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An Analysis of the Stock Return and Exchange Rate Variation on Market Return of Pharmaceutical Industry in Pakistan

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Abstract: Themain purpose of this paper is to investigate the exchange rate exposure of pharmaceutical industry of Pakistan in long run and short term. Quarterly time series data for last 37 quarters from 2003Q1 to 2012Q1have been used. Unit root test, co-integration test and ECM have been applied to investigatethe stationarity and long run and short term exposure of the industry. Results revealed that all variables are stationary at level with intercept only. Co-integration results showthat there is long run relationship between stock returns, exchange rate and market return index. Error Correction Mechanism results shows that that there is negative short term significant relationship between stock returns of pharmaceutical multinationals of Pakistan and exchange rate dollar currencyin short run. Likewise stock returns have positive short term and significant impact with market return index. The equilibrium adjustment term show that all the disequilibrium in short term will adjusted in current period as the coefficient of error term is 1 and statistically significant. Keeping in view, the findings of this study suggest that extensive financial hedging is necessary to moderate the exchange rate exposure.

Key words: Stock Returns · Exchange rate exposure · Co-integration Test · Error correction mechanism · Pharmaceutical industry · Pakistan

INTRODUCTION

In international finance the firm's exposure to exchange rate fluctuation is a key subject matter that affects the value of a firm. However, this relationship can not be determined due to interaction of numerous factors. This issue is widely addressed at the corporate level as the value of firms are affected owing to changes in exchange rates because of sensitivity of cash flows to exchange rate changes. The markets inefficiency due to taxes or other factors may also cause destruction of firm value which is exposed by the translation effects of cash flow positions. The firm’s systematic risk is affected by the variability of exchange rates and consequently its market value.

Pakistan has an extremely vivacious and helpful atmospherefor pharmaceuticalindustry. Pakistan pharmaceutical industry is a triumphant and elevated tech knowledge-based industry. Pharmaceutical industry has great potential for growth in Pakistani as well as international market. There is consistent growth in this industry from the last six decades. However, in Pakistan there is still a lot of potential for pharmaceutical industry to establish new manufacturing unit to fill the gap of demand and supply in Pakistani market. In Pakistan pharmaceutical industry also has challenges for their growth and development. This industry is a complicated and knowledge intensive, therefore it face diverse challenges.

The objective of this research is to explore the effect of foreign exchange risk on the valuation of Pakistani pharmaceutical firms. According to, Bodnar and Marston [6] that the exchange rate exposure of a monopolistic exporter is simply proportional to the firm’s net foreign currency denominated revenues. This result validates the inherent postulation of insignificant competitive pressures on revenues of the US pharmaceutical firms that make propriety drugs.

Moreover, Parsley and Popper [(2002) examined that firms without foreign revenues, costs,or operations might

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be obliquely affected by exchange rate changes through its impact on foreign competition or broader macroeconomic conditions. the corporate managers, investors and financial analysts need to set up means of managing or investing optimally to counteract exchange rate risks under anticipating exchange rate movements.

Though, there have been numerous studies over past several years on exchange rate exposure, it is still very common to discover ourselves challenged when asked to briefly describe the foreign exchange risk and exposure. Foreign exchange risk refers to the variability of home currency values of assets, liabilities, or operating incomes due to unforeseen fluctuation s in exchange rates. The only way to avoid this risk is to anticipate foreign exchange rate changeability. It can be exemplified that if a company is operating in fixed exchange rate system then it would be not at risk. However, foreign exchange exposures is the sensitivity of variability in the real domestic currency value of assets, liabilities or operating incomes to unanticipated fluctuation in exchange rate as stated by Adler and Dumas, [1].

The literature has indentified three major types of foreign exchange rate exposure: translational/ accounting, transaction and operating exposure by which a firm is exposed to foreign exchange rate changes which provides the basis to measure the impact of these movements on the valuation of firms.Variability in exchange rate cause changes on the costs of inputs, outputs and substitute goods which influence the competitive spot of domestic firms with no direct global involvement relative to foreign corporations. Exchange rate changes can disturb an individual investor who owns a portfolio comprising of securities in different currencies, multinational company (MNC) with subsidiaries and branches in foreign locations, an exporter/importer who concentrates on international trade and even a firm that has no direct international activities. The general concept of exposure refers to the degree to which the value of a firm is affected by exchange rate changes.

