .....	16
1.3 APPRAISAL OF AREAS OF RISK AND UNCERTAINTY.....	18
1.3.1 <i>Macro risks: The general economic and commercial environment</i> .....	18
1.3.1.1 Statutory and regulatory requirements .....	18
1.3.1.2 Legal or legislative requirements .....	19
1.3.1.3 Reporting requirements .....	19
1.3.1.4 Tax .....	19
1.3.1.5 Demographic environment .....	19
1.3.1.6 Social environment.....	19
1.3.1.7 Political environment.....	20
1.3.1.8 Economy .....	20
1.3.1.9 Technology .....	20
1.3.2 <i>Micro risks: The financial and operational environment of the insurer</i> ...	20
1.3.2.1 Pricing.....	20
1.3.2.2 Investment strategy.....	20
1.3.2.3 Capital structure.....	21
1.3.2.4 Product mix and marketing strategy .....	21
1.3.2.5 Reinsurance .....	21
1.3.2.6 Human resource risks .....	21
1.3.2.7 Internal controls.....	22
1.3.2.8 Mergers and acquisitions.....	22
1.3.2.9 Technology .....	22
1.3.2.10 Customer service .....	22
1.4 IDENTIFICATION AND SPECIFICATION OF THE PROBLEM .....	23
1.4.1 <i>Setting the correct framework</i> .....	23
1.4.1.1 The structure of an insurance company.....	23
1.4.1.2 The structure of the collective risk model .....	24
1.4.1.3 The quality of information.....	24
1.4.2 <i>Evaluation of the primary objective: Optimising business strategies</i> .....	25
1.4.2.1 The Capital Asset Pricing Model.....	25
1.4.2.2 Discounted cash flow methods.....	27
1.4.2.3 Determine an appropriate risk premium.....	27
1.4.2.4 Rating agencies.....	28

1.5	DEVELOPING AND IMPLEMENTING THE SOLUTION .....	28
1.5.1	<i>Business strategies</i> .....	29
1.5.1.1	Business mix strategy .....	29
1.5.1.2	Managerial strategies .....	29
1.5.1.3	Distribution channel strategy.....	30
1.5.1.4	Capital allocation strategy .....	30
1.5.1.5	Investment strategy.....	30
1.5.1.6	Reinsurance strategy.....	31
1.5.2	<i>Evaluate business strategies</i> .....	31
1.6	MONITOR THE EXPERIENCE.....	32
1.7	SUMMARY .....	33
<b>2.</b>	<b>THE MODEL INSURER.....</b>	<b>34</b>
2.1	INTRODUCTION .....	34
2.2	THE BASIC WORKING OF A MODEL INSURER.....	35
2.2.1	<i>The aim of implementing a model insurer</i> .....	35
2.2.2	<i>The basic operation</i> .....	36
2.3	A POSSIBLE COMPANY STRUCTURE.....	37
2.3.1	<i>Departmental structure</i> .....	37
2.3.2	<i>Income structure</i> .....	38
2.3.2.1	Evaluation of earned premium .....	39
2.3.2.2	Evaluation of incurred claims.....	40
2.3.2.3	Income statement.....	41
2.3.3	<i>Capital structure</i> .....	42
2.3.3.1	Evaluation of the assets of the company .....	43
2.3.3.2	Evaluation of the liabilities of the company .....	44
2.4	COMBINING IDEAS .....	45
2.4.1	<i>An algorithm for the business process</i> .....	45
2.5	SUMMARY .....	48
<b>3.</b>	<b>SETTING A FRAMEWORK FOR THE MODEL INSURER.....</b>	<b>49</b>
3.1	INTRODUCTION .....	49
3.2	SYNTHESIS OF THE FRAMEWORK.....	49
3.2.1	<i>A framework or model structure</i> .....	51
3.2.1.1	The holistic basis .....	52
3.2.1.2	A consolidated algorithm for the proposed framework.....	53
3.2.1.3	A note on correlations.....	56
3.3	ANALYSIS OF AREAS OF RISK AND UNCERTAINTY .....	57
3.3.1	<i>The National Association of Insurance Commissioners (NAIC) in the USA</i> 57	
3.3.2	<i>The General Insurance Study Group (GISG) in the UK</i> .....	59
3.3.3	<i>The General Insurance Board Working Party</i> .....	60
3.3.3.1	Underwriting risk.....	61
3.3.3.2	Asset risk .....	62
3.3.3.3	Other risk .....	63
3.4	SYNTHESIS ON THE AREAS OF RISK AND UNCERTAINTY .....	66
3.5	SUMMARY .....	67

