ARE NON-LINEAR DYNAMICS A UNIVERSAL OCCURRENCE? FURTHER EVIDENCE FROM ASIAN STOCK MARKETS

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ABSTRACT

With abounding evidence of non-linearity in stock markets of developed markets, this study attempts to narrow the gap in the literature of Asian countries by providing further empirical evidence to the issue "are non-linear dynamics a universal occurrence?". The results from the Hinich bispectrum test indicate strong evidence of non-linearity in all the Asian stock markets under investigate- Japan, Hong Kong, Singapore and Malaysia. These findings further add to the empirical support that non-linearity is a salient feature in stock market time series data and have important implications for works on market efficiency, modelling and pricing and hedging strategies in derivatives markets.

Key Words: Non-linearity; Data generating process; Hinich bispectrum test; Asian stock markets

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I. INTRODUCTION

It is an accepted fact that financial economics has been dominated over the past decade by linear paradigm, which assumes that economic time series conform to linear models or can be well approximated by a linear model. For example, empirical tests of market efficiency, purchasing power parity, tests of causality and many of the empirical models of asset pricing have implicitly assumed that the underlying dynamics are in linear form or can be made linear by a simple transformation.

However, there are ample empirical evidence against the linear paradigm. Theoretically, there is no reason to believe that economic systems must be intrinsically linear (see, for example, Pesaran and Potter, 1993; Campbell *et al*., 1997; Barnett and Serletis, 2000). Empirically, there are a great number of studies showing that financial time series exhibit non-linear dependencies (see, for example, Hsieh, 1989, 1991; Scheinkman and LeBaron, 1989; De Grauwe *et al*., 1993; Abhyankar *et al*, 1995; Steurer, 1995; Brooks, 1996; Barkoulas and Travlos, 1998; Opong, *et al.*, 1999). With this development, the