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Stock Prices and Exchange Rates: Are they Related? Evidence from South Asian Countries

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I. INTRODUCTION

The issue of whether stock prices and exchange rates are related or not has received considerable attention after the East Asian crisis. During the crisis the countries affected saw turmoil in both currency and stock markets. If stock prices and exchange rates are related and the causation runs from exchange rates to stock prices, then the crisis in the stock markets can be prevented by controlling the exchange rates. Moreover, developing countries can exploit such a link to attract/stimulate foreign portfolio investment in their own countries. Similarly, if the causation runs from stock prices to exchange rates then authorities can focus on domestic economic policies to stabilise the stock market. If the two markets/prices are related then investors can use this information to predict the behaviour of one market using the information on other market.[1]

Most of the empirical literature that has examined the stock prices-exchange rate relationship has focused on examining this relationship for the developed countries with very little attention on the developing countries. The results of these studies are, however, inconclusive. Some studies have found a significant positive relationship between stock prices and exchange rates [for instance Smith (1992); Solnik (1987) and Aggarwal (1981)] while others have reported a significant negative relationship between the two [e.g., Soenen and Hennigar (1998)]. On the other hand, there are some studies that have found very weak or no association between stock prices and exchange rates [for instance, Franck and Young (1972); Bartov and Bodnor (1994)].

On the issue of causation, the evidence is also mixed. Some studies [for instance, Abdalla and Murinde (1997)] have found causation runs from exchange rates to stock prices while other reported a reverse causation [e.g., Ajayi and

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[1]Investors can use this information for speculation and to hedge their return on foreign investment.

Mougoue (1996)]. Bahmani-Oskooee and Sohrabian (1992), however, claim there is a bi-directional causality between stock prices and exchange rates in the short-run but not in the long-run.

There is no theoretical consensus on the relationship between stock prices and exchange rates either. For instance, portfolio balance models of exchange rate determination postulate a negative relationship between stock prices and exchange rates and that the causation runs from stock prices to exchange rates. In these models individuals hold domestic and foreign assets, including currencies, in their portfolio. Exchange rates play the role of balancing the demand for and supply of assets. An increase in domestic stock prices lead individuals to demand more domestic assets. To buy more domestic assets local investors would sell foreign assets (they are relatively less attractive now), causing local currency appreciation.[2] An increase in wealth due to a rise in domestic asset prices will also lead investors to increase their demand for money, which in turn raises domestic interest rates. This again leads to appreciation of domestic currency by attracting foreign capital. Another channel for the same negative relationship is increase in foreign demand for domestic assets due to stock price increase. This would also cause a domestic currency appreciation.

In contrast, a positive relationship between stock prices and exchange rates with direction of causation running from exchange rates to stock prices can be explained as follows: a domestic currency depreciation makes local firms more competitive, leading to an increase in their exports. This in turn raises their stock prices.[3]

A weak or no association between stock prices and exchange rates can also be postulated. The asset market approach to exchange rate determination treats exchange rate to be the price of an asset (price of one unit of foreign currency). Therefore, like prices of other assets the exchange rates are determined by expected future exchange rates. Any news/factors that affect future values of exchange rate will affect today's exchange rate. The factors/news that causes changes in exchange rates may be different from the factors that cause changes in stock prices. Under such scenario, there should be no link between the said variables.[4]

[2]Here exchange rate is defined as the price of one unit of foreign currency in local currency terms. Thus currency appreciation means a lowering of decrease in the exchange rate. Hence, the relationship between stock prices and exchange rates is negative.

[3]The relationship would be negative if many firms use lots of imported inputs in their production. Increase in their cost of production due to currency depreciation might reduce firms' sales and profits that might lead to a fall in their stock prices.

[4]If there are some common factors that affect both stock prices and exchange rates (for instance interest rates), then we might expect an association between these two financial variables. No association can also be explained as follows: a domestic currency depreciation raises the price of those firms that export goods to other countries, but if these firms import many of its inputs from abroad the stock price may not rise as the cost of production will increase, making these firms less competitive. On the other hand, firms not exporting their products to other countries but importing raw materials may find a fall in their stock prices as currency depreciation may cause their sales/profits to decline.

