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Global Financial Crisis, Foreign Portfolio Investment and Volatility : Impact Analysis on Select Southeast Asian Markets

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Abstract

The objective of the paper is to understand and compare the extent and nature of the impact of foreign portfolio investment (FPI) on the stock market volatility, particularly in the southeast Asian emerging markets and compare that against the corresponding experience of Indian economy, in the context of a global financial crisis of the recent past. Asian emerging markets are now being perceived as becoming financially more and more vulnerable to the international events due to their growing exposure to unstable foreign investment flows. Daily net FPI inflow and daily leading stock market composite index of four countries, namely Thailand, the Philippines, Indonesia and India, have been analysed using ARCH-GARCH group of models dividing the study period (2000 – 2014) among pre-crisis, crisis and post-crisis period separately. The study reveals that the net inflow of FPI has been a significant determinant of stock market return.

I. Introduction

THE WORLD INSTITUTE for Development Economics Research (WIDER) headed by Sir Kenneth Berrill, former Chairman of the Securities and Investment Board in the U.K., in the late 1980s, convincingly argued for developing countries to liberalize their financial markets in attracting foreign portfolio investment (FPI). The argument was that the huge capital base through pension and investment funds of the developed countries could be attracted to developing countries provided they liberalized their markets externally and developed their stock markets internally (WIDER, 1990). The

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the countries. However, the marginal impact is always very small. The relation between net FPI inflow and stock market return is never affected by the incidence of major international financial shock. Past information and volatility clustering have been significantly influencing the stock market return volatility of all these southeast Asian countries on an average and India in absolutely similar way.

Impact of volatility spillover from the FPI market to the stock market in the sample countries has been found to be different under different market conditions. In one sense, the Indian and Indonesian markets have shown almost similar effect of volatility spillover. In both these countries volatility spillover has been significant during a period when there is positive mean inflow of FPI and the stock market is also giving a positive average daily return. The spillover impact is dying down as the stock market of these countries starts giving negative average daily return. In other words, greater volatility in the FPI net inflow in India and Indonesia would have a significant impact on the volatility of their respective stock markets when stock markets yield positive average daily return. When, however, the daily return in the stock market is negative on an average the volatility in FPI net inflow would have insignificant impact on stock market volatility.

No such empirical similarity in the volatility spillover has been found in the Philippines and Thailand. However, the Philippines is the only market where the volatility spillover is insignificant all through the study period. In one sense, this is the only country where the volatility in the stock market is absolutely uncorrelated with the volatility in the net inflow of FPI.

Notes

1. "Taper tantrum" refers to the time period defined as 05.02.2013 through 09.05.2013 and is marked by a 137 basis point increase in the US 10-year treasury.

References

Agarwal, R.N., (1997), "Foreign Portfolio Investment in Some Developing Countries: A Study of Determinants and Macro Economic Impact", *The Indian Economic Review*, Vol. 32, pp. 217-229.

Ahmed Shaghil, and Andrei Zlate, (2013), "*Capital Flows to Emerging Market Economies A Brave New World?*", Board of Governors of the Federal Reserve System, International Finance Discussion Papers, Number 1081.

Akgiray, V., (1989), "Conditional Heteroscedasticity in Time Series of Stock Returns: Evidence and Forecast", *Journal of Business*, Vol. 62, No. 1, pp. 55-80.

Arora, H. and G. Baluja, (2013), "Dynamics of FII Flows on Indian Stock Market Volatility: An Empirical Exploration Using Garch Approach", *Pacific Business Review International*, Vol. 6, No. 2, pp. 41-47.

Badhani, K.N., (2005), "Dynamic Relationship Among Stock Prices, Exchange Rate and Net FII Investment Flow in India", IIM Lucknow Conference.

© Indian Institute of Finance

1206

Bailey, W., CX, Mao and K. Sirodom, (2007), "Investment restrictions and the cross-border flow of information: Some empirical evidence", *Journal of International Money and Finance*, Vol. 26, No. 1, pp. 1-25.

