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Book Review on
"FUZZY CHOICE FUNCTIONS – A REVEALED PREFERENCE APPROACH"
by Irina GEORGESCU
Published in *"Studies in Fuzziness and Soft Computing"*,
Springer, 2007

The monograph "Fuzzy Choice Functions – A Revealed Preference Approach", written by Dr. Irina Georgescu from the Academy of Economic Studies, Bucharest, Romania, and appeared in Studies in Fuzziness and Soft Computing, Vol. 214, 2007, Springer, ISBN 978-3-540-68997-3, started as a PhD thesis, supervised by Professor Christer Carlsson from Turku Centre for Computer Science, Institute for Advanced Management Systems Research, Abo Akademi University, Turku, Finland.

As mentioned in the Introduction, it has the following goals: to develop the main topics of revealed preference theory (rationality, revealed preference, congruence, consistency) for a large class of fuzzy choice functions, to explore new topics (degree of dominance, similarity, indicators of rationality) specific to a fuzzy approach to choice functions and to show the manner in which some problems of multicriterial decision making problems can find natural solutions in fuzzy revealed preference theory.

The book has eleven chapters: Introduction, Preliminaries, Classical Revealed Preference Theory, Fuzzy Preference Relations, Fuzzy Choice Functions, Fuzzy Revealed Preference and Consistency Conditions, General Results, Degree of Dominance, Similarity and Rationality Indicators for Fuzzy Choice Functions, Applications, Concluding Remarks and a rich bibliography of 120 titles.

As mentioned in Concluding Remarks, the contribution of the book consists in the following: (1) it is a theoretical framework for a fuzzy revealed preference theory different of that of Banerjee's; the author develops the fuzzy version of the direction Uzawa-Arrow-Sen. (2) The treatment, in this general framework, of the main topics of revealed preference theory such as rationality, revealed preference and congruence axioms, consistency conditions; the statement of various conditions and results, as well their proofs, is not a simple translation of the situations from the case of crisp choice functions; sometimes, a crisp property has many different fuzzy versions. (3) The definition of the degree of dominance of an alternative as a tool in obtaining the hierarchy of alternatives according to different

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criteria, where the criteria can be taken as the available sets of alternatives. (4) The definition of new concepts, as similarity and the indicators of fuzzy choice functions are introduced for obtaining a deeper insight on fuzzy revealed preference theory. (5) The analysis of the three applications of Chapter 8 describing concrete economic situations led to the conclusions that the mathematical modeling is done by formulating some fuzzy choice problems, where criteria are represented by fuzzy available sets of alternatives, and that the degree of dominance is the mathematical instrument on which the algorithms of multicriterial hierarchy are based.

The text is reasonably self-contained, but previous knowledge of revealed preference and fuzzy set theory is helpful for the reader.

The book is addressed to economists – social choice theorists- and to computer scientists, who can find in it a stimulating material for further research and concrete applications.

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The main publications in the last five years are:

Iorgulescu, A., **On BCK algebras - Part II: New algebras. The ordinal sum (product) of two bounded BCK algebras,** Soft Computing, 2007

Iorgulescu, A., **Classes of pseudo-BCK algebras - Part II,** J. of Multiple-Valued Logic and Soft Computing, Vol. 12, No. 5-6, 575-629, 2006

Iorgulescu, A., **Classes of pseudo-BCK algebras - Part I,** Journal of Multiple-Valued Logic and Soft Computing (Special issue dedicated to the memory of Helmuth Thiele), Vol. 12, No. 1-2, 71-130, 2006

Iorgulescu, A., **Pseudo-Iseki algebras. Connection with pseudo-BL algebras,** Journal of Multiple-Valued Logic and Soft Computing, 11, 3-4, 263-308, 2005

Iorgulescu, A., **Iseki algebras. Connection with BL algebras,** Soft Computing, Vol. 8, No. 7, 449-463, 2004

Iorgulescu, A., **On pseudo-BCK algebras and porims,** Scientiae Mathematicae Japonicae, 60, nr. 3, 501-513; e10, 293-305, 2004

Iorgulescu, A., **Some direct ascendents of Wajsberg and MV algebras,** Scientiae Mathematicae Japonicae, Vol. 57, No. 3, 583-647, 2003

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