From the above discussion it is clear that there is no empirical or theoretical consensus on the issue of whether stock prices and exchange rates are related and the direction of causation if they are related. This paper provides further empirical evidence on the above two issues. It uses monthly data from four South Asian countries, Pakistan, India, Bangladesh and Sri Lanka, and employed cointegration and error correction modelling approach to examine these issues. The paper is organised as follows: In the next section we review some empirical studies. Section three discuses empirical methodology and data, while section four present empirical results. In section five we provide concluding remarks.

2. PREVIOUS EMPIRICAL STUDIES

Franck and Young (1972) was the first study that examined the relationship between stock prices and exchange rates. They use six different exchange rates and found no relationship between these two financial variables.

Aggarwal (1981) explored the relationship between changes in the dollar exchange rates and change in indices of stock prices. He uses monthly U.S. stock price data and the effective exchange rate for the period 1974–1978. His results, which were based on simple regressions, showed that stock prices and the value of the U.S. dollar is positively related and this relationship is stronger in the short run than in the long run.

Solnik (1987) examined the impact of several variables (exchange rates, interest rates and changes in inflationary expectation) on stock prices. He uses monthly data from nine western markets (U.S., Japan, Germany, U.K., France, Canada, Netherlands, Switzerland, and Belgium). He found depreciation to have a positive but insignificant influence on the U.S. stock market compared to change in inflationary expectation and interest rates.

Soenen and Hanniger (1988) employed monthly data on stock prices and effective exchange rates for the period 1980-1986. They discover a strong negative relationship between the value of the U.S. dollar and the change in stock prices. However, when they analysed the above relationship for a different period, they found a statistical significant negative impact of revaluation on stock prices.

Bahmani-Oskooee and Sohrabian (1992) analysed the long-run relationship between stock prices and exchange rates using cointegration as well as the casual relationship between the two by using Granger causality test. They employed monthly data on S&P 500 index and effective exchange rate for the period 1973–1988. They concluded that there is a dual causal relationship between the stock prices and effective exchange rate, at least in the short-run. But they were unable to find any long-run relationship between these variables.

Smith (1992) uses a Portfolio Balance Model to examine the determinants of exchange rates. The model considers values of equities, stocks of bonds and money as important determinants of exchange rates. The results show that equity values has

a significant influence on exchange rates but the stock of money and bond has little impact on exchange rates. These results imply not only that equities are an important additional factor to include in portfolio balance models of the exchange rate, but also suggest that the impact of equities is more important than the impact of government bonds and money.

Rittenberg (1993) employed the Granger causality tests to examine the relationship between exchange rate changes and price level changes in Turkey. Since causality tests are sensitive to lag selection, therefore he employed three different specific methods for optimal lag selection [i.e, an arbitrarily selected, Hsiao method (1979), and the SMAR or subset model auto regression method of Kunst and Marin (1989)]. In all cases, he found that causality runs from price level change to exchange rate changes but there is no feedback causality from exchange rate to price level changes.

Bartov and Bodnor (1994) concluded that contemporaneous changes in the dollar have little power in explaining abnormal stock returns. They also, found a lagged change in the dollar is negatively associated with abnormal stock returns. The regression results showed that a lagged change in the dollar has explanatory power with respect to errors in analyst's forecasts of quarterly earnings.

Ajayi and Mougoue (1996) show that an increase in aggregate domestic stock price has a negative short-run effect on domestic currency value but in the long-run increases in stock prices have a positive effect on domestic currency value. However, currency depreciation has a negative short-run effect on the stock market.

Yu (1997) employed daily stock price indices and spot exchange rates obtained from the financial markets of Hong Kong, Tokyo, and Singapore over the period from January 3, 1983 to June 15, 1994 to examine the possible interaction between these financial variables. His results, based on the Granger causality test, show that the changes in stock prices are caused by changes in exchange rates in Tokyo and Hong Kong markets. However, no such causation was found for the Singapore market. On the reverse causality from stock prices to exchange rates, his results show such causation for only Tokyo market. Therefore, for Tokyo market there is a bi-directional causal relationship between stock returns and changes in exchange rates. He also uses vector autoregressive model to analyse a long-run stable relationship between stock prices and exchange rates in the above Asian financial markets. His results found a strong long-run stable relationship between stock prices and exchange rates on levels for all three markets.