Banerjee, A., and S. Sarkar, (2006), "Modeling Daily Volatility of the Indian Stock Market Using Intraday Data", Working Paper No. 588, IIM Lucknow

Bansal, A. and J.S. Pasricha, (2009), "Foreign Institutional Investor's Impact on Stock Prices In India", *Journal of Academic Research in Economics*, Vol. 1, No. 2, pp. 181-189.

Batra, A., (2003), "The Dynamic of Foreign Portfolio Inflows and Equity Returns in India", Working Paper, ICRIER, Delhi, October 2003.

Bekaert, G. and Campbell R. Harvey, (2000), "Capital Flows and the Behaviour of Emerging Market Equity Returns, Capital Flows and the Emerging Economies: Theory, Evidence, and Controversies", University of Chicago Press, pp.159 – 194.

Bessembinder, Hendrik. and Paul.J. Seguin, (1993), "Price Volatility, Trading Volume, and Market Depth: Evidence from Futures Markets", *Journal of Financial and Quantitative Analysis*, Vol.28, No.1, p.21

Bhattacharya, Basabi and Jaydeep Mukherjee, (2005), "An Analysis of Stock Market Efficiency in the Light of Capital Inflows and Exchange Rate Movements: The Indian Context", IGIDR.

Biswas, Joydeep, (2005), "Foreign Portfolios Investment and Stock Market Behavior in a Liberalized Economy: An Indian Experience", *Asian Economic Review*, *August*, Vol. 47, No.2, pp. 221-232

Bollerslev, T., (1986), "Generalized autoregressive conditional heteroskedasticity", *The Journal of Econometrics*, Vol. 3, pp. 307-327.

Bollerslev, T., (1990), "Modelling the coherence in short-run nominal exchange rates: A multivariate generalized ARCH model", *The Review of Economics and Statistics*, Vol. 72, No. 3, pp. 498-505.

Bonser-Neal, C, S. L. Jones, and D. Linman, (2002), "Herding, Feedback Trading and Foreign Investors", Indiana University.

Brooks, C. and O.T. Henry, (2000), "Linear and non-linear transmission of equity return volatility, evidence from the US, Japan and Australia", *Economic Modelling*, Vol. 17, pp. 497-513.

Chakrabarti, R, (2001), "FII Flows to India: Nature and Causes," *Money and Finance*, Vol. 2, No. 7, October-December 2001.

Chan, Felix and Michael McAleer, (2003), "Estimating smooth transition autoregressive models with GARCH errors in the presence of extreme observations and outliers," *Applied Financial Economics, Taylor & Francis Journals,* Vol. 13 No. 8, pp. 581-592.

Chandrasekhar, C.P. and Jayati Ghosh, (2014), "Asia is vulnerable to financial instability", *The Hindu Business Line*, November 2014

Choe, H.; B.C. Kho and Rene H.M. Stulz, (1999), "Do foreign investors destabilize stock markets? The Korean experience in 1997", *Journal of Financial Economics*, Vol. 54, pp. 227-264.

© Indian Institute of Finance

Daigler, R.T. and M.K. Wiley, (1999), "The Impact of Trader Type on the Futures Volatility-Volume Relation", *The Journal of Finance*, Vol. 54, No. 6, pp.2297-2316.

Dickey, D.A. and W.A. Fuller, (1979), "Distribution of estimator of autoregressive time series with a unit root", *Journal of American Statistical Association*, Vol. 74, pp. 427-431.

Dickey, D.A. and W.A. Fuller, (1981), "Likelihood ratio statistics for autoregressive time series with a unit root", *Econometrica*, Vol. 49, pp. 1057-1072.

Dornbusch, R., and Y.C., Park, (1995), "Financial integration in a second-best world: are we still sure aboutour classical prejudices", Financial Opening: Policy Lessons for Korea, Korea Institute of Finance, Seoul, Korea

Dvoøák, T., (2005), "Do Domestic Investors Have an Information Advantage? Evidence from Indonesia", *The Journal of Finance*, Vol. 60, No. 2

EPLO Reporter, (2000), "Investors: A Study of the Post-election Crash", *Economic and Political Weekly*, February 19, 2005.

