➢ Thesis Title: **"Tracing Dynamic Linkages and Volatility Spillover Effect between Pakistani and Foreign Stock Markets"**

Name of Student: **Ghulam Ghouse** Supervisor Name: **Dr. Saud Ahmed Khan**

Abstract

This study traces the degree of integration and volatility spillover effect between the Pakistani and foreign stock markets by analyzing the Meteor shower hypothesis. Daily data are used from nine worldly equity markets (KSE 100, NIKKEI 225, HIS, S&P 500, NASDAQ 100, DOW JONES, GADXI, FTSE 350 and DFMGI) for the period of 3rd Jan, 2005 to 28th Nov, 2014. At first we used the whole data set to explore the mean and volatility spillover effect between stock markets. Then we split data set into two subsets. First part of data contains the era of global financial crisis of 2008 from 3rd January 2005 to 31st December 2009. Second subset is after global financial crisis time period from 4th January 2010 to 28th November 2014 (The global crisis prevailed till end of 2009). Univariate GARCH type models i.e. GARCH and GJR are employed to estimate volatility of Pakistani and leading foreign stock markets. Then following the technique of Hamao et al (1990) the same GARCH type models are utilized to explore the dynamic linkages between Pakistani and foreign stock markets. This study emphasis on exploring the direct linkages between Pakistani (KSE 100) and US stock markets (S&P 500, NASDAQ 100 and DJI). We also analyze the indirect linkages between Pakistani and US markets through Dubai financial market (DFMGI).

The results of whole data set from 3rd Jan, 2005 to 28th Nov, 2014 illustrate that there is mixed co-movements between leading foreign stock markets and Pakistani stock market. The unidirectional mean and volatility spillover effect from S&P 500, NASDAQ 100 and DJI to KSE 100 is found. The bidirectional mean spillover effect between DFMGI and S&P 500, NASDAQ 100 and DJI is found. The bidirectional mean and volatility spillover effect between Pakistan and Dubai equity market is also traced.

The results from first data subset from 3rd Jan, 2005 to 31st Dec, 2009 provide evidences of unidirectional mean and volatility spillover effect from S&P 500, NASDAQ 100, DJI and DFMGI to KSE 100. The results also describe that there is no co-movement between DFMGI and S&P 500 and DJI but unidirectional mean and volatility spillover effect from DFMGI to NASDAQ 100 is found. There is unidirectional mean and volatility spillover effect from DFMGI to KSE 100 but there is no sign of co-movement from KSE 100 to DFMGI.

The second subset of data includes period after the global financial crisis from 4th Jan, 2010 to 28th Nov, 2014. The results from second Period show that there exists only unidirectional volatility spillover effect from S&P 500, NASDAQ 100 and DJI to KSE 100. The mean and volatility spillover effect from KSE 100 to DFMGI and only mean spillover effect from DFMGI to KSE 100 is traced. There is sign of unidirectional volatility spillover effect from S&P 500, NASDAQ 100 and DJI to DFMGI. The mean and volatility spillover effect from DFMGI to S&P 500, NASDAQ 100 and DJI is also observed. This reveals that these markets are directly interlinked with each other during the period from 4th Jan, 2010 to 28th Nov, 2014.

After this discussion we came to know there is only one indirect linkage through which may the information transmitted to KSE 100. This is linkage is developed due to the co-movement

among KSE 100, DFMGI and NASDAQ 100 in crisis period. Like, the mean and volatility spillover effect from DFMGI to KSE 100 and NASDAQ 100. There is also mean and volatility spillover effect from NASDAQ 100 to KSE 100. This integration between these markets may provide a sign of indirect linkage. It also exhibits the volatility in Pakistan stock market returnsis instigated through direct effects as well as indirect effects. Our study brings important conclusions for financial institutions, portfolio managers, market players and academician to diagnose the nature and level of linkages between the financial markets.

Key words: Volatility, Equity market, Spillover effect, ARCH model, Asymmetric GARCH