

TABLE OF CONTENTS

ABSTRAK	i
ABSTRACT	iii
ACKNOWLEDGEMENT	v
TABLE OF CONTENTS	vi
LIST OF TABLES	ix
GLOSSARY OF ABBREVIATIONS	x
1 INTRODUCTION	1
1.1 General Introduction	1
1.2 Summary of Contributions of Thesis	5
1.3 Organization of Thesis	7
2 LITERATURE REVIEW	8
2.1 Maximum Likelihood Estimation	8
2.2 Orthogonal Parameterization	11
2.3 Maximum Likelihood Estimation under Model Misspecification	15
2.4 Information Matrix Test	17
2.5 Simulated Annealing	19
3 A GOODNESS-OF-FIT TEST BASED ON AN INFORMATION MATRIX IDENTITY	22
3.1 Introduction	22

3.2	Empirical Distribution Function based Goodness-of-fit Tests	24
3.3	A Goodness-of-fit Test based on Bartlett's First Identity	26
3.3.1	Introduction	26
3.3.2	Asymptotic Properties	28
3.3.3	The Bootstrap Procedure for Bartlett's First Identity Goodness-of-fit Test	31
3.3.4	The Bias Corrected and Accelerated Method	33
3.3.5	Monte Carlo Experiments and Results	35
3.4	Comparison between Bartlett's First Identity Goodness-of-fit Test and Jarque-Bera Test	39
3.5	Conclusion	42
4	PARAMETERS ORTHOGONAL TO THE MEAN	43
4.1	Introduction	43
4.2	Parameters Orthogonal to the Mean	44
4.2.1	Condition for Orthogonal Parameters	44
4.2.2	Orthogonal Parameters for Poisson-convolution Models	46
4.3	Test of the Mean under Model Misspecification	48
4.3.1	Uniformly Most Powerful Test of Hypotheses	48
4.3.2	Uniformly Most Powerful Test for Mean of Convolution of Poisson and Power Series Distributions	49
4.4	Monte Carlo Simulation Study on Power of Uniformly Most Powerful Test	51
4.5	Conclusions	55

5 STATISTICAL INFERENCE FOR DELAPORTE DISTRIBUTION	56
5.1 Introduction	56
5.2 Efficiency of Estimation	57
5.2.1 Introduction	57
5.2.2 Evaluation of Information Determinant	58
5.2.3 Efficiencies of the Methods of Estimation	59
5.3 Interval Estimation	63
5.3.1 Confidence Interval for Correctly Specified Model	64
5.3.2 Confidence Interval for Misspecified Model	65
5.3.3 Results and Discussions	66
5.4 Parameter Estimation via a Quadratic Distance Statistic	67
5.4.1 Introduction	67
5.4.2 Results and Discussions	71
5.5 Conclusion	72
6 CONCLUSION AND FURTHER RESEARCH WORK	75
REFERENCES	77
APPENDICES	84
A White's (1982) Results	84
B Mean Value Theorem	87
C Proof of Result 4.3.1	88