Abdalla and Murinde (1997) applied cointegration approach to examine the long-run relation between stock price index and the real effective exchange rate for Pakistan, Korea, India and Philippines. They use month data from January 1985 to July 1994. Their study found no long-run relationship for Pakistan and Korea but did find a long-run relationship for India and Philippines. They also examine the issue of causation between stock prices and exchange rates. Using standard Granger causality

tests they found a unidirectional causality from exchange rates to stock prices for both Pakistan and Korea. Since a long-run association was found for India and Philippines they uses an error correction modelling approach to examine the causality for these countries. The results show a unidirectional causality from exchange rate to stock prices for India but for Philippines the reverse causation from stock prices to exchange rates was found.

Granger, Huang and Yang (1998) examine the causality issue using Granger causality tests and Impulse response function for nine Asian countries. They use daily data for the period January 3, 1986 to November 14, 1997. The countries included in their study are: Hong Kong, Indonesia, Japan, South Korea, Malaysia, Philippines, Singapore, Thailand and Taiwan. For Japan and Thailand they found that exchange rates leads stock prices with positive correlation. The data from Taiwan suggests stock prices leads exchange rates with negative correlation. No relationship was found for Singapore and bi-directional causality was discovered for the remaining countries.

Ong and Izan (1999) use Nonlinear Least Square method to examine the association between stock prices and exchange rates. They found that U.S. share price returns fully reflect information conveyed by movements in both the Japanese yen and the French France after four weeks. Their results, however, suggest a very weak relationship between the U.S equity market and exchange rates. They concluded that depreciation in a country's currency would cause its share market returns to rise, while an appreciation would have the opposite effect.

Amare and Mohsin (2000) examine the long-run association between stock prices and exchange rates for nine Asian countries (Japan, Hong Kong, Taiwan, Singapore, Thailand, Malaysia, Korea, Indonesia, and Philippines). They use monthly data from January 1980 to June 1998 and employed cointegration technique. The long-run relationship between stock prices and exchange rates was found only for Singapore and Philippines. They attributed this lack of cointegration between the said variables to the bias created by the "omission of important variables". When interest rate variable was included in their cointegrating equation they found cointegration between stock prices, exchange rates and interest rate for six of the nine countries.

3. EMPIRICAL METHODOLOGY AND DATA

To examine the long-run relationship between stock prices and exchange rates we employ the standard technique of cointegration. In particular, Johansen (1988, 1991) and Johansen and Juselius (1990) bivariate cointegration tests are applied. This methodology is extensively discussed in the literature and therefore has not been discussed here. Please see the above references for details. To implement the

Johansen test we first examine the time series properties of the said variables. We use Augmented Dickey Fuller (ADF) and Phillips-Perron tests to find out the order of integration of both the series. If these series are found to be of the same order of integration then we can apply the cointegration tests.

To examine the issue of causation we can employ error correction modelling approach or the standard Granger causality tests depending upon whether there is a long-run relationship between stock prices and exchange rates or not. In the absence of any cointegrating relationship between the above variables standard Granger causality tests would be applied. The error correction modelling approach is explained as follows:

If two variables, Y_t and X_t, are cointegrated, then there exists an error-correction representation of the form

$$\Delta Y_t = \alpha_0 + \beta_0 Z_{t-1} + \sum \gamma_{0i} \Delta Y_{t-i} + \sum \delta_{0i} \Delta X_{t-i} + \varepsilon_{0t} \quad \ldots \quad \ldots \quad (3.1)$$

$$\Delta X_t = \alpha_1 + \beta_1 Z^*_{t-1} + \sum \gamma_{1i} \Delta X_{t-i} + \sum \delta_{1i} \Delta Y_{t-i} + \varepsilon_{1t} \quad \ldots \quad \ldots \quad (3.2)$$

where Δ is the first differenced operator (i.e., $\Delta Y_t = Y_t - Y_{t-i}$), ε_{it} is iid with zero mean and constant variance and Z_{t-1} and Z^*_{t-1} are the lagged residuals obtained from the following cointegration regressions:

$$Y_t = \alpha_0 + \beta_0 X_t + Z_t \quad \ldots \quad \ldots \quad \ldots \quad (3.1)$$

$$X_t = \alpha_1 + \beta_1 Y_t + Z^*_t \quad \ldots \quad \ldots \quad \ldots \quad (3.2)$$