<b>4.</b>	<b>DATA AND INFORMATION REQUIREMENTS .....</b>	<b>68</b>
4.1	INTRODUCTION .....	68
4.2	THE METHODOLOGY UNDERLYING THE DATA ON INDIVIDUAL MODEL POINTS ....	68
4.3	THE PRINCIPLE OF CORRESPONDENCE .....	69
4.4	THE POLICY INFORMATION .....	69
4.5	THE CLAIMS INFORMATION .....	72
4.6	DATA VALIDATION .....	73
4.7	THE VOLUME OF DATA REQUIRED .....	75
4.7.1	<i>Conventional statistical theory in setting a required sample size .....</i>	<i>75</i>
4.7.2	<i>Conventional practice .....</i>	<i>76</i>
4.8	INFORMATION REQUIREMENTS ON THE GENERAL ECONOMIC AND COMMERCIAL ENVIRONMENT .....	76
4.9	SUMMARY .....	78
<b>5.</b>	<b>QUANTIFYING THE LIABILITY AREA OF RISK .....</b>	<b>79</b>
5.1	INTRODUCTION .....	79
5.2	STOCHASTIC SIMULATION .....	79
5.3	FITTING DISTRIBUTIONS TO CLAIMS INFORMATION .....	81
5.3.1	<i>The method of moments .....</i>	<i>82</i>
5.3.2	<i>Method of maximum likelihood estimation .....</i>	<i>83</i>
5.3.3	<i>Method of least squares .....</i>	<i>84</i>
5.3.4	<i>Some useful distributions .....</i>	<i>85</i>
5.3.4.1	The Poisson distribution .....	85
5.3.4.2	The Normal (Gaussian) distribution .....	86
5.3.4.3	The Log-Normal distribution .....	87
5.3.4.4	The Exponential distribution .....	87
5.3.4.5	The Pareto distribution .....	88
5.3.4.6	The Gamma distribution .....	90
5.3.5	<i>Testing the fit .....</i>	<i>90</i>
5.4	GENERALISED LINEAR MODELLING .....	91
5.4.1	<i>Special case of generalised linear modelling .....</i>	<i>94</i>
5.5	DELAY MODELLING .....	95
5.5.1	<i>Step 1 .....</i>	<i>95</i>
5.5.2	<i>Step 2 .....</i>	<i>96</i>
5.5.3	<i>Step 3 .....</i>	<i>98</i>
5.6	BOOTSTRAPPING .....	100
5.7	MODEL BUILDING .....	102
5.7.1	<i>Step 1 .....</i>	<i>102</i>
5.7.2	<i>Step 2 .....</i>	<i>102</i>
5.7.3	<i>Step 3 .....</i>	<i>102</i>
5.7.3.1	<i>Step 3.1 .....</i>	<i>102</i>
5.7.3.2	<i>Step 3.3 .....</i>	<i>104</i>
5.7.3.3	<i>Step 3.4 .....</i>	<i>104</i>
5.7.3.4	<i>Step 3.5 .....</i>	<i>105</i>
5.7.4	<i>Step 4 .....</i>	<i>106</i>
5.8	SUMMARY .....	107

