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Volatility spillover, risk and prospects for return in NIFTY Realty sector index

Management

KEYWORDS:

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ABSTRACT

The recent decade is evident to real estate sector growth in India. Developing economies like India created opportunity for several national and multination companies to develop real estate sector. Presently NIFTY Realty sector consist 10 main stocks. This paper empirically investigates the risk and return prospects in NIFTY REALTY sector index. Data ranges from 20th July 2010 to 31st December 2016 and employs generalized autoregressive conditional heteroskedesticity models. The research methodology includes symmetric and asymmetric GARCH modeling. We attempted to model the volatility for NIFTY REALTY sector index and found that

Introduction

Volatility plays primary role in stock price movements. Higher degree of volatility makes shuffle stock prices at higher degree of changes which may result in either higher degree of enjoyable profits or increases the stock holding time. The last decade of growth and expansion of real estate business delivered the highest contribution in developing the nation. The real estate sector provides opportunity for long term planning. The development of townships, redevelopment of old buildings, malls, airports, etc. are contributions of real estate sector or Realty sector index stocks. NIFTY realty sector includes the index prices containing 10 listed companies such as DLF Ltd, Delta Corp Ltd, Godrej Properties Ltd, Housing Development and Infrastructure Ltd, Indiabulls Real Estate Ltd, Oberoi Realty Ltd, Phonix Mills Ltd, Prestige Estates Projects Ltd, Sobha Ltd and Unitech Ltd. The sector index price indicates the risks and prospects in the sector. This study aims to investigate the degree of risk and prospects for returns in NIFTY Realty sector index considering the data range from 20th July 2010 to 31st December 2016 covering daily closing index prices.

Review of literature

Corporate dividend policy has been remained a heavily investigated issue in corporate finance Nazir, M. S., Nawaz, M. M., Anwar, W., & Ahmed, F. (2010). They contributed on paper that also an effort in this regard to examine the role of corporate dividend policy in determining the volatility considering the data from Pakistan using Karachi Stock Exchange (KSE) indexed (KSE-100) firms for the period of 2003-2008 and secure consequence and accidental effect models have been applied on the panel data. The results found that dividend policy has a strong significant connection with the stock price volatility in KSE. They conclude their findings that reliable with the previous researchers of emerging economies that price volatility may be abridged by employing an effect corporate dividend policy.

Whereas, Al Rjoub, S. A. M. (2011) contributed their reseaerch paper describing that stock volatility upsurges during downturns and financial crises. The indication strengthens the idea that stock prices are significant business cycle pointer. They employed two different statistical models for stock volatility. Another scholarly publication by Beltratti, A., & Morana, C. (2006) where they worked on macroeconomic causes of stock market volatility. They study the relationship among macroeconomic and stock market volatility using S&P500 data. While, Athanassiou, E., Kollias, C., & Syriopoulos, T. (2006) worked on research paper that analyses the impact of exogenous national security related shockwaves on the time varying volatility structure considering Greek Stock Market (GSM). In order to evaluate the statistical process they employ alternatively conditional Heteroscedastic models that includes symmetric and asymmetric.

An early contribution by Wadhwani, M. K. E. S. S. (1994) to stock market volatility by considering data from sixteen national stock market. The main findings of research work indicate that idiosyncratic risk is significantly priced and the price of risk is not common across all study markets. Walid, C., Chaker, A., Masood, O., & Fry, J. (2011) worked on paper using Markov-Switching EGARCH model to examine the active relation between stock price volatility and exchange rate changes considering four developing countries. They found that differentiate among two dissimilar regimes in both the conditional mean and the conditional variance of stock returns. Whereas, Ahn, H. J., Bae, K. H., & Chan, K. (2001) worked on limit orders limit depth and volatility considering Hong Kong stock exchange stock prices. They investigate the role of limit orders in the liquidness delivery in a unadulterated order driven market. They found that how that market complexity increases following to an upsurge in fleeting volatility and transitory volatility deteriorations succeeding to an upsurge in market depth.

While, Tripathy, T., & Gil-Alana, L. A. (2010) contributed research study focusing on National Stock Market volatility. They submit that computing volatility is significant matter for stock market traders. They focused to associate the different volatility models considering the series returns of National Stock Exchange. They employed five models including asymmetric and symmetric GARCH models. They conclude their results suggesting that the AGARCH and VIX models proved to be the best methods. Emerging market stock returns have been characterized as having higher volatility than returns in the more developed markets Abugri, B. A. (2008).

Data and methodology

The study covers time ranging from 20th July 2010 to 31st December, 2016 considering daily observations counts 1602 which abstracted from official website of National Stock Exchange. The financial series returns converted to log differences to come over with unit root problems and tested by Augmented Dickey fuller.

