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Topic of Research: Trading Volume, Index Return and Volatility: Evidence from Developed Versus Emerging Equity Markets.

<u>Findings</u>

The significant contemporaneous relationship between standardized return and volume exhibits the presence of Mixture of Distribution Hypothesis in each market except Japan for the full sample period. The impact of return lag on volume being consistently higher than leads indicates markets being informationally efficient where change in price reflects absorption of information, which in turn results in change in trading volume. Among the emerging economies, lag return has dominance over the lead return, which means volume can be predicted using lagged return and vice- versa. Among the developed markets, France and Japan exhibits the dominance of lead return over the lag, which indicates the presence of information asymmetry.

The co-movement between volume and stock price is described by a U-shaped line with no flat section at its bottom as the intensity of the relationship is relatively higher at lower quantiles but the coefficients are significant at both ends of the distribution. The asymmetrical effect is uniform for the developed and emerging markets except for the USA and UK.

As for the transmission of liquidity spillovers across the markets, variations in stock liquidity of each market have more impact on its own market than cross-country during the non-covid period. Japan and US markets displayed the strongest net liquidity spillovers to other markets.

Mincer Regression is employed to measure the increment in the forecasting of volatility over the Standard-GARCH model by incorporating two additional variables i.e., VIX and Trading volume. The results suggest that both the VIX and volume do provide some additional forecast power. However, the results may be statistically significant, the gain is marginal, and the coefficient values are small.

Summary of Abstract

Keywords: Trading Volume, Information flow, Liquidity, Asymmetry, Volatility   Forecasting.

Present study attempts to understand the relationship between three important financial variable of equity markets i.e., Trading Volume, Volatility and Return. The study has been attempted taking into consideration Developed and Emerging Equity Markets. It also studied asymmetrical relationship between stock price and trading volume. Also, how liquidity in one market spillovers to other market. Further, it measures the improvement in the volatility forecasting over standard conditional volatility models by incorporating VIX and Trading volume in the model.

The research mainly addressed the following research Gaps: *The relationship between trading volume and stock price was examined and compared for the developed and emerging markets. The study examined the asymmetrical relationship between the variables and analyzed the pattern of co-movement at the tails of the distribution. The study has examined the pattern of liquidity spillovers across the sample markets. Further, it measures whether VIX and Trading Volume can improve the volatility forecasting over GARCH models.*

The study adopts a sample of 4 developed and 4 emerging equity markets. The time period of the study is from 16 August, 2011 and ending on December 31, 2020 with 2205 observations.

The study find the following evidences: To examine the lead-lag relationship between volume and return, the linear regression analysis is employed. The significant contemporaneous relationship between standardized pre-whiten return and volume exhibits the presence of MDH in each market except Japan for the full sample period. Similarly, the significance of either lead or lag of return indicates the presence of SIAH also. Overall, the number of lags being significant are higher than the leads of return. Thus, the impact of return lag on volume being consistently higher than leads indicates markets being informationally efficient where change in price reflects absorption of information, which then results in trading volume. Among emerging economies, lag return has dominance over the lead return, which means volume can be predicted using lagged return and vice-versa. Among the developed markets, France and Japan exhibited the dominance of lead return over the lag, which indicates the presence of information asymmetry.

As for the causal relationship between trading volume and volatility, emerging markets depict more evidence of unidirectional causality while developed markets have more cases of bidirectional causality. The sign of causality is majorly positive, except in a few cases.

To check the asymmetry in the relationship of stock price and trading volume, a quantile regression is used. Overall, the findings exhibit the significant influence of the lagged trading volume on the returns, in upper as well as in lower quantiles, despite the OLS estimation showing insignificant influence. High returns are positively influenced by lagged volume, whereas returns in lower quantiles are negatively influenced by lagged volume. Only in the cases of Japanese and UK markets, higher quantile returns are negatively influenced by lagged volume, whereas returns in lower quantiles are positively influenced by lagged volume. The co-movement between volume and stock price is described by a U-shaped line with no flat section at its bottom as the intensity of the relationship is relatively higher at low quantiles but the coefficients are significant at both ends of the distribution. The asymmetrical effect is uniform for the developed and emerging markets except for USA and UK.

From the sub-period analysis, the findings indicate that volume-return linkage in the sample markets is clustered, i.e., stemming from two sub-periods rather than randomly scattered in time. Only for the Japanese, UK and Taiwan markets, volume-return linkage is not clustered, i.e., stemming from sub-periods rather randomly scattered in time. Hence, even if previous trading volume significantly influences stock returns, it may not be easy to predict the subsequent returns and even more difficult to exploit.

For the transmission of liquidity spillovers across the markets, variations in stock liquidity of each market have more impact on its own market rather than cross-country during non-covid period. Japan and US markets displayed the strongest net liquidity spillovers to other markets. The forecast error of UK liquidity is least explained by the liquidity of other markets, whereas the forecast error variance of Korea and Japan is explained by the maximum market, i.e., by at

least four sample markets. During COVID- period, own market contribution reduced and cross-country liquidity spillovers has increased. Taiwan and Korea act as strong liquidity spillovers "senders" in the COVID-period.

Mincer Regression is employed to measure the increment in the forecasting of volatility over Standard-GARCH model by incorporating two additional variables i.e., VIX and Trading volume. The results suggest that both the VIX and volume do provide some additional forecast power. However, the results may be statistically significant, the gain is marginal and the coefficient values are small.