<b>6.</b>	<b>QUANTIFYING THE ASSET AREA OF RISK .....</b>	<b>108</b>
6.1	INTRODUCTION .....	108
6.2	STOCHASTIC MODELLING.....	108
6.3	THE MODELLING OF ASSET PROCEEDS.....	108
6.3.1	<i>Random walk models</i> .....	108
6.3.1.1	Example.....	111
6.3.2	<i>Auto-Regressive Models</i> .....	113
6.3.2.1	Background to auto-regressive models.....	114
6.3.2.2	The Box and Jenkins methodology .....	114
6.3.2.3	Example.....	117
6.3.2.4	An asset model for use in South Africa.....	118
6.3.2.5	Dealing with varying variance in autoregressive functions.....	119
6.3.3	<i>Fractal models</i> .....	120
6.3.4	<i>Chaotic models</i> .....	121
6.3.5	<i>Neural networks</i> .....	121
6.4	FUNDAMENTALS OF ASSET MODELS .....	122
6.5	MODEL BUILDING .....	122
6.5.1.1	Step 1 .....	122
6.5.1.2	Step 2 .....	123
6.5.1.3	Step 3 .....	123
6.5.1.4	Step 4.....	123
6.6	SUMMARY .....	125
<b>7.</b>	<b>QUANTIFYING THE OTHER AREAS OF RISK .....</b>	<b>126</b>
7.1	INTRODUCTION .....	126
7.2	OTHER AREAS OF RISK .....	126
7.2.1	<i>Credit risk</i> .....	126
7.2.1.1	A structured approach to credit risk quantification .....	126
7.2.2	<i>Growth risk</i> .....	129
7.2.3	<i>Expense risk</i> .....	130
7.2.3.1	Step 1 .....	130
7.2.3.2	Step 2.....	130
7.2.3.3	Step 3 .....	130
7.2.3.4	Step 4.....	131
7.2.3.5	Step 5 .....	131
7.2.4	<i>Other risks</i> .....	132
7.3	SUMMARY .....	133
<b>8.</b>	<b>CORPORATE GOVERNANCE .....</b>	<b>134</b>
8.1	INTRODUCTION .....	134
8.2	THE CACG GUIDELINES FOR CORPORATE GOVERNANCE.....	135
8.2.1	<i>An evaluation of the risk evaluation techniques according to the CACG guidelines</i> .....	136
8.3	OTHER GUIDANCE.....	137
8.4	ENTERPRISE WIDE RISK MANAGEMENT .....	138
8.5	SUMMARY .....	140



<b>9. ENTERPRISE WIDE RISK MANAGEMENT .....</b>	<b>141</b>
9.1 INTRODUCTION .....	141
9.2 CAPITAL, BUSINESS STRUCTURE AND THE PROBABILITY OF RUIN .....	142
9.3 APPLYING THE FRAMEWORK.....	144
9.3.1 <i>Optimising the reserving policy of the company</i> .....	144
9.3.2 <i>Calculating the embedded value</i> .....	145
9.4 SETTING A BENCHMARK .....	146
9.5 OPTIMISING THE PRICING OF PRODUCTS.....	149
9.5.1 <i>Allocating capital by risk premium</i> .....	150
9.5.2 <i>Allocating capital by statutory requirement</i> .....	151
9.5.3 <i>Allocating capital by variability per line of business</i> .....	151
9.5.4 <i>Allocating capital by marginal capital allocation</i> .....	153
9.5.5 <i>A suitable approach</i> .....	153
9.5.6 <i>Practical Application of Risk Adjusted Capital</i> .....	153
9.5.6.1 Variability of experience .....	153
9.5.6.2 Internal Solvency.....	154
9.5.6.3 Probability of ruin.....	154
9.5.6.4 Pricing.....	155
9.6 OPTIMISING THE INVESTMENT POLICY .....	155
9.7 OPTIMISING THE OPERATION RISK OF THE COMPANY .....	156
9.8 THE OPTIMISATION PROCESS.....	156
9.9 CONCLUSION .....	157
9.10 SUMMARY .....	158
<b>10. GLOSSARY OF TERMS .....</b>	<b>160</b>
10.1 INTRODUCTION .....	160
10.1.1 <i>Autoregressive</i> .....	160
10.1.2 <i>Bottom up</i> .....	160
10.1.3 <i>Business strategies</i> .....	160
10.1.4 <i>Cost of risk</i> .....	160
10.1.5 <i>Free reserves</i> .....	160
10.1.6 <i>Homoscedastic</i> .....	161
10.1.7 <i>Heteroscedastic</i> .....	161
10.1.8 <i>Model point</i> .....	161
10.1.9 <i>Monte Carlo simulation</i> .....	161
10.1.10 <i>Run-off</i> .....	161
10.1.11 <i>Stochastic</i> .....	162
10.1.12 <i>Top down approach</i> .....	162
10.1.13 <i>Thomson model</i> .....	162
10.1.14 <i>White noise</i> .....	162
<b>11. REFERENCES .....</b>	<b>163</b>
<b>12. ANNEXURE.....</b>	<b>172</b>
12.1 INTRODUCTION .....	172
12.2 DETAILS OF THE MODEL.....	173

