Research Article

A STUDY ON IMPACT OF EXCHANGE RATE FLUCTUATIONS ON SHARE PRICES: WITH SPECIAL REFERENCE TO THE SELECTED IT COMPANIES IN INDIA

Jobin George[1] and Deepa OK[2]

[1]Department of Commerce, St.Joseph's College, Devagiri, Kozhikode
[2]St. Joseph's College, Devagiri, Kozhikode

A R T I C L E   I N F O

A B S T R A C T

This paper examines the relationship between the exchange rates and the share prices. Unit Root Test is applied to test the stationarity of the data series. The cointegration test is used for analysing the long run relationship between the exchange rates and share prices of the selected IT Companies. The share price of Mindtree Ltd and Mphasis Ltd has cointegration with the exchange rate fluctuations. The share price of other companies has no long run relation with the exchange rates.

INTRODUCTION

A share market or a stock market is simply means the aggregation of the buyers and sellers of shares; these may include securities listed on a stock exchange as well as those are traded privately. Listing simply means the process of including the securities in the list maintained by the stock exchanges. Certain securities of small companies are may not be listed in the stock exchanges. Such securities can be traded privately. Stock exchanges are the places where the shares are bought and sold. The prices of these securities are affected by various internal and external factors. Internal factors are those factors that are controllable in nature and the company can adopt various measures to reduce the impact of these factors. But the external factors are uncontrollable and affect the economy as a whole, not to any particular industry or company. Exchange rate is one of the important external factors that may lead to fluctuation in share prices.

Exchange rate is simply the price for which the currency of a country can be exchanged for another country's currency. This influences all type of industries and other sectors in a country. This is same in case of our country also. In India, there are large numbers of industries. IT is one among them. It is one of the fastest growing industries and this industry has also created significant demand in the Indian education sector, especially for engineering and computer science. IT industry offers large number of employment opportunities to the youth and contributes significantly towards Indian export.

*Corresponding author: **Jobin George**
Department of Commerce, St.Joseph's College, Devagiri, Kozhikode

This industry has led to the economic transformation of the country and changes the perception of India in the global economy. IT services, business process management, software product and engineering services, and hardware are the four segment of Indian IT Industry. Business process management is the most important sector among these and this sector contributes significantly towards India's Gross Domestic Product (GDP) and service exports.

A number of studies are conducted to analyse the impact of exchange rate fluctuations on the share prices of various companies that are functioning in different sectors or stock market volatility during different time period. All these studies provide various conclusions about exchange rate fluctuation and its impact on the share prices. This study is also made an attempt to identify the impact of exchange rate fluctuation on the share prices of selected IT companies in India during 2011-2015.

Statement of the Problem

Exchange rate is one of the important macroeconomic factors that has an impact on various sectors of the economy and is relevant in formulation of various policies of the government. This study mainly focused on the exchange rate fluctuations of Indian rupee against US dollar and the impact of the same on the equity share prices of selected IT companies in India.

The IT sector in India is the world's largest sourcing destination and this sector provide employment opportunities to 10 million workforces. The Indian IT sector is grows at a rate of 12-14 percentages for the financial year 2016-17.

In short this is an important sector in India. This study help to identify the share price movement of the companies operating under this sectors and the impact of exchange rate fluctuation on the share prices.

Objectives of the Study

1. To find out the relationship between exchange rate and share prices of selected IT companies in India.
2. To identify the movement of share prices of IT companies in India.
3. To know about the exchange rate fluctuation.

REVIEW OF LITERATURE

Rabia Najar, Khakan Najar (2016) analyses the relationship between Indian rupee against US dollar and Nifty returns. This study uses the Granger Causality Test and identifies the unidirectional relationship between the exchange rate and Nifty returns and state that the stock market is crucial for the economy.

Esin Cakan, Demissew. D. Ejara (2013), analyses the relationship between exchange rates and stock price for 12 emerging market countries. This study covers the period from May 1994 to April 2010. Ganger causality test is used to analyse the data. They conclude that the exchange rate and share price have linear and non linear bidirectional causality in most cases.

Maheem Jamil, Mr Naseem Ullah (2013) state that the exchange rate has significant impact on stock market returns. That means an appreciation of Pakistani rupee will leads to a rise in returns and vice versa. Thus if there is, fluctuations in rupee, that will adversely affect the stock market return. Thus for a stable stock market, the exchange rate has to be maintained in a favourable manner.

Sifunjo. E. Kisaka and Anthony Mwasara (2012) examined the causal relationship between exchange rates and stock prices in Kenya from November 1993 to May 1999. They conclude that there is a cointegration between the exchange rates and share prices. This means these two variables have long run relationships.

Gopalan kutty (2010), in his study the relationship between the exchange rate and share price: the case of Mexico, state that there are some short term relationship between these two variables. There is no long run relationship between the share price and exchange rates. This study is conducted with the help of cointegration test which is useful to analyse the long run relationship between variables.