The above error-correction models (i.e., Equations (3.1) and (3.2) can be used to draw inferences about causality between economic variables. In Equation (3.1), X causes Y if either β_0 is statistically significant (the long-run causality) or the δ_{0i}'s are jointly significant (short-run causality).[5] If both β_0 and β_1 are statistically significant, this indicates bi-directional long-run causality [see Granger (1988); or Jones and Joulfaian (1991) for details]. If $\beta_0 = \beta_1 = 0$, i.e., there is no long-run equilibrium relationship between Y and X, then the above causality test reduces to the standard Granger causality test.[6] Granger (1983) pointed out that the error-correction approach allows for the finding that X Granger causes Y, even if the coefficients on lagged changes in X are not jointly significant. By including lagged residuals from the cointegrating regression, the error-correction model introduces an additional channel through which Granger causality can emerge [Miller and Russek (1990)].

[5] Similarly, Y causes X if either β_1 is statistically significant (the long-run causality) or the δ_{1i}'s are jointly significant (short-run causality).

[6] The use of the standard Granger causality test when the variables are cointegrated may leads to misleading results (because of employing a misspecified model).

Data

To examine whether stock prices and exchange rates are related using data from four South Asian countries we employ major stock prices indices of these countries and the exchange rates between the currencies of these countries with the U.S. dollar (for instance Rs/$, rates for Pakistan). The data on South Asian stock market indices (KSE100 index for Pakistan, BSE200 index for India, CSE Sensitive index for Sri Lanka and DSE All Share Price index for Bangladesh) and exchange rates are obtained from various issues of the Emerging Stock Markets Fact book. All the indices are denominated in local currency units. The study uses monthly data for the period January 1994–December 2000.[7]

4. EMPIRICAL RESULTS

Prior to testing for cointegration, unit root tests are performed on each of the national stock indices and the exchange rate series to determine the order of integration of these series. We employed the Augmented Dickey-Fuller test[8] and the Phillips-Perron test, with and without a deterministic trend[9], to conduct the unit root tests. The tests are performed for the entire sample on both the levels and first differences of the stock indices and exchange rates series. Table 1 and Table 2 report the results of these tests.

Table 1 reveals that the null hypothesis of a unit root in the level series cannot be rejected in the stock prices and exchange rates series of Pakistan, India and Sri Lanka but can be rejected for both stock price and exchange rate series of Bangladesh. This indicates that both the series are non-stationary in case of Pakistan, India and Sri Lanka. Table 2 reports that the null hypothesis of a unit root in the first difference of stock price indices and exchange rates series is rejected for these three countries. Therefore, all the series of these three countries are integrated for order one, i.e., I (1) and for Bangladesh they are I (0). This means we can apply cointegration tests for Pakistan, India and Sri Lanka to examine the long-run relationship. In case of Bangladesh, we can simply run a regression using ordinary least square method (provided the residuals satisfy all usual properties) and examine the long-run relationship by simply testing the statistical significance of the relevant slope coefficient.

[7]For Bangladesh the data was available from January 1996, therefore, sample period for Bangladesh is January 1996 to December 2000.

[8]The optimal lag length was selected based on the criteria first suggested by Campbell and Perron (1991). Their recommended procedure works as follows: we estimated the ADF equation with a long lag order (say 6) and tested the significance of the last lag. If it was found significant we assumed this to be the optimal lag length. If the coefficient of the last length was insignificant we dropped the last lag and re-estimated the ADF equation with one less lag order and tested the significance of the last lag order. This procedure was repeated until we get the last coefficient significant.

[9]We report the results of these tests with deterministic trend if the trend in the DAF equation was found to be significant. Otherwise, we report the results without trend.

Table 1

Unit Root Tests at Level

Country	Lag	ADF Test Statistic	PP Test Statistic
Pakistan			
EPAK	0	–2.923	–2.931
PPAK	0	–2.208	–2.208
India			
EIND	0	–2.381	–2.381
PIND	2	0.458	0.458
Bangladesh			
EBANG	0	–3.99**	–3.993**
PBANG	3	–3.653**	–1.101
Sri Lanka			
ESRI	2	–1.179	–1.477
PSRI	0	–3.097	–3.097

Critical values: 1 percent (*) –4.0713: 5 percent (**) –3.4639.

