EVALUATING VAR MODELS FOR THE VOLATILE INDIAN FUTURES MARKET

Jitender*

School of Economics,
University of Hyderabad,
Hyderabad INDIA
Email id: Jitendergame@gmail.com

ABSTRACT

The application of Value at Risk (VaR) methodology in the context of managing market risk has gained widespread acceptance as a standard for quantifying the inherent "market risk" associated with a range of financial instruments. This research seeks to assess the most suitable VaR model for the characterization of risk in the context of the Indian futures market, with a specific emphasis on Nifty futures. Through an examination of data covering the time frame from 2006 to 2015, a series of VaR estimations have been calculated, utilizing a variety of methodologies. These methodologies encompass parametric approaches such as variance-covariance, Exponentially Weighted Moving Average, and Generalized Auto-Regressive Conditional Heteroskedasticity, as well as non-parametric methods including historical simulation and Monte Carlo simulation.

The analysis reveals that VaR models based on the normality assumption tend to provide underestimated risk estimates, particularly when dealing with returns that do not follow a normal distribution. In contrast, models that take into consideration the presence of fat-tail behavior in financial returns, such as historical simulation, exhibit better performance in accurately capturing the risk associated with these financial instruments.

KEYWORDS: *Value-At-Risk (Var), Nifty Futures, Variance–Covariance, Historical Simulation, Financial Risk Management.*

BIBLIOGRAPHY

1. Maghyereh, A. I., & Al-Zoubi, H. A. (2006). Value-at-risk under extreme values: the relative performance in MENA emerging stock markets. International Journal of Managerial Finance.

2. Alexander, C. (2009). Market risk analysis, value at risk models (Vol. 4). John Wiley & Sons.

3. Butler, C. (1999). Mastering value at risk: a step-by-step guide to understanding and applying VaR. Financial Times/Prentice Hall.

4. Chowdhury, P. D., & Bhattacharya, B. (2015). Estimation of Value at Risk (VaR) in the Context of the Global Financial Crisis of 2007-08: Application on Selected Sectors in India. Indian Journal of Research in Capital Markets, 2(2), 7-25.

5. Coronado, M. (2000). Comparing Different Methods for Estimating Value-at-Risk (VaR) for Actual Non-Linear Portfolios: Empirical Evidence. Working paper, Facultad de CienciasEconomicas y Empresariales, ICADE, Universidad P. Comillas de Madrid, Madrid, Spain.

6. Crouhy, M., Galai, D., & Mark, R. (2006). The essentials of risk management (Vol. 1). New

York: McGraw-Hill.

7. Dowd, K. (2007). Measuring market risk. John Wiley & Sons.

8. Dutta, D., & Bhattacharya, B. (2008). A Bootstrapped Historical Simulation Value at Risk Approach to S & P CNX Nifty. In The National Conference on Money and Banking, IGIDR, Mumbai, India.

9. Şener, E., Baronyan, S., &Mengütürk, L. A. (2012). Ranking the predictive performances of value-at-risk estimation methods. International Journal of Forecasting, 28(4), 849-873.

10. Harmantzis, F. C., Miao, L., & Chien, Y. (2006). Empirical study of value-at-risk and expected shortfall models with heavy tails. The Journal of Risk Finance.

11. Kupiec, P. (1995). Techniques for verifying the accuracy of risk measurement models. The Journal of Derivatives, 3(2).

12. Morgan, J. P. (1996). Risk Metrics technology document. Morgan Guaranty Trust Company of New York, New York, 35-65.

13. Nath, G. C., & Samanta, G. P. (2003). Value at Risk: Concept and Its Implementation for Indian Banking System. Available at SSRN 473522.

14. Penza, P., Bansal, V. K., Bansal, V. K., & Bansal, V. K. (2001). Measuring market risk with value at risk (Vol. 17). John Wiley & Sons.

15. Philippe, J. (2001). Value at risk: the new benchmark for managing financial risk. NY: McGraw-Hill Professional.

16. Poornima, B. G. & Reddy, Y. V. (2017). An Analysis of Portfolio VaR: Variance-Covariance Approach. IUP Journal of Applied Finance, 23(3).

17. Sollis, R. (2009). Value at risk: a critical overview. Journal of Financial Regulation and Compliance.

18. Samanta, G. P., Jana, P., Hait, A., & Kumar, V. (2010). Measuring Market Risk-An Application of Value-at-risk to Select Government Bonds in India. Reserve Bank of India Occasional Papers, 31(1), 2-32.

19. Varma, J. R. (1999) "Value at Risk Models in Indian Stock Market," Indian Institute of Management, Working paper no.99-07-05.

20. Venkataraman, S. (1997). Value at risk for a mixture of normal distributions: the use of quasi-Bayesian estimation techniques. Economic Perspectives-Federal Reserve Bank of Chicago, 21, 2-13.

21. Zangari, P. (1996). An improved methodology for measuring VaR.RiskMetrics Monitor, 2(1), 7-25.