There are many studies, which provide evidence for a relationship between foreign exchange rate movements and changes in firm values. Therefore, this study will make the differenceby providing empirical evidence on the concurrent and lagged impacts of exchange rate changes on the quarterly stock returns of Pakistani Pharmaceutical industry from 2003Q1 to 2012Q1.

Objectives of the Study: The main purpose ofthestudy is to evidently identify the effect of exchange rate risk exposure on stock returns of pharmaceutical industry of Pakistan.More explicitly the objectives of this study are:(i)To identify and observe the relationship between the exchange rate movements, stock return and market return index. (ii) To find the lag exchange rate relationshipwith stock returns and market return index.

Literature Review: Economic theory hypothesizes that under a buoyant exchange rate system, firms lose their competitiveness especially those which are functioning internationally. Luehrman [21] established his study that depreciation of domestic currency upholds the competitiveness of corporations in home country by permitting them to lessening prices charged for merchandise manufactured overseas. On the other hand, competitiveness of export markets is reduced by appreciation of exchange rate which negatively affects the home stock market. On the contrary, exchange rate appreciation leads to lessen the inputs costs which cause positive affect on the stock market, if the country is import denominated. Hence it resulted in appreciation of the value of the domestic firm by lowering the value of domestic currency.

A substantial number of studies on preceding postulates have been conducted to find out the exposure of enterprises to exchange rate changeability. These studies have been conducted on industrialized economies which are indecisive on the nature of exchange rate exposure.In what follows; we carry out a review of the present literature on exchange rate risk exposure.

Jorion [16] studied empirically that the US multinationals sensitivity of the stock prices to movements in dollar exchange rates is decisive in empirical investigation of exchange rate exposure. His results showed that at any accepted level of significance sensitivity of stock prices to movements in exchange rate is insignificant. The study carried by Luetherman [21] while testing the hypothesis that the domestic currency depreciation boost the competitiveness of domestic manufacturers vis a vis foreign competitor. His empirical findings did not support the hypothesis and concluded that Firms did not benefit from a depreciation domestic currency. On the other hand, there was a considerable decline in their market share of industry due to depreciation of the domestic currency.

Bodnar and Gentry [6] founded significant relationship between industry portfolio returns of Canada, Japan and United States and exchange rate exposure using data from period 1979 to 1988. In these countries, less than half industries exhibit significant exchange rate exposure at the 10% significant level. AlDiab *et al*. [2]

investigated the impact of fluctuations in the dollar exchange rate on daily security returns of US multinational corporations. They used event study methodology for the period 1978 to 1987 and established their results that the stock prices of Multinational Companies observed a weak relationship with the movements of exchange rates or that not affected greatly.

Donnelly and Sheehy [12] conducted their study on UK's 39 largest exporting firms to find the relationship between variability in trade-weighted nominal exchange rate and the monthly returns of portfolio during the period 1978 to 1992. They founded empirically contemporaneous negative relationship between the foreign exchange fluctuations and the abnormal returns of UK exporters.

Fang and Loo [15] examined the effect of unexpected movements in the US trade-weighted exchange rate on common stock returns of US industries' for the period 1981 to 1990. Their study testimony significant positive exchange rate risks exposure betas are observed in transportation equipment, machinery, department stores, retail and apparel and miscellaneous industries whereas negative betas are founded for the food and beverage, chemical, mining, petroleum and utilities industries.

Another study carried by Brunner *et al*. [7] on economic exposure of German companies to changeability in DM/US dollar exchange rate. They recorded their results that German firms are considerably significant expose to movements in DM/US dollar rate.

Krishnamoorthy [20] founded that the industrial structure is a vital determinant of the US industry portfolio returns over period 1995 -1997 for exchange rate risk exposure. The study indicated that industries that are classified as being globally competitive and those that serve the consumer sector of the economy have significant levels of exposure.

Chang [10] conducted a study using Jorion [16] two-factor model to observe industry-level currency risk of Taiwan's stock market in the Asian financial crisis regime. He concluded his study by indicating that export-oriented industries are significantly affected by the depreciation of the Taiwan dollar against the US Dollar. The results further observed a negative correlation between firm size and exchange rate exposure in Taiwan's stock market and validate the hypothesis that the exchange rate exposure is less for larger firms than for smaller firms which are in line to the studies conducted by such as Nance *et al*. [23] and Chow *et al*.[11].

