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Price Discovery of Indian Equity Futures

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Abstract

Price discovery being related with the informational efficiency of futures market, the study examined long run and short run relationship between spot and futures market of Indian equity futures using data from the beginning of trading of equity futures in NSE which is from November 9th 2001 to July 31st 2019 and the lead lag relationship between spot and future returns was also determined using Vector Error Correction Model. The short run and long run relationship between spot and futures markets were identified and the cases of unidirectional, bidirectional and no directional relationship were found in short run and the conditions of spot leading futures and futures leading spot were found on individual stocks. The results of companies with leading futures can be used to forecast effect of futures on the spot market and policy makers can stabilize futures market through ensuring smooth run of price discovery process to avoid supernormal profit from arbitraging on price differences.

JEL Code: E3, E64, G13

Keywords: Price Discovery, Equity, Futures, Industry, India

I. Introduction

INDIAN CAPITAL MARKET is a thriving sector with different investment options for its participants. Along with the popularity of equities traded in capital market, different means of managing risk involved in its nature paved way for the segment called derivatives market. Derivatives are instruments whose value derives from an underlying asset which may be securities, gold, stock or other commodities. Basically, derivatives are classified into forward, futures, options and swaps. One of the most actively traded derivates is futures with its various roles such as price discovery, hedging, arbitrage and speculation.

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CIPLA, TATAMOTORS, DRREDDY, M&M ,TATASTEEL and HINDUNILVR spot lead futures and for BPCL and INFY futures lead spot market. The findings of the study are useful in such a way that, traders can use the results of companies with leading futures to forecast effect of futures on the spot market and policy makers can stabilize futures market through ensuring smooth run of price discovery process to avoid supernormal profit from arbitraging on price differences.

References

Alizadeh, A. and N. Nomikos, (2004), "A markov regime switching approach for hedging stock indices", *Journal of Futures Markets*, Vol. 24, No. 7, pp. 649–674.

Alphonse, (2000), "Efficient Price Discovery in Stock Index Cash and Futures Markets", *Annales d'Économie et de Statistique*, No. 60, pp. 177.

Andersen, T. G., T. Bollerslev, F.X. Diebold and C. Vega, (2003), "Micro effects of macro announcements: Real-time price discovery in foreign exchange" *American Economic Review*, Vol. 93, No. 1, pp. 38–62.

Awang, N., N.A. Azizan, I. Ibrahim and R.M. Said, (2014), "Hedging Effectiveness Stock Index Futures Market: An Analysis on Malaysia and Singapore Futures Markets. 2014 International Conference on Economics, Management and Development Hedging, pp. 24–34.

Behera, C. (2015), "Price Discovery and Market Efficiency in Indian Commodity Futures. *International Journal of Innovative Research in Engineering and Management (IJIREM)*, Vol. 12, No. 4, pp. 1–13.

Bhat, Rajani B and V N Suresh, (2014), "Price Volatility and Market Efficiency of Futures Market in India", Vol. 16, No. 3, pp. 11–18.

Brooks, C., O.T. Henry and G. Persand, (2002), "The Effect of Asymmetries on Optimal Hedge Ratios", *Journal of Business*, Vol. 75, No. 2, pp. 333–352.

Brooks ,Chris, (2008), "Introductory Econometrics for Finance", Cambridge University Press, Second Edition.

Chen, S. S., C.F. Lee and K. Shrestha, (2004), "An Empirical Analysis of the Relationship Between the Hedge Ratio and Hedging Horizon: A Simultaneous Estimation of the Short- And Long-Run Hedge Ratios", *Journal of Futures Markets*, Vol. 24, No. 4, pp. 359–386.

Chowdhury, A. R., (1991), "Futures market efficiency: Evidence from cointegration tests", *Journal of Futures Markets*, Vol. 11, No. 5, pp. 577–589.

Duarte, Joe, (2006), "Futures and Options for Dummies", Wiley Publishing Inc, Indiana, USA.

Figuerola-Ferretti, I. and C.L. Gilbert, (2005), "Price discovery in the aluminum market", *Journal of Futures Markets*, Vol. 25, No. 10, pp. 967–988.

Floros, C., (2006), "Journal 25", New Hedge, Vol. 5, No. 5.

Floros, C. and D.V. Vougas, (2008), "The efficiency of Greek stock index futures market", *Managerial Finance*, Vol. 34, No. 7, pp. 498–519.

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Garbade, K. D. and W.L. Silber, (1983), "Price Movements and Price Discovery in Futures and Cash Markets", *The Review of Economics and Statistics*, Vol. 65, No. 2, pp. 289.

