

## THE NON-LINEAR RELATIONSHIP BETWEEN VOLATILITY AND SOVEREIGN CREDIT RISK: EVIDENCE FROM EMERGING COUNTRIES

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### ABSTRACT

**Purpose-** This study investigates the nexus between the volatility index of VIX, and sovereign credit risk of CDS spread, in emerging markets, namely China, Russia, Brazil, Turkey, and Mexico. The emerging markets are in the center of investors' interest due to high return opportunities. The research aims to find out the relationship between the VIX index and the CDS spread of the abovementioned countries in the nonlinear level.

**Methodology-** The relationship between volatility and sovereign credit risk has been studied many times via linear models. However, financial series exhibit asymmetric dynamics, as volatility clustering, excess kurtosis, and others. Thus we use nonlinear autoregressive distributed lags (NARDL) analysis to capture nonlinear relations between the volatility and the sovereign credit risks of these countries by using daily data from 04.01.2010 to 29.11.2019. The linear ARDL model, that assumes symmetric dynamics of the variables, is not able to model the potential nonlinearity between CDS spreads and volatility movements. That is why we employ a nonlinear approach at this paper.

**Findings-** We apply the Wald test to check the cointegration between CDS and VIX, and find that all time series cointegrated and asymmetric dynamics. The bounds test of the NARDL model confirms the cointegration between VIX and CDS spreads of the countries under study. The analysis of estimated NARDL parameters shows that negative shocks of the volatility index have a long-lasting impact on CDS spreads. Chinese CDS spread are more sensitive to VIX index changes in the short run. The effect of a decrease in volatility on Russian CDS spread is higher than the effect of an increase. Turkish and Brazilian CDS spreads are more reactive to increase in the VIX, whereas Mexican CDS is less sensitive. Analyse outputs show there are asymmetric relations evident both in short-run and long-run periods.

**Conclusion-** Findings show that the impact of the shocks is asymmetric, and the impact of negative shocks on CDS spreads are higher than positive shocks of the same magnitude. These findings allow investors to consider global indicators when taking a position on sovereign bonds of emerging markets. Thus watching the VIX index, they may buy or sell the government bonds of these countries and they must consider its asymmetric impact.

**Keywords:** Volatility; Credit Default Swap; Asymmetry; NARDL

**JEL Codes:** C22; F65; G15

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