Joseph [17] conducted study to examine the impact of foreign exchange rate movements and interest rate variations on UK firms for the period 1988 to 2000. His findings illustrated that industry returns are more negatively influenced by interest rate variations as compare to foreign exchange rate movements. El-Masry [14] carried out an industy level analysis of UK non-financial companies to find out the exchange rate exposure. His study concluded that there is significant lagged exchange rate risk which badly effect the returns of firms and industries.

The only study known to us which explained the exchange rate exposure of firms from an African viewpoint is conducted by Salifu *et al*. [25] for the Ghanaian firms. They used period January 1999 to December 2004 to observe the foreign exchange exposure of Ghanaian Stock Exchange listed companies. They used different exchange rate measures such as; the cedi to US dollar, the cedi to UK pound sterling, the cedi to the euro and a trade-weighted exchange rate index to find the extent of exposure. They used a sample of 20 firms for this study and applied Jorion [16] two-factor model to regress the return on a firm against movements in the exchange rate and market return to affix exchange rate risk. Their study result depicted that about 55% of sampled firms have an empirically significant exposure to the US dollar whereas 35% are statistically bared to the UK pound sterling.

Bartram *et al* [5] conducted a study to hedge the exchange rate risk exposure for many firms. They empirically proved that as the firms gone through currency variations, use both financial and operational hedges as through operational hedge firms lessened 10-15% exchange rate exposure while financial hedgeing like fewer extent of foreign exchange derivatives and foreign debt reduced the foreign exchange risk exposure by about 40%. By applying both hedging vehicles the exchange rate exposure can be reduced to an optimal level.

Olufem [24] investigated empirically the exchange rate exposure of listed firms of Nigeria. He used three different currencies' exchange rate such as UK pound, US dollar and Euro and found that firms are very much exposed to exchange rate risks of the sample currencies under study. He concluded that US dollar significantly effect the firms and exchange rate changes is a major barrier to their performance.

Variable Justification: The literature has indentified three major types of foreign exchange rate exposure: translational/ accounting, transaction and operating exposure by which a firm is exposed to foreign exchange rate changes which provides the basis to measure the impact of these movements on the valuation of firms.

These three kinds of exchange rate exposure modify the firm's prospective and present cash flows which ultimately affect the value of a firm which is the present value of its future cash flows streams by the exchange rate variability. So it is rational and valid to talk about the relationship between fluctuations in exchange rates and the value of the firm. In order to operationalize the present theoretical and conceptual relationship, empirical studies have applied stock return as a proxy for the value of the firm.

Since the variations in foreign exchange rates can be calculated in nominal and real terms, the next consideration is the choice between nominal and real exchange rate variations. Most earlier empirical studies conducted on the relation between stock returns and variability in exchange rates has applied nominal exchange rates. However, Amihud [3] and Choi and Prasad [9] have observed the impact of the movements in both nominal and real exchange rates. Khoo [19], however, stated that if the variations in exchange rates are calculated in real terms, then all variables in the regression equations must also be attuned for inflation for consistency and steadiness. Atind´hou and Gueyie [4], claimed that there is slight difference between nominal and real exchange rates because they are extremely correlated. Thus, if the changes for nominal and real exchange rates were almost perfectly correlated, then the use of either one would have analogous impact on stock returns.

Mark [22] established that real-time movements in nominal and real foreign exchange rates are almost absolutely significant correlated for the seven countries used in his study. If the financial markets are supposed to be well-organized or efficient, the employment of unexpected changes in exchange rates are preferable to actual changes since the anticipated values of the appropriate variables should have been reflected in asset prices and only the unforeseen fluctuations should influence asset returns refered by Choi *et al*. [9].

MATERIALS AND METHODS

The data for current study will involve listed firms on the Karachi Stock Exchange. The choice of the listed firms is based on the fact that these enterprises present enough information for the study period. Quarterly stock returns information for the periods 2003Q1 to 2012Q1 have beenused for the empirical analysis. The Nominal Effective Exchange Rate (NEER)have been chosen to measure the exchange rate exposure to stock returns. In addition, a trade weighted index have also been used to measure the market return exposure to stock returns. The Nominal Effective Exchange Rate will be obtained from the IMF's International Financial Statistics. The rationale for using the NEER is to determine whether the scale or degree of exposure of corporations varies with the incorporation of the trade weighted aspect. The source of variables used in our research included State Bank of Pakistan, IMF's International financial Statistics, KSE, Business Recorder Daily website as well as the annual reports from each listed company.

