

A FUZZY-BASED ROUGH SETS CLASSIFIER FOR FORECASTING QUARTERLY PGR IN THE STOCK MARKET (PART I)

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ABSTRACT. *For practitioners, a PGR (profit growth rate) is an effective evaluation indicator in the short- to midterm to see how big the potential power of future development is and measures the growth of future development for a target company that may be selected into investment portfolios by them. Although the PGR is one of the core financial ratios, it is used little in an academic study for researchers. Hence, the study aims to fill this knowledge gap. The study focuses mainly on solving the practical problems of forecasting quarterly PGR and offers three intelligent hybrid models to generate decision rules as knowledge-based systems for helping investors select appropriate investment portfolios. These proposed hybrid models are constituted differently by six basic components: experiential knowledge (EK), feature selection method (FSM), discretization method (DM), fuzzy set theory (FST), rule filter (RF), and rough set theory (RST), and the presentation of them are organized into two parts (papers). Part I groups the concepts, principles and expressions of them into this paper. Part II is intended to evaluate the proposed hybrid models, and an empirical case study is implemented, which will be presented in the next paper. A conclusion of the proposed hybrid models is given finally in this paper.*

Keywords: Rough set theory, Fuzzy-rule similarity, Profit growth rate (PGR), Feature selection, Discretization method, Minimize entropy principal approach (MEPA)

1. Introduction. The stock market plays a major role in the price determination of the financial instrument for an existing financial product. More meaningfully, the stock market always reflects basic economic energies of a country; therefore, the flourishing of a country is bound, of course, to the growth and boom of stock market. Over the past two decades in Taiwan, high economic development has motivated a wave of prosperity from this market; at the same time, economic growth is related closely and positively to a booming stock market and boosts market development. Restated, the stock market has supported a key role and has been a trigger in the process of Taiwan's economic development [1] from the 1960s. Unfortunately, in recent years, it is a serious challenge for Taiwan to thrive in the globally keener, competitive and dynamic financial climate. On the one hand, economic depression occurs by a specific environment of politics; on the other hand, a global financial crisis, originally caused by the USA, was encountered by Taiwan's financial industry. Obviously, increasing the needs for searching a better way that helps investors to survive in such a serious environment is an increased trend today.