

INEFFICIENCY OF G-SECURITIES MARKET: EVIDENCE FROM INDIA

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Abstract The main objective of this study is to evaluate the efficiency of G-securities market of India. The researcher found that there is weak form of inefficiency in G-securities market of India and this weak form of inefficiency varies with maturation period of G-securities indices. The findings clearly show that there is no randomness in yields of G-securities indices across all maturities (1-, 2-, 3-, 5-, 10-, 15 years). In other words, the G-securities market of India is inefficient. The study also reveals that the short-term G-securities indices are more efficient as compared to long-term G-securities indices of India. As it can be seen from result, that we can predict the short-term G-securities yields (1- & 2 year) for next four days, medium term G-securities yields (3- & 5year) for next 3 days and long-term G-securities yields (10-, 15year) for next two days only. The results of E. GARCH and T GARCH indicate that there is no leverage effect on G-securities yields across all maturities in India. This reveals that G-securities markets are not as sensitive or exposed to external shocks (good or bad news) as stock markets used to be.

Keywords: G-securities market, India, T Garch, Run test, E Garch,

1. INTRODUCTION

The last two decades were most tumultuous and volatile at both global as well as domestic level. Gruesome terror attacks, huge and shocking financial frauds and crises, which led many financial institutions to crumble like pack of cards, in India financial frauds like Harshad Mehta fraud in 1992, swindle amount Rs. 3500 crores. Ketan Parekh swindles which crashed financial market in India. 2G Spectrum Scam in 2008, fraud amount Rs. 1, 76,000 Crore. Satyam scandal in 2009, scandal amount Rs. 14,000 Crore. Coal Allocation Scam in 2012, fraud amount of Rs. 1, 86,000 Crore. All these frauds and other various frauds and swindles created confusions and doubts among investors and have raised questions about the transparency and quality of financial markets of India. Testing the efficiency of financial markets became a vital issue for both investors as well as policy makers dealing with financial markets. This paper is a humble attempt to evaluate the weak form efficiency of G-securities markets of India. The G-securities market in India has been diversified to a great extent and performs as a huge and enough long term source of finance to the stable growth of the Indian economy. The securities market provides immense potential to raise funds for the infrastructural development undertaken by both.

Immense studies have been done on stock market efficiency rather than G-securities markets especially in developing countries like India. The reasons for this biased approach were given by Luciano et al (2012) [1] stock markets trading volumes are much larger than securities markets and G-securities were recently traded in many countries, especially in emerging countries. Details about the development of securities markets in emerging economies can be ascertained in Refs. [2,3]. Among the literature on fixed income securities we can cite Ref. [4] which studies tests for day-of-the-week effects in Thailand's corporate-securities market all the sample securities show high, positive Friday yields; but the day-of-the-week effects are only significant for some securities. Ref. [5] investigate the impact of interest rate volatility on corporate securities yield spreads and found that there is negative relation between default spreads and call spreads. [6,7] vital conclusions were obtained by evaluating the dynamic evolution of market linkages.

The simple and conventional definition of informational efficiency is the degree to which market prices correctly and quickly reflect information and thus true value of an underlying asset [8] informational efficiency can be divided into three forms depending upon the informational set available. The first type is the weak form of efficiency, where stock prices reflect all the information contained in the history of past prices. The second type is semi strong efficiency, where information set is all public known information and the third type is strong efficiency, where prices reflect all kinds of information, public and private [9,10]. Efficiency in capital markets have been defined in terms of what type of information is available to market participants and how they handle that information. As per this view, an efficient G-securities market is one where G-securities prices accurately reflect all available information and quickly adjusts to new information. It is assumed that within the efficient markets hypothesis, market participants rationally take the

decision regarding buying and selling of their securities based on available information about securities prices and their relevant determinants [11]. In a competitive market the Efficient Market Hypothesis is necessary condition for the existence of equilibrium, in which arbitrage opportunities doesn't exist.

2. EXISTING LITERATURE

Lars Oxelheim et.al (2004) investigated the static efficiency of secondary securities market based on four indicators transparency, number of maturities and issuers, spread, and liquidity. They showed that Nordic markets became more efficient during the 1990s, but transparency of efficiency remained a problem for them. Their study explored a supplementary approach to market efficiency. It is a qualitative concept that is closer to the concept of resource efficiency. The main limitations of their study are twofold, firstly it is limited to Nordic markets only and secondly it is qualitative in nature [12].

Luciano Zunino et.al (2012) they have studied market efficiency of G-securities indices of thirty developing and developed countries using statistical technique of complexity-entropy causality plane. They concluded that the classification derived from complexity-entropy causality plane was consisting with qualification assigned by major rating agencies to the G-securities indices. They also find that correlation between permutation entropy, economic development and market size [13].

Mehmet F. Dicle et.al (2009) studied the efficiency and diversification benefits to international investors of Bombay stock exchange and National stock exchange of India. They concluded that Indian markets were well integrated with international equity markets, international diversification is low and day-of-the –weak effect is due to international spillover. The limitation of this study is that it covers two main stock exchanges of India only i.e. Bombay stock exchange and national stock exchange [14].