Model: The objectives of the present study areaccomplishedin three steps. Firstly, to establish the order of integration of the data series, exhaustive unit root test is being carried out. Secondly, to observe and check the long-run relationship between stock returns, exchange rate and market return index, theJohansen [18] and Engle and Granger, [13] co-integration test has been applied. To investigate the short term movements ECM estimation is used.

Unit Root Test: Before prototyping the time series data, we need to set up the decree of consolidation among the variables under study and ensured that it equate all the series. The unit root test, namely Augmented Dickey-Fuller [(ADF) is employed to examine the problem of non-stationarity of the series.

Co-Integration: For the determination of long-term relationship among the variables under present study of the model we have to use the concept of co-integration. Co-integration tests in the present work are channeled by the way of the Johansen approach and later on extended by Jo-hansen and Juselius [18]. This approach used two likelihood ratio (LR) tests statistics-namely, the trace and the maxi- eigen value statistics to examine the number of co-integrating vectors in non-stationary data series. If alternate hypothesis of co-integration is rejected by either the standard tests or the ADF then such determination intimate some long-term relationship amongst variables.

Error Correction Mechanism: This study will follow two-step method to discover the unanticipated variations in exchange rates. The unanticipated movements in exchange rates will be defined by the residuals. The second step consists to involve the replacement of these residuals for the exchange rate variables in regression models. According to previous studies conducted by Jorion [16], using two factor model in the area such as a firm's or an industry's exchange rate exposure coefficient can be measured using a time-series equation as follows:

$$\Delta SR_{it} = \beta_0 + \beta_1 \Delta XR_t + \beta_2 \Delta R_{mt} + \mu_{t-1}$$

Where Δ is the difference operator, $SR_{it}$is the return of the ith stock over time period t, $\Delta XR_t$is the percentage change in simultaneous movements in exchange rates over time period t, R_{mt} is the rate of return on the KSE market index and β_0,β_1 and β_2 are respectively the intercept and coefficients and μ_{t-1} is the lag value of random error term.

In Error Correction Mechanism (ECM) equation, first difference of explained variable depends on the equilibrium error term (u_{t-1}) besides first difference of other explanatory variables. Equilibriumerror term is likely to benegative. The positive/negative value of (u_{t-1}) alongwith their respective parameter bringequilibrium in short-term. If all other regressors have positive short-term cumulative impact on regressand, then (u_{t-1}) must be positive, that the negative value of parameter converts it into negative and bring the equilibrium. Likewise, if all other regressors have negative short-term cumulative impact on regressand, then (u_{t-1}) must be negative, that the negative value of parameterconverts it into positive and bring the equilibrium. The absolute value of parameter depicts how quickly the equilibrium will restore. Statistical package Eview is used for deriving the results.

RESULTS AND DISCUSSION

Descriptive Analysis: Table 1 demonstrate descriptive statistics for the variations in each variables used in this study for the period 2003Q1 to 2012Q2. It presents that the mean for the Stock Returns is 0.014 ranges from a minimum of -0.224 to a maximum of 0.310 with a variability of 0.120 and the mean for the exchange rate variation is -0.015 which ranges from a maximum of 0.041 to a minimum of -0.090 with the variation from the mean is 0.027. The mean for Market Return is 0.052 ranges from a minimum of -0.373 to a maximum of 0.308 with a variability of 0.147 as measured by the standard deviation.

Table 2 showed that exchange rate variation has weak,negative and insignificant correlation (-0.188) with the Stock Returns whereas Market Return Index observed weak, positive but significant correlation (.432) with Stock Returns of Pharmaceuitical Industy of Pakistan.

Stationarity Analysis: In this section of the article we employ unit root test to check the stationarity of all three variables under study on the level and the first difference. Augmented Dickey-Fuller (ADF) has been applied for unit root tests as ADF unit-root tests give us the most consistent and trusty results. ADF test bears three different checks for all time series. First, random technique incorporate intercept (c) and trend (t). Second, random procedure integrate intercept (c) but no trend (0). Third, random process contain no intercept (0) and trend (t). Which one do we opt in present study? One experimental approach proposes optic notice of the time series diagram of the data. Ifthe graphical record demonstrates such features as dynamic variables over time period (step-up and step-down) and no apparent step trend, then the timeseries is best portrayed by the second berth. In this respect we have diagrammed time series graphical record of all the variables in our framework.