Table 2

Unit Root Tests at First Difference

Country	Lag	ADF Test Statistic	PP Test Statistic
Pakistan			
EPAK	4	–5.233*	–8.022*
PPAK	0	–9.115*	–9.115
India			
EIND	0	–7.513*	–7.513*
PIND	2	–4.511*	–8.238*
Bangladesh			
EBANG	0	–8.428*	–8.428*
PBANG	3	–4.247*	–4.891*
Sri Lanka			
ESRI	4	–3.815**	–10.685*
PSRI	0	–10.983*	–10.809*

Critical values:1 percent (*) –3.5153; 5 percent (**) –2.8986.

Next we examine whether the stock prices and exchange rates are cointegrated. As mentioned above we employ Johansen cointegration approach[10] to examine the long-run relationship between these variables. Table 3 reports the results of the pair wise cointegration tests[11] with different lag orders.[12]

Table 3 reveals that there is no long-run equilibrium relationship between stock prices and exchange rates for Pakistan and India. These results are robust to the choice of lag order. The Engle and Granger (1987) cointegration tests confirm this finding.[13] In case of Bangladesh there is a long-run relationship between the said variables. These

Table 3

Co-integration Test (Trace Test Statistics): Sample 1994:01–2000:12

Country		L=1	L=2	L=3	L=4
Pakistan					
Null Hypothesis	Alter. Hypothesis				
r = 0	r ≥ 0	16.164	18.277	15.411	15.946
r = 1	r ≥ 2	6.553	8.078	6.527	5.671
India					
Null Hypothesis	Alter. Hypothesis				
r = 0	r ≥ 0	13.583	17.118	13.322	12.778
r = 1	r ≥ 2	4.588	3.469	3.840	4.985
Bangladesh					
Null Hypothesis	Alter. Hypothesis				
r = 0	r ≥ 0	23.167**	20.456**	28.245*	25.271*
r = 1	r ≥ 2	10.393	6.831	12.317	8.811
Sri Lanka					
Null Hypothesis	Alter. Hypothesis				
r = 0	r ≥ 0	26.149**	25.772**	23.00**	22.24**
r = 1	r ≥ 2	5.6	6.682	7.404	5.302

Significance Levels: 1 percent (*); 5 percent (**).

[10]The cointegrating equation includes a constant term.

[11]Between Johansen's two likelihood ratio tests for cointegration, the trace test shows more robustness to both skewness and kurtosis (i.e., normality) in residuals than the maximum eigenvalue test [see Cheung and Lai (1993) for details]; therefore, we employ only the trace test to perform the cointegration tests.

[12]A common practice in the literature is to select an optimal lag order using some information criteria, e.g., Schwarz Information Criterion (SIC) or Akaike Information Criterion (AIC). Since, cointegration tests can be sensitive to the choice of lag order and since these information criteria may lead to different optimal lag order and hence different conclusion, we therefore, report the cointegration tests for different lag order (in particular, lag order one to four) to examine whether the cointegration results are robust to the choice of lag order.

[13]These results are not reported here but are available from the authors upon request.

results are also robust to the choice of lag order.[14] The results for Sri Lanka show a long-run relationship for lag 1 and lag two but for higher lag order we do not find any cointegration between these variables. Thus cointegration tests are found to be sensitive to the choice of lag order. The Engle and Granger test, however, finds a cointegrating relationship between stock prices and exchange rates for Sri Lanka. We therefore, conclude a long-run relationship between these variables for Sri Lanka.

India and Pakistan conducted nuclear tests in 1998. The stock and currency markets of these countries were severely affected by these nuclear tests. We therefore decided to conduct cointegration tests for the pre-nuclear test period as well. The results of the cointegration tests for this period (i.e., January 1994–April 1998) are reported in Table 4. These results do not alter the conclusion derived above for the entire sample. The stock and currency markets appear to be independent of each other in case of Pakistan and India. Our results confirm the finding of Abdalla and Murinde for Pakistan. Their study also finds no long-run relationship for Pakistan for the sample period 1985-1994. However, their study did find a cointegrating relationship for India for the sample period 1985–1994.