Garner, C. Alan, (1988), "Has the stock market crash reduced consumer spending?", *Economic Review*, April 1988 pp. 3-16.

Gertler, Mark and R. Glenn, Hubbard, (1990), *"Taxation, Corporate Capital Structure, and Financial Distress"*, NBER Chapters, in: Tax Policy and the Economy: Volume 4, National Bureau of Economic Research, Inc., pp. 43-72.

Gordon, J. and P. Gupta, (2003), "Portfolio Flows into India: Do Domestic Fundamentals Matter?", IMF Working Paper, Number WP/03/02.

Hamao, Y. and J. Mei, (2001), "Living with the "enemy": an analysis of foreign investment in the Japanese equity market", *Journal of International Money and Finance*, Vol. 20, pp. 715–735

Harju, K. and S. M. Hussain, (2008), "Intraday return and volatility spillovers across international equity markets", *International Research Journal of Finance and Economics* No. 22, pp. 205-220.

Harris, R. and R. Sollis, (2003), "Modelling and forecasting financial time series", Wiley New York.

Hoti, S., F. Chan and M. McAleer, (2002), "Structure and asymptotic theory for multivariate asymmetric volatility: Empirical evidence for country risk ratings", Paper presented to the Australasian Meeting of the Econometric Society, Brisbane, July 2002

IIF Research Note, (2014), "World Economic Situation and Prospects 2015", Indian Institute of Finance, 2 October 2014,

IMF, (2015), "World Economic Outlook", International Monetary Fund, January 2015

Jain, M.; P. L. Meena, and T. N. Mathur, (2012), "Impact of Foreign Institutional Investment on stock Market with special reference to BSE A study of Last One Decade", *Asian Journal of Research in Banking and Finance*, Vol. 2, No. 2

© Indian Institute of Finance

1208

Joo, B.A. and Z.A. Mir, (2014), "Impact of FIIs Investment on Volatility of Indian Stock Market: An Empirical Investigation", *Journal of Business & Economic Policy*, Vol. 1, No. 2, pp. 106-114.

Joshi, Prashant and Pandya, Kiran, (2012), "Volatility in Stock Markets of India and Canada", *IUP Journal of Applied Economics*

Kanas, A., (1998), "Volatility spillovers across equity markets: European evidence", *Applied Financial Economics* Vol. 8, pp. 245-256.

Karmakar, Madhusudan, (2006), "Stock Market Volatility in the Long Run 1965-2005", *Economic and Political Weekly*, pp. 1796-1802, May 2006.

Khan, Md. Aamir, (2010), "Investigation of Causality between FIIs Investment and Stock Market Returns", *Journal of Finance and Economics*, Vol. 40.

Kim, Sang W. and John H. Rogers, (1995), "International stock price spillovers and market liberalization: Evidence from Korea, Japan, and the United States," *Journal of Empirical Finance, Elsevier*, Vol. 2, No. 2, June 1995, pp. 117-133.

Kroner, K. F. and V. K. Ng, (1998), "Modeling asymmetric aomovements of asset returns", *The Review of Financial Studies*, Vol. 11, No. 4, pp. 817-844.

Li, Q., (2002), "Market opening and stock market behaviour: Taiwan's experience", International Journal of Business and Economics, Vol. 1, No. 1, pp. 9-15.

Ling, Shiqing and Michael McAleer, (2003), "Asymptotic Theory For A Vector Arma-Garch Model," *Econometric Theory, Cambridge University Press*, Vol. 19, No. 2, April, pp. 280-310.

Loomba, Jatinder., (2012), "Do FIIs Impact Volatility of Indian Stock Market?", International Journal of Marketing, Financial Services & Management Research, Vol. 1, No. 7

Murinde, V. and S. Poshakwale, (2002), "Volatility in the Emerging Stock Markets in Central and Eastern Europe: Evidence on Croatia, Czech Republic, Hungary, Poland, Russia and Slovakia", *European Research Studies Journal*, Vol. 4, pp. 73-101

Nath, G.C., and M. Dalvi, (2004), "Day-of-the-week effect and market efficiency-Evidence from Indian equity market using high frequency data of National Stock Exchange", Paper Presented at The Center for Analytical Finance, Indian School of Business, Hyderabad, December 2004, pp. 19-21,

Pal, Parthapratim, (1998), "Foreign Portfolio Investment in Indian Equity Markets - Has the Economy Benefited?", *Economic and Political Weekly*, Vol. 33, No. 11.