After keeping an eye on the graphical record of all the variables in the framework which have not beengiven due to space limitation, we find that on level the Stock Return, Exchange Rate and Market Returns have no trend in the time series data. Thus, we employ a simulation with intercept (c) and without trend (0). Since, we have used quarterly data sets, we will exercise the lag (n = 1). Hence, we selected.

Table 1: Descriptive Statistics

Variables	N	Minimum	Maximum	Mean	St. Devitation
SR	37	-0.224	0.310	0.014	0.120
XR	37	-0.090	0.041	-0.015	0.027
Rm	37	-0.373	0.308	0.052	0.147

Table 2: Correlations Matrix

Items		SR	XR	Rm
SR	Pearson Correlation	1.000		
	Sig. (2-tailed)			
XR	Pearson Correlation	-0.188	1.000	
	Sig. (2-tailed)	0.279		
Rm	Pearson Correlation	0.432**	0.172	1.000
	Sig. (2-tailed)	0.010	0.324	

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3: Test of the unit root hypothesis without trend

Variables	Types of test (c, t, n)	ADF test statistic	D-W statistic	Probability
SR	c 0 1	-4.971427*	2.018015	0.0003
XR	c 0 1	-4.033240*	1.765932	0.0036
Rm	c 0 1	-4.986514*	1.976005	0.0003

Note:

1-* rejected null hypothesis at 1% significant level2- ** rejected null hypothesis at 5% significant level

2-*** rejected null hypothesis at 10 % significant level4-Term c, t and n represent intercept, trend and lags respectively.

5- Probability means MacKinnon (1996) one-sided p-values.

(c, t, n) = (c, 0, 1) for without trend in the ADF test.The result of the ADF test indicates that all the variables stock return, exchange rate and market return have no unit root after taking first difference of the variables. The test rejected the null hypothesis that there is a unit root in the level of every variableat a 1 % significant level for variable stock returns, exchange rate and market return.

Co-Integration Analysis: In this part, we executed the Johansen co-integration test. Long-run equilibrium statistic of anynonstationary economic variable is Co-integration. The existence of long-run equilibrium relationship in nonstationary economic variables is called as co-integration relation.

Statistic for VAR Lag Order Selection: We found that all the series of the three variables (stock return, exchange rate and market return) are integrated of order one *I (*0) preprocesses. Our succeeding step is to ascertain whether any arrangement of variables have a cointegrated relationship. Before employing the co-integration test, we firstly determine the pertinent order of Lag (p) of the VAR model. For this intent we utilize: Final Prediction Error (FPE), Akaike InformationCriterion (AIC), Schwarz Information Criterion (SIC) and Hannan-Quinn Information Criterion (HQ). Table 4 shows criteria of the optimum lag selection. According to the outcomes of these tests, we chose lag 1 in the VAR model. The outcome received from the Johansen Co-integration technique are given in table 5.The first column demonstrates Ho, with r = 0, r < 1, r <2, refers at most none, at most 1, at most 2, co-integration relationships.

VAR Co-integration Test Statistic

Trace test shows 3co-integration equation(s) at both 5% and 1% levels. Max-Eigenvalue test shows 3co-integration equation(s) at the 5% level and Max-Eigenvalue test gives 1 co-integration equation(s) at the 1% level. These statistics indicates to us that four null hypothesis are rejected. This implies that three Co-integration equation r = 3 among the three variables are established at a significance level of 5% and 1 %. Thus, quarterly data for last 37 quarters from 2003Q1 to 2012Q1 seems to backup our intention that a long-term relationship has been found between the stock returns, exchange rate and market return index. The appraisal of the Long-run co-integration Vector is presented in the Table 6.

Estimation of Co-integration and Adjustment Coefficient: If we put the data of the table 6 in equation form. Following Co-integration equation shows the long term relationship of the variable.