Table 4

Co-integration Test (Trace Test Statistics): Sample: 1994:01 to 1998:04

Country		L=4	L=3	L=2	L=1
Pakistan					
Null Hypothesis	Alter. Hypothesis				
r = 0	r ≥ 0	14.631	15.278	14.718	12.739
r = 1	r ≥ 2	6.193	6.313	5.407	5.505
India					
Null Hypothesis	Alter. Hypothesis				
r = 0	r ≥ 0	9.015	8.616	14.876	10.086
r = 1	r ≥ 2	3.971	2.625	2.764	3.824

Significance Levels: 1 percent (*); 5 percent (**).

To examine the issue of causation we employ the standard Granger causality tests for Pakistan and India. The results of Granger causality tests are reported in Table 5 and Table 6 for Pakistan and India respectively for lag orders 1 to 4.[15] These tables provide some interesting results: There seem to be no short-run association

[14]Even though we do not need to apply cointegration tests for Bangladesh we did it to confirm the long-run relationship between the said variables.

[15]Again, instead of using some information criteria to select an optimal lag order we report the results using different lag order (from one to four) to see whether our results are sensitive to the choice of lag order.

between stock prices and exchange rates either. Neither stock prices lead exchange rates or exchange rates lead stock prices. These results are robust to the choice of lag order. This finding is in contrast to the finding of Abdalla and Murinde who find exchange rates Granger cause stock prices in case of Pakistan and India.

Table 5

Granger-causality Test: Pakistan

Hypothesis	Lag	F-statistic	Prob. Values
PPAK ⇒ EPAK	1	0.748	0.389
EPAK ⇒ PPAK	1	0.045	0.832
PPAK ⇒ EPAK	2	1.988	0.143
EPAK ⇒ PPAK	2	0.019	0.981
PPAK ⇒ EPAK	3	1.279	0.287
EPAK ⇒ PPAK	3	0.071	0.975
PPAK ⇒ EPAK	4	1.547	0.198
EPAK ⇒ PPAK	4	0.256	0.904

Table 6

Granger-causality Tests: India

Hypothesis	Lag	F-statistic	Prob. Values
PIND ⇒ EIND	1	0.019	0.888
EIND ⇒ PIND	1	0.425	0.516
PIND ⇒ EIND	4	0.183	0.946
EIND ⇒ PIND	4	1.163	0.3337
PIND ⇒ EIND	2	0.137	0.872
EIND ⇒ PIND	2	2.033	0.132
PIND ⇒ EIND	3	0.203	0.894
EIND ⇒ PIND	3	1.467	0.232

For Sri Lanka and Bangladesh we employ the error correction models (Equation 3.1 and 3.2) to examine the long-run and short-run causality. Significance of the β_0 indicates causation runs from stock prices to exchange rates while significance of β_1 indicates a reverse causation that runs from exchange rates to stock prices. To examine the short-run causality we employ an *F*-test. If δ_{0i}'s are jointly significant using an *F*-test, this indicates a short-run causation from stock prices to exchange rates while significance of δ_{1i}'s indicates a reverse causation. These results are reported in Tables 7 and 8.

Table 7

Vector Error Correction Models (Long- and Short-run Causation): Bangladesh

Hypothesis	Lag	*t*-statistic	*F*-statistic
PBANG ⇒ EBANG	1	–3.78*	0.0296
EBANG ⇒ PBANG	1	1.54	0.4449
PBANG ⇒ EBANG	2	–3.69*	0.2549
EBANG ⇒ PBANG	2	0.99	0.4466
PBANG ⇒ EBANG	3	–2.45*	0.2095
EBANG ⇒ PBANG	3	3.10*	0.3934
PBANG ⇒ EBANG	4	–3.19*	0.1475
EBANG ⇒ PBANG	4	2.26*	0.2476

Significance Levels: 1 percent (*).

