
Markov Chain Model for predicting the Share Price of Canadian Stock Market

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The stock prices are vital in the investor's point of view to make decision regarding their investment. So, the success of the investor, especially in the stock market, depends a great deal on the choice of the decision taken by the investor. Therefore, this paper studies a Markov chain application on stock market price. This paper provides a Markov chain analysis for forecasting the stock prices of five Canadian banks; Royal Bank of Canada (RBC), Toronto-Dominion Bank (TD), Bank of Nova Scotia (Scotia bank) (BON), Bank of Montreal (BMO) and Canadian Imperial Bank of Commerce (CIBC) in Canada. The closing prices of each trading day of each bank were obtained from the Yahoo finance website between Jan 2019 and April 2020. Two methods have been adopted to describe the state of the system. For each bank, the states were considered as gains or losses for model 1 and large increments, low increments, small increments, small losses, moderate losses, and high losses for Model 2. The Transition probabilities, steady state probabilities and mean recurrent time were obtained for these two models and compared among the banks. Based on the model 1, it is revealed that the chance of getting gain (55%) is comparatively high for all the banks. According to model 2, the chance of getting small increment is high for each of the five banks. This is a good sign for investors; they do not get any considerable large loss. Also, noted that, for BON shareholders there is 48% chance of getting small increment in the near future.

Key words: *Markov chain, closing price, steady state probability, stock market, transition probability*

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