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SOUTH-EAST ASIAN STOCK MARKETS FOLLOW A NON-RANDOM WALK

by Venus Khim-Sen Liew, Kian-Ping Lim and Chee-Keong Choong

Are the returns of the major South-East Asian stock markets forecastable? If so, can those returns be forecast by models that rely entirely on one variable - the stock price itself?

To seek answers to the above questions, we resorted to time-series modelling, a methodology which is rooted in the same principles as technical analysis. A time-series model demands nothing more than the historical records of the variable under investigation, whereby the movements of the variable are explained solely in terms of its own past.

Parallels have even been drawn between the recent trend in non-linear time-series modelling (where the output from a model is not proportional to the sum of its input variables) and technical analysis. Clyde and Osler (1997) argued that technical analysis could be viewed as a simple way of exploring

the non-linear behaviour of financial time-series. For example, patterns such as head-and-shoulders are clearly attempting to find some kind of non-linearity in the series.

In our study we looked at daily stock market indices from the five major South-East Asian countries (ASEAN-5: Indonesia, Malaysia, Philippines, Singapore and Thailand) from January 1990 to October 2001. From this data, we computed the percentage daily returns (based on the price move from the close of one trading day to the next). Figure 1 provides an example of the resulting time-series; a plot of the daily returns from Singapore's Strait Times Index.

The data was divided into two periods. Data from January 1990 to October 2000 was used to create six time-series models (two linear and four non-linear) and a random walk model. The seven models were

then used to generate 1-day, 1-week, 1-month, 3-month, 6-month, 9-month and 1-year forecasts.

The forecasts from these models were then compared with the actual data from November 2000 to October 2001 and their performance was measured using the root mean squared error (RMSE) method.

Forecasting Performance

The forecasting performances of the seven models are summarized in Table 1 (note that models with better performance have smaller average values). In addition, the average ranking of the models (based on RMSE for each forecast horizon) is given in Table 2.

On average, linear models are superior to non-linear models for forecast horizons of

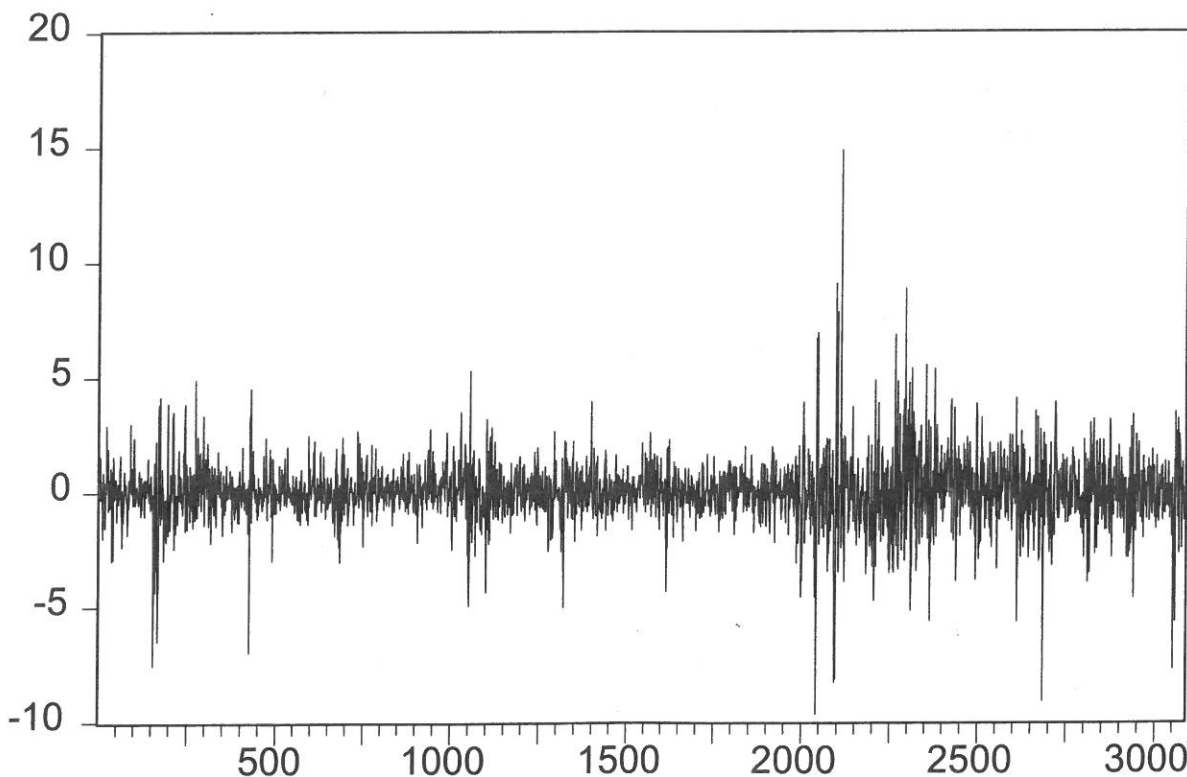


Figure 1. Daily returns of the Strait Times Index