Md. Lutfur Rahman,Jashim Uddin (2009) analyse the exchange rate and stock market index of three countries. This study concludes that the data series are non stationary and there is no cointegrating relationship between these two variables. The outcome of this study also states there is no causal relationship between stock index and exchange rate.

Filommina P. Scaria (2007) examines that the relationship between exchange rates and share prices and observe that these are reflected as highly integrated co-movement. The finding of this study supports the Portfolio Balance Approach which postulates a negative relationship between the exchange rates and stock prices. This study also identify that the different industry groups responded differently to the exchange rates.

Saadet Kasman (2003) analyses the relationship between stock indices and exchange rates in Turkey. The cointegration test is used for analysis and identifies a long run stable relationship between these two variables. Many of the investors believe that any change in exchange rate will cause a change in stock indices. The reason for this is that the investor would prefer to sell their stock to buy foreign currency. This study indicate that change in exchange rate causes a change in industrial sector index.

Golaka C Nath and G P Samanta (2003) conduct a study and opened up some interesting issues regarding the causal relationship between exchange rates and stock prices. In India a very small portion of household saving is invested in stock market and a major portion of the same is invested in other form of financial assets. The stock market investment may have a significant impact on exchange rate movement as FII investment has played a dominant role. This study gives a tentative result and address the need for in-depth research.

RESEARCH METHODOLOGY

Various statistical tools are used for analysing the data. The tools include graphical analysis, unit root test and cointegration test.

The study is based on daily exchange rate and daily closing share price of near month from January 2011 to December 2015. The data have been collected from the official website of BSE and RBI.

A number of methodological issues should be resolved when time series data is used for empirical analysis. The tools used in present analysis are outline below.

Testing for unit roots

An important issue that has received much attention from time series econometricians in recent times when using time series data for analysis is the phenomenon of nonstationarity. Regressing one nonstationary time series on another give rise to the problem of spurious regression; that is, absence of any meaningful relationship between variables. To guard against the possibility of spurious regression, a number of testing procedures are available to determine stationarity/ nonstationarity of time series variables. The present study utilizes the Dickey Fuller test in augmented form to check for stationarity. The test is available in three forms depending on no intercept, intercept, intercept and trend in the data. The test in its most general form is:

$$\Delta Yt = \mu + \gamma Yt - 1 + \sum_{i=1}^{p} \lambda i \Delta Yt - i + \varepsilon t \qquad (1)$$

The test statistic known as τ statistic is based on the value of γ obtained from the sample.

Johansen Cointegration test

Given a group of nonstationary time series, it is necessary to establish whether the series are cointegrated or not. If the time series are cointegrated, it is important to identify the cointegrating (long run equilibrium) relationship between them. There are number of methods for testing cointegration has been suggested in the literature. The widely used procedure for determining the existence of cointegration among a set of nonstationary I (1) variables is the Johansen cointegration test. In the Johansen framework the first step is

the estimation of a pth order vector auto regression (VAR) in k variables, namely:

$$Y_t = \pi_1 Y_{t-1} + \pi_2 Y_{t-2} + \ldots\ldots\ldots \pi_p Y_{t-p} + \varepsilon_t \qquad (2)$$

where Y_t is the (kx1) vector of nonstationary I (1) variables, π_i is an (nxn) matrix of parameters and ε_t is an (nx1) vector of innovations. Johansen procedure is based on vector error correction (VECM) which is a reparameterization VAR (1) and is given as:

$$\Delta Y_t = \pi Y_{t-1} + \Gamma_1 \Delta Y_{t-1} + \Gamma_2 \Delta Y_{t-2} + \ldots\ldots + \Gamma_{p-1} \Delta Y_{t-(p-1)} + \varepsilon_t \qquad (3)$$

where $\pi = \pi_1 + \pi_2 + \ldots\ldots\ldots \pi_{p-1}$, and $\Gamma_i = -(\pi_{i+1} + \pi_{i+2} + \ldots\ldots\ldots \pi_p)$

Johansen cointegration test suggests two test statistics (λ_{max} statistics and λ_{trace} statistics) for determining the cointegrating rank (number of cointegrating relationships). Both of the test statistcs establishes the rank of the π matrix based on its Eigen values (and hence the number of cointegrating relationships)

$$\lambda_{trace(r)} = -T \sum_{i=r+1}^{k} l_n(1 - \hat{\lambda}_i) \qquad (4)$$

$$\lambda_{max\,(r,r+1)} = -T\; l_n(1 - \hat{\lambda}_{r+1}) \qquad (5)$$

The decision to accept or reject the existence of cointegrating relationship between the variables depends on the value of the test statistic obtained from the sample compared to the critical values. If no cointegration has been established between the variables, then the entire model (2) is formulated in first differences as:

$$\Delta Y_t = \pi_1 \Delta Y_{t-1} + \pi_2 \Delta Y_{t-2} + \ldots\ldots\ldots \pi_p \Delta Y_{t-p} + \varepsilon_t$$

