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The Effect of Multi Macro-Economic Factors on Stock Market in Bangladesh

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Abstract:

The main aim of this paper is to shed light on different factors which effect performance of stock market in Bangladesh. ARDL approach has been taken in this study in order to scrutinize the long run and short relationship among the variables. The examined results of ARDL indicate that oil prices, remittances inflow and foreign direct investment have positive while exchange rate have negative and significant effect on stock market development in Bangladesh in long run whereas, all these variables have significant and negative effect on stock market development in Bangladesh in the short run except remittances inflow.

Keywords: Stock market development, market capitalization, exchange rate, remittances, oil prices, ARDL model

1. INTRODUCTION

Stock market is a place where preference shares, common shares and bonds are sold and bought. Stock market development is associated with many foreign and domestic factors such as economic liberalization, political stability, oil prices, foreign direct investment, inflation, exchange rate, remittances inflow, and domestic savings. Oil price tremors have imperative impression on stock markets, as an upsurge in oil prices shakes a firm's discount factors and cash flows and discount factors (Jammazi and Roberedo, 2016).Oil is the life blood of modern economies. As countries urbanize and modernize

their demand for oil upsurges expressively. Future oil demand is tough to forecast but is normally highly associated with the growth in manufacturing production. Subsequently, countries suffering hasty economic growth are the ones utmost likely to dramatically surge their demand for oil. Oil price capriciousness can influence the corporate cash flow, because crude oil is a considerable input in the manufacture process; subsequently influence the stock market performance (Miller and Ratti, 2009). The previous theoretical research works show a positive effect of stock market development on economic growth of many countries. (e.g. Demirguckunt and Levne 1996; Sing, 1997; and Levne and Zervs, 1998). The stability and economic growth of any country is associated with the financial institutions because a strong financial system guarantees the stability and economic growth of a country. Stock market is a central part in the financial system of any economy. The economic and financial stabilities are considered as two sides of the same coin (Brio, 2011; Nasr et al., 2015). Stock market plays an important part to lead the economic growth, saving and investment in the country. Oil price tremors have imperative impression on stock markets, as an upsurge in oil prices shakes a firm's discount factors and cash flows and discount factors (Jammazi and Roberedo, 2016).Oil is the life blood of modern economies. As countries urbanize and modernize their demand for oil upsurges expressively. Future oil demand is tough to forecast but is normally highly associated with the growth in manufacturing production. Subsequently, countries suffering hasty economic growth are the ones utmost likely to dramatically surge their demand for oil. Oil price capriciousness can influence the corporate cash flow, because crude oil is a considerable input in the manufacture process; subsequently influence the stock market performance (Miller and Ratti, 2009). Remittances play a vital role and have positive impact on productivity and employment directly and indirectly through its effect of investment. (Leon, Ledesma & Piracha, 2004). Remittances stimulate financial development (Billmeier and Massa, 2009). Remittances is an important source of external financing for developing countries (Ratha, 2012**)**. Movements in exchange rate and oil prices are also expected to affect the performance of stock market in any economy. Exchange rate is the price of one country's currency to that of another. This denotes that exchange rate has two mechanisms, i.e. the domestic and foreign

component and hence indicating that it can be expressed directly or indirectly. Direct expression of exchange rate is where the exchange rate is expressed based on domestic currency. Foreign direct investment transfers business know-how and technology from one country to the host country (Romer, 1993). It is considered desirable form of capital inflows which directly add to the host economies' capital stock and to substantially contribute to the transfer of technological and managerial expertise (Kose, Prasad, Rogoff, & Wei, 2010). It is now largely accepted that foreign direct investment (FDI) carries development benefits to developing countries reliant on the absorptive ability of these economies to integrate increases from spillover and technology transfer effects (Alfar, Chnda, Kalmli-Ozcan, & Sayk, 2004; Durham, 2004). Moreover, they are accepted to be extra unchanging and less prone to setbacks than other forms of investment flows (Levchenk & Maur, 2007; Tng & Wei, 2011). For these reasons, FDI has been seen as the monetarist equivalent of "good cholesterol" (Hausman & Fernandez-Arias, 2001) or the "poster child for the welfares of monetary globalization" (Koose, Prasd, Ragoff, & Wei, 2006).

The purpose of this paper is to examine the effect of oil prices, remittances inflow, exchange rate and foreign direct investment on stock market performance in Bangladesh. This study will contribute to the literature in the following ways. Firstly, this is the first study in context of Bangladesh to explore the effect of oil prices, exchange rate and remittances on stock market performance in Bangladesh. Secondly, ARDL approach has been taken in this research study.

The rest of this research paper is structured as follows. Section 2 provides brief literature of previous studies. Section 3 provides data and methodology. Section 4 provides results and discussion, and conclusion in section 5.