GARCH (1, 1) Generalized autoregressive conditional heteroskedesticity (GARCH) by Bollerslev (1986) which consists ARCH (1) and GARCH (1) lag terms. Model property is given below;

$$ht = \omega + \alpha 1 ut\text{-}1^{2} + \beta 1\, h_{t}\text{-}1$$

Ht represents the volatility for all covered study markets, where, indicates the constant which derives as greater than 0 and to support this α1ut-12 and β1 ht-1 must be >0 and indicates weighted average of a long term average. The α1ut-12 indicates ARCH term which represents volatility from the previous period And, β1 ht-1 indicates GARCH term this is also last period forecast variances.

EGARCH (1, 1) EGARCH or Exponential GARCH was developed and introduced by Nelson (1991) which is asymmetric GARCH model and capable to capture stylized facts in financial returns. The model takes long term process and ensures the positive variances.

$$\text{Log } h_{t} = w + b_{1} \log ht\text{-}1 + a1[qVt_{-1} + g\{|Vt\text{-}1| - E|Vt\text{-}1|\}]$$

Where, Ω indicates the constant, b1 log ht-1 takes the long rooted GARCH, a1[qVt-1 covers good news about the market ARCH and, g{|Vt-1| - E|Vt-1|} captures the asymmetry in financial series returns of NIFTY Realty sector index.

Result and discussion

The computation process started with conversion of NIFTY Reality sector index into log and considered first log difference. Then after the variable tested for unit root problems and test Augmented Dickey fuller test conducted. The result property computed using following formula. The test were conducted with constant and with constant and trend.

With constant,

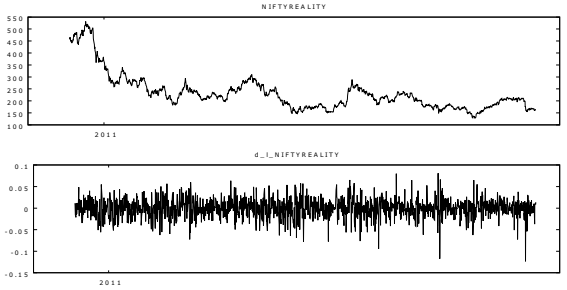
$$(1-L)y = b0 + (a-1)*y(-1) + e$$

With constant and trend,

$$(1-L)y = b0 + b1*t + (a-1)*y(-1) + e$$

The result property of ADF test for NIFTY Realty sector index considered at significant level of 1% using maximum lag value 4, and criterion AIC. Test sample size 1600 for both the computation. The test rejects the null hypothesis of unit root.

Fig1 – NIFTY Realty sector index actual and stationary returns



Source: Author's computation using NIFTY Realty sector index from 20th July 2010 to 31st December 2016

The property of descriptive statistics indicates high degree of standard deviations (investment risk) with negatively skewed returns. The ex-kurtosis indicates favorable outcomes (1.6494). NIFTY Realty sector index price movements shuffled from -0.1233 (min) to 0.0809 (max) during the covered study period range. We considered 1601 daily closing observations of NIFTY Realty sector index. The graphical series returns provided in Fig1 which indicates the NIFTY Realty sector index series return movements for actual and stationary series. The figure captures several volatility shocks at upper and lower side. Such unpredictable shocks create unpredictable changes in asset returns for investors. At present the NIFTY Realty sector index indicates the price movements at lower than the average returns from the covered study period.

We failed to fit GARCH (1,1) by Bollerslev (1986) to NIFTY Realty sector index returns and attempted to model by considering actual series returns, logged returns, first log difference and difference of first log difference to asset returns. After these attempts we failed to fit GARCH (1,1). However, we success to model Exponential GARCH by Nelson (1991) to NIFTY Realty sector index returns considering difference of first difference of log returns. The result property indicates presence of leverage effect. The normal distribution of Nelson EGARCH indicates negative conditional mean and negative value for conditional variance equations except the value for alpha and beta. EGARCH fitted at significant level of 10% and confirms the presence of asymmetry in series returns of NIFTY Realty sector index.

Conclusion

The result outcome of this paper is significant to understand the transmitting pattern and presence of leverage effect in NIFTY Realty sector index. The degree of standard deviations indicates presence of high risk and high probability for unpredictability. We could not fit GARCH (1,1) even after all possible attempts. Further, EGARCH fitted at significant level of 10% and indicates presence of leverage effect in financial series returns of NIFTY Realty sector index. It indicates that the market will react more volatility at down side or at bad news and create higher number of volatility shocks. However, the present index contains only 10 fundamental stock companies where the market capital and popularity of identified stocks matters. Moreover, midcap and large-cap listed companies and group of such listed companies may produce better analytical outcomes.

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