Information and Entropy Econometrics — A Review and Synthesis

Amos Golan

Department of Economics
American University
4400 Massachusetts Avenue
NW Washington
DC 20016-8029
USA
agolan Qamerican.edu



the essence of knowledge

Boston - Delft

Contents

· · · · · · · · · · · · · · · · · · ·	1
Historical Perspective	7
20	15
Information and Entropy — The Basics	15
Discussion	26
Multiple Random Variables, Dependency,	
and Joint Entropy	28
Generalized Entropy	32
Axioms	34
Errors and Entropy	36
Asymptotics	39
Stochastic Process and Entropy Rate	45
Continuous Random Variables	46
The Classical Maximum Entropy Principle	49
The Basic Problem and Solution	49
Duality — The Concentrated Model	51
	Discussion Multiple Random Variables, Dependency, and Joint Entropy Generalized Entropy Axioms Errors and Entropy Asymptotics Stochastic Process and Entropy Rate Continuous Random Variables The Classical Maximum Entropy Principle The Basic Problem and Solution

	~
X1V	Contents

4.3	The Entropy Concentration Theorem	55-
4.4	Information Processing Rules and Efficiency	57
4.5	Entropy — Variance Relationship	58
4.6	Discussion	59
4.7	Example	61
5	Information-Theoretic Methods	
(of Estimation — I	63
5.1	Background	63
5.2	The Generic IT Model	64
5.3	Empirical Likelihood	67
5.4	Generalized Method of Moments — A Brief	
	Discussion	72
5.5	Bayesian Method of Moments — A Brief	
	Discussion	81
5.6	Discussion	83
6	Information-Theoretic Methods	
•	of Estimation — II	85
6.1	Generalized Maximum Entropy — Basics	85
6.2	GME — Extensions: Adding Constraints	93
6.3	GME — Entropy Concentration Theorem	
	and Large Deviations	94
6.4	GME — Inference and Diagnostics	96
6.5	GME — Further Interpretations and Motivation	99
6.6	Numerical Example	103
6.7	Summary	105
7	IT, Likelihood and Inference	107
7.1	The Basic Problem — Background	107
7.2	The IT-ME Solution	109
7.3	The Maximum Likelihood Solution	111
7.4	The Generalized Case — Stochastic Moments	112
7.5	Inference and Diagnostics	114

	Contents	XV
7.6 IT and Likelihood		117
7.7 Conditional, Time Series Markov Process		118
8 Concluding Remarks and Related Work		
Not Surveyed		131
References		137