EMPIRICAL RESULTS

Unit Root Test Result

Variables	Level	First difference
Exchange rate	-2.591606(0.2843)	-36.60833(0.0000)**
HCL Technologies Ltd	-1.588855 (0.7972)	-33.56283 (0.0000)**
Wipro Ltd	-2.967406 (0.9301)	-35.21552 (0.0000)**
Infosys Ltd	-1.924547 (0.6409)	-34.08012 (0.0000)**
TCS Ltd	-2.686076 (0.2426)	-38.61082 (0.0000)**
Tech Mahindra Ltd	-1.381488 (0.8661)	-33.74000 (0.0000)**
Mind tree Ltd	-1.332210 (0.6164)	-32.66316 (0.0000)**
Infinite Solutions Ltd	-3.628339 (0.278)	-29.41113 (0.0000)**
Persistent System Ltd	-1.795563 (0.7066)	-33.92289 (0.0000)**
Zensar Technologies Ltd	-1.082798 (0.9301)	-35.09700 (0.0000)**
Mphasis Ltd	-1.195031 (0.2125)	-35.03178 (0.0000)**

**shows significance at 5% level

Figures in parentheses are p values

The result of unit root test of the exchange rates & share prices indicates that the null hypothesis is rejected at level and the same is accepted at 5% level of significance at first difference. That means all the data series are non stationery. So cointegration test is applied for analysing the long term relationship between the exchange rates and share price of selected IT Companies.

Cointegration Test Result

Variables	Hypothesis	Eigenvalue	λtrace	λmax
HCL Technologies Ltd	r = 0	0.003708	5.862296(.7117)	4.449966(.8091)
	r = 1	0.001178	1.412330(.2347)	1.412330(.2347)
Wipro Ltd	r = 0	0.010181	14.26919(0.0758)	12.23861(0.1020)
	r = 1	0.001696	2.030580(0.1542)	2.030580(0.1542)
Infosys Ltd	r = 0	0.033840	5.666380(0.7345)	4.609199(0.7901)
	r = 1	0.000882	1.057181(0.3039)	1.057181(0.3039)
TCS Ltd	r = 0	0.006828	9.087976(0.3573)	8.201503(0.3586)
	r = 1	0.000740	0.886473(0.3464)	0.886473(0.3464)
Tech Mahindra Ltd	r = 0	0.002726	4.368084(0.8717)	3.269614(0.9272)
	r = 1	0.000917	1.098471(0.2946)	1.098471(0.2946)
Mind tree Ltd	r = 0	0.017076	21.82815(0.0049)	20.56440(0.0044)**
	r = 1	0.001058	1.26744(0.2609)	1.263744(0.2609)
Infinite Solutions Ltd	r = 0	0.009205	12.11084(0.1517)	11.06918(0.1508)
	r = 1	0.000870	1.041654(0.3074)	1.041654(0.3074)
Persistent System Ltd	r = 0	0.004083	6.338963(0.6555)	4.900875(0.7543)
	r = 1	0.001200	1.438087(0.2304)	1.438087(0.2304)
Zensar Technologies Ltd	r = 0	0.004051	5.621764(0.7397)	4.846264(0.7611)
	r = 1	0.000649	0.775500(0.3785)	0.775500(0.3785)
Mphasis Ltd	r = 0	0.019234	24.64549(0.0016)	23.26727(0.0015)**
	r = 1	0.001150	1.378223(0.2404)	1.378223(0.2404)

** Indicate rejection of hypothesis
Figures in parentheses are P values

The cointegration test results clearly indicate there is a cointegration relationship between exchange rate and share prices of Mphasis Ltd & Mindtree Ltd. Thus the test result suggests there is a long run relationship between these two variables. In case of Mphasis Ltd & Mindtree Ltd the null hypothesis is rejected and the alternative hypothesis is accepted.

CONCLUSION

The share prices of companies are fluctuating in the market. This fluctuation happens because of the influence of various factors, these may be internal or external to the company. Exchange rate is one of such external factor. The present study analyses the impact of exchange rate fluctuations on share prices with special reference to the selected IT companies. The analysis of study is done by using the unit root test and cointegration test. The unit root test identifies that the exchange rate and the share prices of all the selected companies are non stationary series. The cointegration test identifies that only the share prices of two companies, i.e., Mindtree Ltd and Mphasis Ltd has cointegration with the exchange rate fluctuations. That means there is a long run relationship between the exchange rate and share prices of these two companies. The share prices of other companies have no cointegration with exchange rates, i.e., there is no long run relationship between these two variables.

The exchange rate fluctuations may or may not affect the share prices of companies. In case of certain companies exchange rate fluctuations may be a reason for share price movements. So this study concludes that it is not necessary to have a long run relationship between the exchange rate fluctuations on the share prices.

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