Table 8

Vector Error Correction Models (Long- and Short-run Causation): Sri Lanka

Hypothesis	Lag	*t*-statistic	*F*-statistic
PSRI does not cause ESRI	1	-2.50*	0.0789
ESRI does not cause PSRI	1	-4.04*	14.005*
PSRI does not cause ESRI	2	-2.87*	0.2129
ESRI does not cause PSRI	2	-3.36*	1.2277
PSRI does not cause ESRI	3	+2.83*	0.1148
ESRI does not cause PSRI	3	+2.68*	1.1952
PSRI does not cause ESRI	4	-3.76*	0.0873
ESRI does not cause PSRI	4	-1.61*	1.1166

Significance Levels: 1 percent (*).

Table 7 reveals that results for the long-run causation are sensitive to the choice of lag order in case of Bangladesh. For lag order 1 and 2 there is a unidirectional causation that runs from stock prices to exchange rates. However, there is a bi-directional causality for higher lag order. In case of Sri Lanka (Table 8) there is a bi-directional long-run causality. Table 7 and 8 also reveal that there is no short-run causation in either direction for Bangladesh and Sri Lanka.

5. CONCLUSION

This paper examined the long-run and short-run associations between stock prices and exchange rates for four South Asian countries for the period January 1994 to December 2000. We employed monthly data and applied cointegration, error correction modelling approach, and standard Granger causality tests to examine the long-run and short-run associations. Our results show no long-run and short-run

associations between stock prices and exchange rates for Pakistan and India. No short-run association was also found for Bangladesh and Sri Lanka. However, there seems to be a bi-directional long-run causality between these variables for Bangladesh and Sri Lanka. Our results suggest that in South Asian countries stock prices and exchange rates are unrelated (at least in the short run); therefore, investors cannot use information obtained from one market (say stock market) to predict the behaviour of the other market. Moreover, authorities in these countries cannot use exchange rate as a policy tool to attract foreign portfolio investment; rather they should use some other means to do this (e.g., use interest rates, reduce political uncertainty, improve law and order situation, produce conducive investment climate etc.). The above results provide evidence against the portfolio balance models of exchange rates determination that postulate a uni-directional causation that runs from stock prices to exchange rates, neither do these results support the traditional models that hypothesized causation from exchange rates to stock prices. We, however, suggest that the significance of our results could possibly be improved upon by applying daily or weekly data. The use of more frequent observations may better capture the dynamics of stock and currency market interrelationships. Another possible extension is to employ the firm level data for these countries and examining the above relationship for those firms that are engaged in international trade (e.g., multinational firms) and for those firms that are not directly affected by exchange rates.

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Comments

The paper by Dr Naeem Muhammad and Mr Abdul Rasheed is very interesting and a useful contribution to the literature on Capital Market.

The paper examines the relationship between stock prices and exchange rates, which have recently gained attention in the developing countries. In this context, the authors have provided a good discussion on the theoretical basis of the relationship. However, I think that these theories are valid in the case of completely flexible exchange rates, i.e., where the rates are completely determined by the market forces. I believe this is not the case in the developing countries including South Asian countries. For example, in the case of Pakistan, the exchange rate regime, during the sample period used in the study, has been subjected to significant changes and it is only after May 1999 that a floating exchange rate system is being pursued. The other countries in the region may have similar situation. It would be useful if the authors include a portion discussing how the relationship between stock prices and exchange rates is affected by different kind of exchange rate regimes.

The authors have presented a comprehensive review of literature dealing with testing the relationship. The techniques used by the authors are fairly standard and widely used in other studies. The results are, however, surprising. The relationship does not hold in the two bigger and relatively more developed markets, India and Pakistan, whereas it holds, to some extent, in the smaller and relatively less developed markets, Bangladesh and Sri Lanka. This requires some explanation.

For example, in the case of Pakistan, this may be due to the changes in exchange rate regimes. Moreover, the stock market in Pakistan has also been sluggish for most of the time in the sample period and it has gained momentum in recent years. Similarly the events occurred in other countries that may be responsible for lack of relationship need to be mentioned. The lack of relationship may also be due to the omission of important variables as pointed out by one of the studies reviewed by authors. The authors may also try to include interest rate variables in the model. Using effective exchange rates may do another experiment.

Though the study is interesting and useful it is based on the technique that is quite sensitive to the choice of lags, selection criteria, critical values, etc. This implies that conclusions drawn from the results obtained from such technique must be considered with care.

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