
Editorial

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Biographical notes: Giuseppe Calabrese is a Senior Researcher at the Ceris-CNR (Institute for Economic Research on Firms and Growth, Italian National Research Council) of Moncalieri, Turin. His main areas of research focus on industrial organisation, technological innovation and the car industry. His latest work in the field of the automotive industry concerns new product development and production networks in Fiat Auto, the role of small-medium firms in the reorganisation of the car supply base and R&D organisation, the prospects for alternative fuel vehicles. Currently, he is teaching Business Economics and Organisation at the Polytechnic of Turin and at the University of Turin.

1 Introduction

The papers presented in this Special Issue are focused on the analysis of new methodologies for the risk analysis of enterprises and are part of a larger project on 'The employment of soft computing techniques in the analysis of complex systems in economics'. The whole research was founded by the Italian Minister for the University, Scientific and Technological Research (now Minister for the University and Research) and has been coordinated by Professor Maurizio Fanni of the University of Trieste.

The research institutes involved in the project have been: Economics and Engineering Departments of the University of Trieste, OSSIND of Cagliari, ISAE of Rome, Ceris-Cnr of Moncalieri, Science Park of Trieste.

The research started by the description of the emergence of vulnerability and risk in various areas of Economics, researching new models in the field of economics by the application of the logic of complex systems dynamics in:

- economic systems, that is, political, financial and country risk
- enterprise and financial markets, that is, operating risk, financial risk and distress risk.

An important aspect of the research was the recognition of possible links between methods used and results obtained on the basis of economic theory (i.e. Fisher Theory, Modigliani and Miller Theory, CAPM and market models).

The methodology used in each section of analysis (country risk, enterprise risk and financial markets risk) tried to succeed in discovering new organisational principles applicable to each system by equilibrium simulation, periodic motion of phenomena, chaotic behaviour of phenomena and identification in each system of internal or external forces representing tools of attraction in conditions of agreement or disagreement.

The main scopes of this research were:

- to analyse the principles of organisation of economic systems (country systems, financial markets and systems of production) which produce stability or, conversely, generate instability and, in addition, the development of 'soft computing' techniques for the purpose of analysis of those principles
- the creation and implementation of database systems, essential for empirical study and, their application to complex systems
- the construction of forecast models of risk (operative, financial and default) by the application of soft computing techniques (including neural networks and genetic algorithms) that is able to define the systems under consideration and to reproduce trade-off risk yield in non-linear terms
- the creation of platform prototypes (software modular) for the analysis and evaluation of country risk, of country insolvency risk and of financial markets risk (operational, financial and default)
- the use of the EGRID data system of operation for access to and sharing of information and results, and the creation of an interface of 'facility' platform prototypes and the implementation (representing considerable innovative importance) of a connection between the two systems.

As far as the new methodologies for the risk analysis of enterprises is concerned the researchers have studied complex and interdisciplinary models. Indeed, in the last few years, both complex framework of artificial neural network and hybrid models have been elaborated.

In this context, it is possible to cite Yim and Mitchell (2002, 2005) work where artificial neural networks are compared with other statistical methodologies. Moreover, Tsakonas et al. (2006) create neural logic networks by means of genetic programming.

In recent years, the literature focuses on hybrid models because they take advantages of different models and the results are very good, as it is shown in this Special Issue.

2 The contents of the Special Issue

The first paper presented in this Special Issue represents a critical overview about methodologies for the analysis of default risk and rating assessment. Indeed, New Basel Capital Accord describes the opportunity for banks to assign rating judgements to firms. Moreover, banks can decide which method to use for the estimation of rating judgement and, in this context, a survey with an analysis of models used in the literature is interesting, as well as necessary.

The second contribution studies a methodology to develop the probability of default for private firms. After a short analysis about predictive variables of default prediction, the Maximum Expected Utility (MEU) model is used. The goal is to use the interaction between variables to improve the final model evidence.

Main goal of third work is to build a synthetic qualitative indicator that collects together several qualitative variables of firm as growth capacity, income and liquidity of assets. The indicator indicates a qualitative threshold judgement, based on the performance of the firm, as shown by the analysis on balance-sheet data.

The fourth paper presents a methodology for defining the variables that determine the default. To achieve this goal, an artificial neural network model and a cluster analysis method is used. The results are that the first sample of variables introduced in the model has been reduced to a more little group of variables. In this work, all indexes used are balance-sheet data.

In the fifth paper, the creation of an integrated system of economic and financial analysis to create a prototype assisting in checking the 'state of health' of firms is shown. The goal of this work is to estimate the insolvency risks of enterprises through the experimentation of the models deriving from the research.

In the sixth contribution, the problem of a bank that wants to create an Internal Rating System (IRB) is faced. In this work different complex systems and logit/probit models for simulating rating of an external agency are compared. With this contribution, the author wants to prove that it is possible for a bank to build a framework, that is able to simulate rating judgements of rating agencies.

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The papers included in this Special Issue are part of a larger project on 'The employment of soft computing techniques in the analysis of complex systems in economics' founded by the Italian Minister for the University, Scientific and Technological Research (now Minister for the University and Research). I would like to thank all the researchers involved in this project for their valuable contribution and in particular the Professor Maurizio Fanni of the University of Trieste who coordinated the whole research.

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