Ghosh, A., (1993), "Cointegration and error correction models: Intertemporal causality between index and futures prices", *Journal of Futures Markets*, Vol. 13, No. 2, pp. 193–198.

GopalaKrishnan, P.G and Nandini Jagannarayan, (2011), "Derivative Markets", Himalaya publishing House.first edition.

Gupta, K. and B. Singh, (2006a), "Investigating the Price Discovery Efficiency of Indian Equity Futures Market", *Paradigm*, Vol. 10, No. 2, pp. 33–45.

Gupta, K. and B. Singh, (2006b), "Price discovery and causality in spot and futures markets in India", *The ICFAI Journal of Derivatives Markets*, January 2006.

Gupta, K. and B. Singh, (2009a), "Estimating the optimal hedge ratio in the Indian Equity Futures market", *IUP Journal of Financial Risk Management*, Vol. 6, No. 3and 4, pp. 38–98.

Gupta, K. and B. Singh, (2009b), "Price Discovery and Arbitrage Efficiency of Indian Equity Futures and Cash Markets". NSE Research Paper, National Stock Exchange, (143005), pp. 1–42.

Gupta, S., H. Choudhary and D.R. Agarwal, (2018), "An Empirical Analysis of Market Efficiency and Price Discovery in Indian Commodity Market", *Global Business Review*, Vol. 19, No. 3, pp. 771–789.

Hatemi-J, A. and E. Roca, (2014), "Estimating the optimal hedge ratio in the presence of potential unknown structural breaks", *Applied Economics*, Vol. 46, No. 8, pp. 790–795.

Herbst, A. F., J.P. McCormack and E.N. West, (1987), "Investigation of a lead lag relationship between spot stock indices and their futures contracts", *Journal of Futures Markets*, Vol. 7, No. 4, pp. 373–381.

Hull, John.C. and Sankarshan Basu, (2016), "Option, Futures and Other Derivatives", Pearson, seventh edition.

Inani, S. K., (2018), "Price Discovery and Efficiency of Indian Agricultural Commodity Futures Market: An Empirical Investigation", *Journal of Quantitative Economics*, Vol. 16, No. 1, pp. 129–154.

Kalok Chan , K . C . Chan and G . Andrew Karolyi, (2016), "The Society for Financial Studies Intraday Volatility in the Stock Index and Stock Index Futures Markets", *The Review of Financial Studies* , Vol . 4 , No . 4 (1991), pp . 657-684.

Kapoor, S. (2016), "Dynamics of Price Discovery and Indian Index Futures Market (A case of S and P CNX NIFTY)", *Amity Journal of Finance*, Vol. 1, No. 1, pp. 36–47.

Kenourgios, D., A. Samitas and P. Drosos, (2008), "Hedge ratio estimation and hedging effectiveness: The case of the Sand P 500 stock index futures contract", *International Journal of Risk Assessment and Management*, Vol. 9, No. 1–2, pp. 121–134.

Kevin, S., (2010),"Commodity and Financial Derivative", PHI learning, Second Edition, Delhi

Kim, K. and S. Lim, (2019), "Price discovery and volatility spillover in spot and futures markets: evidences from steel-related commodities in China", *Applied Economics Letters*, Vol. 26, No. 5, pp. 351–357.

Kolb, Robert .W, (2006), "Understanding Futures Markets", Blackwell publishing, Ninth edition.

Kolb, Robert .W, and James A. Overdahl, (2007), "Futures, Options and Swaps", Blackwell publishing, Fifth edition.

Krishnaswami, O.R and M. Ranganathan, (2005), "Methodology of Research in Social Sciences", Himalaya Publishing House, second edition.

Kumar, B. and A. Pandey, (2008), "Journal 21", New Hedge, India.

Liu, X. and B. Jacobsen, (2012), "The Dynamic International Optimal Hedge Ratio", *SSRN Electronic Journal*, Vol. 2, No. 3, pp. 82–94.

Louis H . Ederington, "The Hedging Performance of the New Futures Markets", *The Journal of Finance*, Vol . 34, No . 1, March, 1979, pp . 157-170.

Mall, M., B.B. Pradhan and P.K. Mishra, (2011), "The efficiency of India's stock index futures market: An empirical analysis", *International Research Journal of Finance and Economics*, Vol. 69, No. June, pp. 178–184.

Mallikarjunappa, T. and E.M. Afsal, (2010), "Price discovery process and volatility spillover in spot and futures markets: Evidences of individual stocks", *Vikalpa*, Vol. 35, No. 2, pp. 49–62.

Martin, B. Y. (1998), "Statistical Laboratory", Cambridge University, Vol. 28, No. 1996.

