



Modeling Asset Price Dynamics

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Abstract. We model the price prediction in Sri Lankan stock market using Ising model and some recent developments in statistical physics techniques. In contrast to usual agent-models, the influence does not flow inward from the surrounding neighbors to the centre, but spreads outward from the center to the neighbors. Monte Carlo simulations were used to study this problem. The analysis was based on All share price index, Milanka price index in Colombo Stock Exchange and Simulated Price Process. The monthly and daily influences of the above indices to the Sri Lankan economy were also investigated. The model thus describes the spread of opinions traders.

Keywords: Stock market, Price formation, Spin model

1. INTRODUCTION

A large set of economic models can be mapped to various versions of the Ising model to account for social influence in individual decisions. Human beings are not spins, they can learn, adapt the nature and strengthen their interactions with others based on the past experience. We use Ising model to study the price prediction in Sri Lankan financial market. This is a mathematical model where state is described by the accumulation of binary variables and has been frequently used for discovering universality behind various social and economic systems (Stauffer, 2000, Wedagedara 2006). The spins are interpreted as market participant's attitude (Weron 2000, 2003). The return of