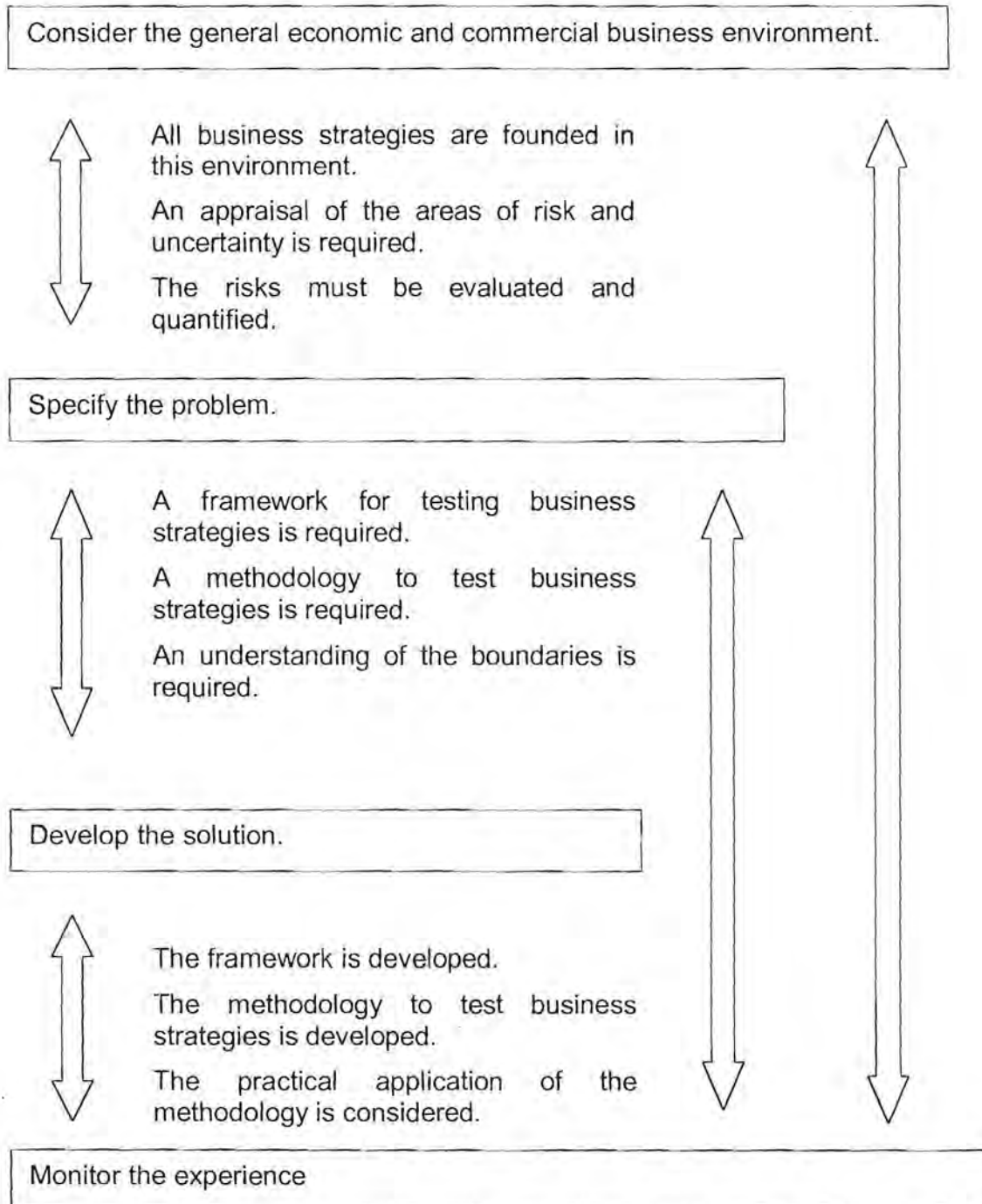
12.2.1	<i>The liability model</i> .....	173
12.2.2	<i>The asset model</i> .....	175
12.2.3	<i>Exposure details</i> .....	176
12.2.4	<i>Capital requirements</i> .....	177
12.2.5	<i>The collective risk model</i> .....	178
12.3	IDENTIFYING THE PROBLEM.....	179
12.4	DEVELOPING THE SOLUTION.....	179
12.5	EXAMPLE OF RESULTS.....	179
12.5.1	<i>Development of cash position</i> .....	180
12.5.2	<i>Development in the claims experience</i> .....	181
12.5.3	<i>Development in equity experience</i> .....	182
12.5.4	<i>Development of the fund</i> .....	182
12.5.5	<i>Investigating the objective</i> .....	183
12.6	VISUAL BASIC CODE.....	186
12.7	CONCLUSION.....	192