Miffre, J., (2001), "Efficiency in the Pricing of the FTSE 100 futures contract", *European Financial Management*, Vol. 7, No. 1, pp. 9–22.

Moosa, I. A., (2014), "The Sensitivity of the Optimal Hedge Ratio to Model Specification", *Finance Letters*, Vol. 1, pp. 15–20.

Naik, G. and S.K. Jain, (2002), "Indian Agricultural Commodity Futures Markets: A Performance Survey", *Economic and Political Weekly*, Vol. 37, No. 30, pp. 3161–3173.

Park, T. H. and L.N. Switzer, (1995), "Time-varying distributions and the optimal hedge ratios for stock index futures", *Applied Financial Economics*, Vol. 5, No. 3,pp. 131–137.

Pizzi, M. A. and A.J. Economopoulos, (1998), "An Examination of the Relationship between S tock Index C ash and Futures Markets A Cointegration Approach", Vol. 18, No. 3, pp. 297–305.

Prashad, Anjali, (1998) "Hedging performance of Nifty index futures", Center for International Trade and Development, JNU, Delhi, India, pp. 1–29.

Patwari, D.C. (2000), "Financia Futures and Options in Indian Perspective", JAICO Publishing house, Mumbai.

R. W. and Y. Tse, (2004), "Price discovery in the Hang Seng Index markets: Index, futures and the tracker fund", *Journal of Futures Markets*, Vol. 24, No. 9, pp. 887–907.

Rahman, S. and M. Zhong, (2002), "Fluctuations", *Perpetrator of Volatility*, Vol. XXV, No. 3, pp. 431–444.

Raju, M. T. and K. Karande, (2003), "Securities and Exchange Board of India" *Price Discovery and Volatility on NSE Futures Market*, Working Paper No. 7.

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Robert F. Engle and Byung Sam Yoo, (2012), "Co-Integration and Error Correction: Representation", Estimation, Vol. 55, No. 2, pp. 251–276.

- Sah, A. N. and K.K. Pandey, (2011), "Hedging Effectiveness of Index Futures Contract: The Case of S and P CNX Nifty", *Global Journal of Finance and Management* Vol. 3, No. 1, pp. 975–6477.
- Samal, G. P., (2017), "Price Discovery Efficiency of Cotton Futures Market in India", *Agricultural Economics Research Review*, Vol. 30, No. 2, pp. 235.
- Sanders, D. R. and M.R. Manfredo, (2004), "Comparing hedging effectiveness: An application of the encompassing principle", *Journal of Agricultural and Resource Economics*, Vol. 29, No. 1, pp. 31–44.
- Saumitra N Bhaduri, and Raja Sethu Durai (2005), "Optimal Hedge Ratio and Hedging Effectiveness of Stock Index Futures: Evidence from India", *Macroeconomics and Finance in Emerging Market Economics*, Vol.1, No. 1, pp. 121-134.
- Singh, G., (2017), "Estimating Optimal Hedge Ratio and Hedging Effectiveness in the NSE Index Futures", *Jindal Journal of Business Research*, Vol. 6, No. 2, pp. 108–131.
- Srinivasan, P., (2010), "Price Discovery in NSE Spot and Futures Markets of India: Evidence from selected IT Industries", *Bhavan's International Journal of Business*, Vol. 4 No. 1, 2010, pp. 16–27.
- Stoll, Hans R. and Robert E. Whaley (2013), "The Dynamics of Stock Index and Stock Index Futures Returns", Cambridge University Press
- Thakur, S. K. (2011), "Optimal Hedge Ratio and Hedge Efficiency: An Empirical Investigation of Hedging in Indian Derivatives Market", SSRN Network.
- Theissen, E. (2012), "Price discovery in spot and futures markets/: a reconsideration", *The European Journal of Finance*, November 2012, pp. 37–41.
- Turkington, J. and D. Walsh, (1999), "Price discovery and causality in the Australian share price index futures market", *Australian Journal of Management*, Vol. 24, No. 2, pp. 97–113.
- Upagade, Vijay and Aravind D. Shende, (2010), "Research Methodology", S.Chand Publishing, Jaipur.
- Wahab, M. and M. Lashgari, (1993), "Price dynamics and error correction in stock index and stock index futures markets: A cointegration approach", *Journal of Futures Markets*, Vol. 13, No. 7, pp. 711–742.
- Zhong, M., A.F. Darrat, and R. Otero, (2004), "Price discovery and volatility spillovers in index futures markets: Some evidence from Mexico", *Journal of Banking and Finance*, Vol. 28, No. 12, pp. 3037–3054.