SR = -0.1804 -7.99XR + 1.065Rm

Table 4: VAR lag order selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	118.0370	NA*	1.88e-07*	-6.971938*	-6.835892*	-6.926162*
1	123.0197	8.757469	2.41e-07	-6.728465	-6.18428	-6.545363
2	132.5084	14.95199	2.38e-07	-6.758087	-5.805764	-6.437659

* indicates lag order selected by the criterion

Table 5: VAR Co-integration Test Statistics

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.615602	58.46596	29.68	35.65
At most 1 **	0.370184	26.91541	15.41	20.04
At most 2 **	0.297627	11.65859	3.76	6.65

Trace test indicates 3 cointegrating equation(s) at both 5% and 1% levels

*(**) denotes rejection of the hypothesis at the 5%(1%) level

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.615602	31.55055	20.97	25.52
At most 1 *	0.370184	15.25681	14.07	18.63
At most 2 **	0.297627	11.65859	3.76	6.65

Max-eigenvalue test indicates 3 cointegrating equation(s) at the 5% level

Max-eigenvalue test indicates 1 cointegrating equation(s) at the 1% level

*(**) denotes rejection of the hypothesis at the 5%(1%) level

Table 6: Estimation of Co-integration and Adjustment Coefficient: Normalized Co-integrating Coefficients

SR(-1)	XR(-1)	IDX(-1)	C
1	-7.995568	1.064911	-0.180362
	-1.67593	-0.34146	
	[-4.77083]	[3.11867]	
Adjusted Coefficients			
D(SR)	D(FX)		D(IDX)
-0.361553	0.054206		-0.455866
(0.09255)	(0.02280)		(0.09967)
[-3.90651]	[2.37695]		[-4.57398]

Standards error in parentheses & t-statistics in brackets

Table 7: Estimation of Error Correction Mechanism

Dependent Variable: SRMethod: Least Squares			Included Observations: 37	
Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.002212	0.017889	-0.123678	0.90240
ΔXR	-1.36151	0.571605	-2.381907	0.02380
ΔRm	0.37614	0.09417	3.994253	0.00040
Lag RESID	-1.012262	0.181773	-5.568839	0.00000
R-squared	0.607137	Mean dependent var		-0.00444
Adjusted R-squared	0.56785	S.D. dependent var		0.15862
S.E. of regression	0.104275	Akaike info criterion		-1.57343
Sum squared resid	0.3262	Schwarz criterion		-1.393863
Log likelihood	30.74839	F-statistic		15.45415
Durbin-Watson stat	2.029304	Prob(F-statistic)		0.000003

Csonsidering the results of table we formulized the above equation that one unit increase in exchange rate causes 8 times decrease in stock returns of pharmaceutical industry of Pakistan. Moreover, the long term relationship between the market return index and stock returns of pharmaceutical multinationals in Pakistan is positive. The results depicts that one unit increase in market return index will bring 1.065 times increase in stock return of the pharmaceutical multinationals of Pakistan.

Error Correction Mechanism: The result of Error Correction Mechanism (ECM) is presented in Table 7. The regression results of Error Correction Mechanism (ECM) of stock returns equation shows that short-run changes in exchange rate have negative but significant impact on stock returns of pharmaceutical multinational of Pakistan. On the other hand, market return index have positive but significant impact on short-term changes in stock returns. The coefficient of equilibrium error term is 1, demonstrating that about all the inconsistency in the previous quarter is eliminated this quarter.

CONCLUSION

In presents study we investigated the relationship between stock returns, exchange rate and market return index. Applying Johansen-Juselius co-integration test, the long run relationships between stock returns, exchange rate and market return index are explored and found that there is a long run relationship between stock returns of pharmaceutical multinationals of Pakistan and all other variables. According to the VAR normalized co-integration results that there is long run negative relationship between stock returns of pharmaceutical multinationals and exchange rate but positive with the market return index.

Results of ECM revealed that there is negative short term significant relationship between stock returns of pharmaceutical multinationals of Pakistan and exchange rate dollar currency. Likewise stock returns have positive short term and significant impact with market return index.The result of ECM showthat all the inconsistencies of the previous quarter have been adjusted to this quarter.

Based on the finding of the study it is recommended for multinational firms that they need to establish operational hedging to reduce the exchange rate risk exposure to a modest and bearable level. Multinationals have to deal in foreign currencies so they have significant revenues and costs in foreign currency. Their exchange rate exposure may be low as these firms match their proportion of foreign currency revenues and costs. The firms with unbalanced revenue or costs system are contending larger exchange rate exposure. These multinationals are advised to establish sizable financial

hedging to moderate their exchange rate risk.Finally, more research is needed to find the ways of financial hedging to moderate the exchange rate exposure.

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