APPLICATION OF SMOOTHING TECHNIQUES ON GM(1,1) FOR FORECASTING SYSTEM

林彥宏、王正賢

E-mail: 9126981@mail.dyu.edu.tw

ABSTRACT

THE GREY PREDICTION THEORY IS A SUITABLE TOOL FOR DEALING WITH A SHORT-TERM FORECASTING. ONE OF GENERAL USED PREDICTION MODEL IS GM(1,1).HOWEVER, GM(1,1) HAS NOT YIELDED GOOD RES -ULTS FOR DATA WITH OBVIOUS FLUCTUATION. THUS, THE PURPOSE IN THIS STUDY IS CONSTRUCTING AN EFFECTIVE PREDICTION SYSTEM THAT APPROACHES DESIRABLE PREDICTION RESULTS UNDER THE REQ -UIREMENT OF SHORT-TERM PREDICTION IN REAL SITUATIONS.IN THIS STUDY, INVESTIGATIONS OF THE FLUCTUATING DATA DISCRIMINATE ASPECTS FROM THREE DIRECTIONS FOR AFOREMENTIONED PURPOSE. THE SERIES AND FACTORS ANALYSIS IS FIRST APPLIED FOR ANALYZING WHETHER A TIME SERIES IS AF -FECTED BY OTHER SERIES OR UNEXPECTED FACTORS. THEN, THESE INFLUENCES LEAD TO THE INCREAS -ING OF FLUCTUATION IN DATA ARE REMOVED FROM ORIGINAL DATA IN ORDER TO DECREASE THE FLUCTU -ATION. IN ADDITION, THE DECOMPOSITION OF THE TIME SERIES, ESPECIALLY THE SEASONAL EFFECT, IS STUDIED FOR REALIZING INFLUENCES OF SEASONAL OR PERIODIC EFFECTS. FURTHERMORE, ESTIMATES OBTAINED FROM SMOOTHING MATHEMATICAL TECHNIQUES ARE USING FOR FITTING THE ORIGINAL DATA AND BECOMING INPUT VALUES OF GM(1,1).SUMMARIZING ABOVE METHODS, ALL OF THEM ARE USING FOR SMOOT -HING AN ORIGINAL TIME SERIES IN ORDER TO REDUCE FLUCTUATION IN DATA AND CREATING AN IDEAL FORM OF SERIES FOR IMPROVING THE PRECISION OF GM(1,1). FINALLY, THE TAIWAN STOCK INDEX ARE USING FOR VERIFYING AFOREMENTIONED METHODS ARE USEFUL FOR IMPROVING THE PRECISION OF GM(1,1) AND SUITABLE FOR PURPOSE OF SHORT-TERM PREDICTION.

Keywords : GREY THEORY, STOCK PRICE, FACTORS ANALYSIS, SEASONAL INDEX,SMOOTHING TECHNIQUES

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