The aim of this study is to investigate efficiency of G-securities yields of India. This study contributes to the research field as it is entirely different from previous studies such as (Luciano Zunino et al., 2012) have applied complexity-entropy causality plane, (Mehmet F. Dicle et al, 2004) have applied Granger type causality and Run test. (A. Q. Khan et al. 2011) have applied Run test. (Shikha Mahajan et. al, 2013) has used correlation and Run test and no study has predicted the future yields. But our study is unique from previous studies, because as far as Indian G-securities market is concerned, to the best of our knowledge, no such type of study has been conducted till now. This is the most comprehensive study to investigate the efficiency of Indian G-securities markets. By Yields wise as well as year wise and taking into consideration all short (1 year, two years). Medium (3 year 5 year) and long term (10 year, 15 years, 30 year) securities yields by using Run test and ARMA, and shows that we can predict yields of G-securities for next three days, which is quite novel feature of this study and is first study of this kind of nature.

3. DATA AND METHODOLOGY

The period of the study is of six years ranging from September 2011 to September 2016, the frequency of data used in the study is daily and data is secondary in nature and has been collected from Bombay Stock Exchange. The tools used in the study are RUN test and ARMA,

T. GARCH, E. GARCH with the help of SPSS and Eviews software.

Run test and Securities Market Efficiency Test

Run test has been used to test the efficiency of securities market based on an idea called “Monte Carlo fallacy or the fallacy of the maturity of chances”. This may be explained as a belief that what “goes up must come down”. This phenomenon is evident itself amongst investors the prices of whose stock's has raised for a period of time are deemed to be “due for a fall” [18] it means having the knowledge of historical price movements of stocks, one can easily predict the likely direction future price movements. This proves the argument that the stock market is predictable and inefficient. Now the problem is to check whether Indian G-securities market is predictable or not by detecting serial dependence of Securities yields applied. In this paper Run test and ARMA E GARCH and T GARCH model will be used to check the efficiency G-securities market of India.

3. ANALYSIS

3.1 Result of Descriptive Statistics of G-securities yields of India

Descriptive statistics of daily yields of different securities indices. As can be seen from the table, the average daily

yields do not vary significantly across different maturities and ranges from .002 bps for 3-year securities Yields to .39 bps for 30 year securities Yields. The securities volatility or standard deviation, on the other hand, also do not exhibits significant variation, and ranging from 0.48% for 3-year securities Yields to 0.62% for 1-year securities Yields. For rest of the securities indices volatility is almost same.

3.2 Result of Run test of G-securities yields of India

shows the results of run test and reveals that successive yields of G-securities are independent. It is found that the probability value of each securities index is significant, which shows that the yields are independent across all maturities in India. Therefore, G-securities yields across all maturities (1-, 2-, 3-, 5-, 10-, 15- & 30 years) shows that there is no randomness among the G-securities yields of India. In other words, the G-securities yields of India are weakly inefficient. It means with the help of past prices and trend one can predict the yield in G-securities market. Now the question ascends how long G-securities markets can be predicted. In order to answer this question, we have performed the ARMA test.

3.3 Results of E GARCH & T GARCH of G-securities yields of India

clearly shows that probability value of heteroscedasticity is significant which indicates that there is an Arch effect in G-securities yields of India and probability value of LM Test is not significant which indicates that there is no serial correlation in G-securities yields. Which is a good for further analysis of data. Jarque-Bera probability indicates that data is normally distributed. The coefficients and corresponding probability value of E. GARCH and T GARCH indicates that there is no leverage effect on G-securities yields across all maturities in India. This reveals that G-securities markets are not as sensitive or exposed to external shocks (good or bad news) as stock markets used to be. This also proves that investments in G-securities in India are safe and secure investments as compared to ordinary stocks.

3.4 Results of OLS ARIMA of 1- & 2-year securities yields

indicates that prob. value of one year yields lag 1, lag 2, lag 3 and lag 4 are significant which indicates that the yields of one-year G-securities index of India can be predicted up to next four days. This index is most inefficient securities index in G-securities market of India. While the prob. value of two year yields lag 1, lag 2, lag 3 and lag 4 are significant which indicates that the yields of two-year G-securities index of India can be predicted up to next four days. This reveals that short term maturity G-securities yields are highly inefficient as compared to medium and long term G-securities yields in India.

3.5 Results of OLS regression of three-year securities yields

indicates that prob. value of three-year yields lag 1, lag 2, lag 3 are significant which indicates that the yields of three-year G-securities index of India can be predicted up to next three days only. While as the prob. value of five year yields lag 1, lag 2, lag 3 are significant which indicates that the yields of five-year G-securities index of India can be predicted up to next three days. This reveals that medium term maturity G-securities yields are less inefficient as compared to short G-securities yields in India.

3.6 Results of OLS regression of ten-year securities yields

indicates that prob. value of ten-year yields lag 1, lag 2 are significant which indicates that the yields of ten-year G-securities index of India can be predicted up to next two days. Similarly, the prob. value of fifteen-year yields lag 1, lag 2 are significant which indicates that the yields of fifteen-year G-securities index of India can be predicted up to next two days.

CONCLUSION

The results show the evidence that G-securities yields across all maturities (1-, 2-, 3-, 5-, 10-, 15 years) that there is no randomness among the G-securities yields of India. In other words, the G-securities market of India is inefficient. The study also reveals that the inefficiency reduces with maturity of G-securities indices. As the result show that we can predict the short-term G-securities yields (1- & 2 year) for next four days, medium term G-securities yields (3- & 5 year) for next 3 days and long-term G-securities yields (10-, 15 year) for next two days only. The results of E. GARCH and T GARCH indicates that there is no leverage effect on G-securities yields across all maturities in India. This reveals that G-securities markets are not as sensitive or exposed to external shocks (good or bad news) as stock markets

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