Pavabutr, Pantisa and Yan, Hong., (2007), "The Impact of Foreign Portfolio Flows on Emerging Market Volatility: Evidence from Thailand", *Australian Journal of Management*, Vol. 32, No. 2, pp. 345-368.

Poon, S.H. and C. Granger, (2003), "Forecasting Financial Market Volatility: A Review", *Journal of Economic Literature*, Vol. 41, No. 2, pp. 478-539.

Porwal, Ajay, Hamender Kumar and Rohit Gupta, (2005), "The Stock Market Volatility", *The Journal Accounting and Finance*, Vol. 20, No.1, October 2005, pp. 31-44.

Poshakwale, S. and V. Murinde, (2001), "Modelling the Volatility in East European Emerging Stock Markets: Evidence on Hungary and Poland", *Applied Financial Economics*, Vol. 11, pp. 445-456.

Radelet, S. and J. Sachs, (1998), "The onset of the East Asian financial crisis", Working Paper, Harvard University.

Ram, Mohan T.T., (2006), "Neither Dread Nor Encourage Them", *Economic and Political Weekly*, January 2006, pp. 95-98.

Reinhart, Carmen M. and Kenneth S., Rogoff, (2009), "The Aftermath of Financial Crises", NBER Working Paper No. 14656, *American Economic Review*, Vol. 99, No. 2, pp. 466-72, May.

Reyes, M. G., (2001), "Asymmetric volatility spillover in the Tokyo stock exchange", *Journal of Economics and Finance*, Vol. 25, No. 2, pp. 206-213.

Sanso, A., V. Arago and J.L. Carrion, (2003), "Testing for changes in the unconditional variance of financial time series", Department of Economia Aplicada Working Paper, Universitat de Les Illes Balears, 5.

Saxena, P., (2011), "FII Flows and Stock Market Volatility: Exploring Causal Link", JEL Working Paper.

Scherrer, Wolfgang and Eva, Ribarits, (2007), "On the Parametrization of Multivariate GARCH Models", *Econometric Theory*, Vol. 3, June 2007, pp. 464-484

Singh, A. and J., Glen, (2004), "Comparing capital structures and rates of return in developed and emerging markets." *Emerging Markets Review*, Vol. 5, No. 2, pp. 161-192.

Stulz, Rene M., (1997), "International Portfolio Flows and Security Markets", unpublished working paper, Dice Center for Financial Economics, The Ohio State University

Stulz, Rene M; Choe Bong-Chan and Hyuk Kho, (1997), "Do foreign investors destabilize stock markets? The Korean experience in 1997", Scirna Direct

Tesar, L.L. and I.M. Werner, (1995), "Home bias and high turnover", *Journal of International Money and Finance*, Vol. 14, pp. 467-492.

UN-WIDER, (1990)," Foreign Portfolio Investment in Emerging Equity Markets", World Institute for Development Economics Research of the United Nations University, WIDER study group report No. 5, 12 March 1990, Helsinki, Finland.

Upadhyay, Saroj, (2006), "FIIs in the Stock Market and the Question of Volatility", *Portfolio Organizer*, May 2006, pp. 22-30.

Wang L.R. and C.H. Shen, (1999), "Do foreign investments affect foreign exchange and stock markets – the case of Taiwan", *Applied Economics*, Vol. 31, pp. 1303-1314.

World Bank, (2009), "*Capital flows and emerging market economies*", Report submitted by a Working Group established by the Committee on the Global Financial System, Bank for International Settlement. CGFS Papers No. 33 January 2009.

Worthington, Andrew and Helen Higgs, (2001), "A multivariate GARCH analysis of equity returns and volatility in Asian equity markets," School of Economics and Finance Discussion Papers and Working Papers Series 89, School of Economics and Finance, Queensland University of Technology

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