ON THE FORECASTABILITY OF ASEAN-5
STOCK MARKETS RETURNS USING TIME SERIES MODELS

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Abstract

This study examines the forecastability of ASEAN-5 stock market returns using linear and non-linear time series models. Time series models with GARCH errors are also considered. Based on formal econometrics tests, this study shows that the behaviour of these returns do not follow random walk movement. Results of this study also reveal that all the estimated time series models, both linear and non-linear, have smaller out-of-sample forecast errors than the random walk model. These two findings robustly indicate that returns of ASEAN-5 stock markets do not follow random walk movement and are forecastable. Thus, this study can be taken as providing justification for the work of technical analysts.

Keywords: Random walk; Time series models; Autoregressive; Smooth Transition Autoregressive; GARCH; Forecasting; ASEAN-5 stock markets.

I. INTRODUCTION

Over the past few decades, there has been a growing interest in the modelling and forecasting of economic and financial variables, such as GDP, exchange rates, stock prices or returns. Most of these earlier works used structural models, trying to explain the fluctuations in the variable under study with some exogenous macroeconomic variables as the explanatory variables. Lately, with the advancement of time series econometric techniques, many researchers resort to time series models in their forecasting endeavour. This approach gain further popularity when data of higher frequency are becoming available from the equity, foreign exchange and derivatives markets, which is particularly useful to those with short-term horizons.

Time series models have been widely applied in forecasting financial time series for several reasons. The most important reason is that time series models enjoy greater simplicity as compared to the econometric structural models without loosing their forecastability. In other words, the forecasting performance of time series models are at least comparable to structural models disregarding the fact that the former requires minimum information set. Unlike a structural model, a time series model demands nothing more than the historical records of the variable under investigation[1]. It is assumed that the movements of a time series are solely explained in terms of its own past and therefore forecasts can be made by extrapolation of the past (Harvey, 1993). The work of time series modelling and forecasting has close connection

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[1] One problem encountered by forecasters using structural models is that the explanatory variables introduced on the right-hand side of the equations make them difficult to use for projection (Six, 1989). It is the simplicity of the time series requirement that enables the resulting model to be a good alternative to the solution of many forecasting problems.