Return and Volatility Spillover Effects between the INR-USD Exchange Rate and BSE Sensex

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Abstract

Exchange-rate volatility has suggestions for the financial system of a nation particularly the stock market. To contemplate the effect of exchange-rate on the stock prices of banks is significant for future expectation of economic development. Stock market activities are associated with all the industrial sectors, so it contributes in the economic development of a nation. This paper analyses the effect of exchange-rate on BSE SENSEX indices. To instigate this study, the relationship between BSE SENSEXindices and exchange-rate (INR/USD) volatility was analyzed. The data are collected from April 2009 to March 2019. The data are analyzed using descriptive statistics, GARCH (1,1) analysis, correlation analysis, and regression analysis. The results of this study could give local as well as international investors, a better understanding opportunity towards exchange-rate volatility and Indian industrial sectors' share market knowledge.

I. Introduction

EXCHANGE-RATE VOLATILITY, may be explained as unrelenting changes of the currency value between two nations, has leaded the enduring research initiatives on international finance inferable from its impacts on developing economies. In both developing as well as developed economies, curiosity for exchange-rate changes have developed in an amazing way to a great extent on its effect on stock costs of banking segment in India (Jacob and Kattookaran, 2019). Monetary security represents the exhibition of banking sector.

India experienced a revolution of its monetary exchange system all through the past quite a few decades. From 1947 to 1991, the flat exchange

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This paper is an empirical research highlighting the underlying relation between USD/INR exchange-rate value and BSE SENSEX. In this empirical paper, GARCH (1,1) correlation and regression model is used to test the consequence of exchange-rate sensitivity on the SENSEX values for the period from April 2009 to March 2019 on monthly basis. For the purpose of conducting research, the SENSEX values are used taken here as dependent variable and the USD/INR exchange-rates are considered here as independent variable. The statistical examination's output here is dependent on the gathered information which uncovers the fact that there exists a positive relation between USD/INR exchange-rate value and BSE SENSEX. GARCH examination yield uncovers that there is huge volatility as for SENSEX indices dependent on the USD/INR exchange-rate value. This conclusion is deduced thru the use of GARCH analysis, correlation as well as regression that both exchange-rate and SENSEX indices are more or less moving in same direction.

In conclusion, this study can be used in future by using variables like GDP, interest rate, etc., along with the exchange-rate fluctuations , for discovering wide-ranging results. In future, this study also may be extended to various other countries in comparison with US dollar and other controlling currencies. This may develop the indulgent of the persuade connecting these variables across countries.

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Annexure I
Table A1
Last Trading Day's closing price of INR/USD exchange-rate and
BSE SENSEX Indices from April 2009 to March 2019

Month	USD vs INR	SENSEX
Apr-09	49.725	11,403.25
May-09	47.120	14,625.25
Jun-09	47.250	14,493.84
Jul-09	47.825	15,670.31
Aug-09	48.690	15,666.64
Sep-09	47.735	17,126.84
Oct-09	46.925	15,896.28
Nov-09	46.535	16,926.22
Dec-09	46.410	17,464.81
Jan-10	46.125	16,357.96
Fab-10	46.105	16,429.55
Mar-10	44.825	17,527.77
Apr-10	44.275	17,558.71
May-10	46.365	16,944.63
Jun-10	46.445	17,700.90
Jul-10	46.405	17,868.29
Aug-10	47.065	17,971.12
Sep-10	44.570	20,069.12
Oct-10	44.325	20,032.34
Nov-10	45.500	19,521.25
Dec-10	44.713	20,509.09
Jan-11	45.825	18,327.76
Fab-11	45.265	17,823.40
Mar-11	44.535	19,445.22
Apr-11	44.225	19,135.96
May-11	45.060	18,503.28
Jun-11	47.700	18,845.87
Jul-11	44.210	18,197.20
Aug-11	45.800	16,676.75
Sep-11	49.020	16,453.76
Oct-11	48.695	17,705.01
Nov-11	52.130	16,123.46
Dec-11	53.015	15,454.92
Jan-12	49.515	17,193.55
Fab-12	49.110	17,752.68
Mar-12	50.875	17,404.20
Apr-12	52.665	17,318.81
May-12	56.040	16,218.53
Jun-12	55.510	17,429.98
Jul-12	55.560	17,236.18
Aug-12	55.525	17,380.75
Sep-12	55.555	18,762.74
Oct-12	53.805	18,505.38
Nov-12	54.265	19,339.90
Dec-12	53.995	19,426.71
Jan-13	53.275	19,894.98
Fab-13	54.146	18,861.54
Mar-13	54.285	18,835.77
Apr-13	53.685	19,504.18
May-13	56.580	19,760.30
Jun-13	59.533	19,395.81
Jul-13	60.855	19,345.70
Aug-13	65.705	18,619.72
Sep-12	62.590	19,379.77
Oct-12	61.624	21,164.52
Nov-12	62.399	20,791.93
Dec-12	**61.810**	**21,170.68**

(Contd...)

Table A1 (Continued)

Jan-14	62.685	20,513.85
Fab-14	61.765	21,120.12
Mar-14	60.015	22,386.27
Apr-14	60.345	22,417.80
May-14	59.195	24,217.34
Jun-14	60.060	25,413.78
Jul-14	60.555	25,894.97
Aug-14	60.520	26,638.11
Sep-14	64.940	26,630.51
Oct-14	61.405	27,865.83
Nov-14	62.210	28,693.99
Dec-14	63.035	27,499.42
Jan-15	62.020	29,182.95
Fab-15	61.659	29,220.12
Mar-15	62.291	27,957.49
Apr-15	63.529	27,011.31
May-15	63.743	27,828.44
Jun-15	63.604	27,780.83
Jul-15	63.988	28,114.56
Aug-15	66.412	26,283.09
Sep-15	65.517	26,154.83
Oct-15	65.423	26,656.83
Nov-15	66.462	26,145.67
Dec-15	66.208	26,117.54
Jan-16	67.878	24,870.69
Fab-16	68.208	23,002.00
Mar-16	66.255	25,341.86
Apr-16	66.425	25,606.62
May-16	67.209	26,667.96
Jun-16	67.504	26,999.72
Jul-16	66.655	28,051.86
Aug-16	66.973	28,452.17
Sep-16	66.556	27,865.96
Oct-16	66.686	27,941.51
Nov-16	68.598	26,652.81
Dec-16	67.955	26,626.46
Jan-17	67.515	27,655.96
Fab-17	66.725	28,743.32
Mar-17	64.860	29,620.50
Apr-17	64.290	29,918.40
May-17	64.510	31,145.80
Jun-17	64.620	30,921.61
Jul-17	64.200	32,514.94
Aug-17	63.935	31,730.49
Sep-17	65.310	31,283.72
Oct-17	64.750	33,213.13
Nov-17	64.490	33,149.35
Dec-17	63.840	34,056.83
Jan-18	63.550	35,965.02
Fab-18	65.210	34,184.04
Mar-18	65.115	32,968.68
Apr-18	66.460	35,160.36
May-18	67.430	35,322.38
Jun-18	68.460	35,423.48
Jul-18	68.460	37,606.58
Aug-18	71.005	38,645.07
Sep-18	72.510	36,227.14
Oct-18	73.960	34,442.05
Nov-18	69.650	36,194.30
Dec-18	**69.570**	**36,068.33**
Jan-19	70.960	36,256.69
Fab-19	70.840	35,867.44
Mar-19	69.185	38,672.91

Source : BSE