## TABLE OF FIGURES

FIGURE 1: AN OVERVIEW OF RISK CATEGORIES.....	17
FIGURE 2: AN EXAMPLE OF THE EFFICIENT FRONTIER.....	26
FIGURE 3: POSSIBLE DEPARTMENTAL STRUCTURE FOR A GENERAL INSURANCE COMPANY .....	38
FIGURE 4: FRAMEWORK OVERVIEW.....	50
FIGURE 5: EVALUATING EXPOSURE OVER TIME .....	71
FIGURE 8: SIMULATED ASSET GROWTH EXAMPLES .....	110
FIGURE 9: THE JSE ALL SHARE INDEX.....	111
FIGURE 10: JSE MONTHLY FORCE OF INTEREST .....	112
FIGURE 13: RELATION BETWEEN CAPITAL, BUSINESS AND THE PROBABILITY OF RUIN .....	142
FIGURE 14: AN EXAMPLE OF THE EFFICIENT FRONTIER.....	148
FIGURE 15: EXPECTED OUTGO IN THE YEAR FOR THE COLLECTIVE MOTOR MODEL.....	178
FIGURE 17: PROJECTED CLAIMS EXPERIENCE FOR THE YEAR.....	181
FIGURE 18: DEVELOPMENT OF EQUITY POSITION.....	182
FIGURE 20: PROJECTION OF BUSINESS DEVELOPMENT.....	183
FIGURE 21: PDF OF THE VALUE OF THE FUND BASED ON THE MODEL.....	184
FIGURE 22: RESULT OF A CHANGE IN INVESTMENT POLICY ON THE FUND VALUE AFTER 12 MONTHS.....	185

## 0. Preface

In an effort to ensure a causal understanding of this dissertation, the following diagram has been included together with an explanation pertaining to the content of each chapter.



The arrows indicate the interdependence between the different processes.

The introductory chapter considers the interaction of all the sections. The control cycle is considered, a specific control cycle is proposed and aspects pertaining to each section are considered. In particular the different elements of risk and uncertainty are considered.

In the second chapter the model office framework required to apply the control cycle is considered. This framework is based on three sections namely:

1. The business structure. The business structure is derived from the departmental structure of the company.
2. The business result. The business result following from the departmental structure is reflected in the income statement.
3. Consolidation of the business result. The consolidation over time is reflected in the balance sheet. The balance sheet provides an indication of the value of the company.

An algorithm proposed by other practitioners is also considered.

In the third chapter the methodology required to apply to the framework is considered. This is done by considering the most important areas of risk and uncertainty and proposing and providing a synthesis of the risks that need to be evaluated and the algorithm that will be appropriate for this purpose.

Note that the evaluations specified in these two chapters focus on both the problem of setting an appropriate framework as well as the solution to setting an appropriate framework. The most important areas of risk and uncertainty, based on empirical studies are then considered namely:

1. Pricing risk
2. Reserving risk
3. Asset risk
4. Credit risk
5. Management risk

Chapter 5 considers both pricing and reserving risk under the heading of liability risk because these elements are intertwined with a proper evaluation of the liabilities being taken on (pricing) or the existing liabilities (reserving)

Chapter 6 considers asset risk and how this can be quantified.

Chapter 7 considers credit and expense risk.

Chapter 8 considers corporate governance. The intention here is to ensure that if corporate governance is properly enforced, then the risk pertaining to poor management will be reduced.

Chapter 9 consolidates the ideas into one working framework.

Chapter 10 provides a glossary of terms.

Chapter 11 provides references. The references are important because this dissertation cannot provide the full detail of all the research it is founded on.

Chapter 12 is the annexure which provides a practical application of the ideas set out in this dissertation. It is based on a simple example to illustrate the ideas. The annexure is, however, very important in that it provides the reader with a simple example to intuitively grasp the framework and methodology set out in this dissertation.