2. LITERATURE

Previously many researchers worked on the impact of oil prices, exchange rate, foreign direct investment and remittances inflow on stock market development but there studies were different from this study due to selection of different variables and region. This is the first study which has used oil prices, remittances inflow, exchange rate and foreign direct investment as independent variables and its

impact on dependent variable i.e. market capitalization as a share of GDP which has used as a proxy for stock market development in Bangladesh in this research study.

Raza, Iqbal, Ahmed (2012) described that foreign direct investment increases stock market capitalization. The outcome is expected false because they just scrutinized the association with OlS. An exertion is made in this paper to inspect the relationship of some macroeconomic variables in general and FDI in specific with the stock market development in a multivariate framework. Malik and Amjad (2013) inspects the effects of FDI on the Pakistani stock market KSE. The authors grounded their study on secondary yearly data from 1985 to 2011, and by using econometric methods they inspected the affiliation between FDI and stock market development. A strong causal consequence among the inflow of FDI and the growth of the total market capitalization was originated. The results show that FDI had a positive influence on the Pakistani stock market. Local stock market, which will clue to a high development of the local stock market. Baker, Foley & Wurgler (2004), Halalmeh & Sayah (2010) found a positive impact of FDI on stock market development.

Charles et al. (2011) made a study to examine the association between stock prices and exchange rate in seven African countries among Tunisia. They applied vector error correction model (VECM) cointegration and impulse retort analysis to define the long and short-run bonds among stock prices and exchange rates. Cointegration analyses indicate a long-run relationship between stock prices and the exchange rate in Tunisia, where exchange rate depreciation drives down stock prices. A short-run error-correction model also shows similar results. Motelle (2011) investigate the relationship between workers' remittances and financial sector development in Lesotho. Johansen–Juselius cointegration results indicate the positive and significant impact of workers' remittances on financial sector development.

Granger causality test confirms the unidirectional causality runs from financial development to remittances. Billmeier and Massa (2007) investigate the impact of workers' remittances on stock market capitalization of 17 Middle East and Central Asian countries. Regression results suggest the positive and significant effects of workers' remittances on stock market capitalization. They conclude that the stock market capitalization is mainly driven by the oil price

in Asian markets. Shahbazetal. (2007)scrutinized the association among workers remittances inflow and financial sector development in Pakistan by using the annual time series data from 1971–2001. ARDL and Johansen cointegration techniques have been applied. Results indicated the positive and significant effect of remittances on financial sector development in the long run.

Ansar and Asghar (2013) analyzed the influence of oil prices on the consumer price index and stock market (KSE-100 Index). The study discovered that there is a positive association among oil prices, CPI and KSE-100 Index but such connection is not much stronger. Abdalla (2013) scrutinized the influence of oil price variations on stock market yields in the Kingdom of Saudi Arabia. The observed proof from daily returns on the Saudi Stock market (Tadawul) Index and daily crude oil prices proposes that stock market returns instability increased as a result of crude oil price vacillates during the period of study.

3. DATA AND METHODOLOGY

This research paper scrutinized the effect of oil prices, remittances inflow, exchange rate and foreign direct investment on stock market development in Bangladesh by utilizing annual time series data from 1985 to 2017 sourced from WDI (World Bank, 2017). In this study our dependent variable is Market capitalization as share of GDP used as proxy for stock market development. Other independent variables are oil prices, remittances inflow, exchange rate and FDI. Following is the model for the examination of the study variables.

$$MC_t = \beta_0 + \beta_1 olp_t + \beta_2 remit_t + \beta_3 exch_t + \beta_4 fdi_t + \varepsilon_t \quad (1)$$

β_0 is constant, β_1 *to* β_4 coefficients of independent variables while ε_t is the error term.

Autoregressive Distributed Lag Bounds test

In this research study Bounds test were used to investigate the long run connotation among the dependent variable and independent variables. Based on the hypothesis the following ARDL bounds test model was used to investigate the long run association among the study variables.

$$\Delta MC_t = \varphi_0 + \varphi_1 MC_{t-i} + \varphi_2 OLP_{t-i} + \varphi_3 REMI_{t-i} + \varphi_4 EXCH_{t-i} + \varphi_5 FDI_{t-i} + \sum_{i=1}^{q} \beta_1 \Delta MC_{t-i} + \sum_{i=1}^{q} \beta_2 \Delta OLP_{t-i} + \sum_{i=1}^{q} \beta_3 \Delta REMI_{t-i} + \sum_{i=1}^{q} \beta_4 \Delta EXCH_{t-i} + \sum_{i=1}^{q} \beta_5 \Delta FDI_{t-i} + \varepsilon_t \quad (2)$$

In equation 2 Δ represent the first difference, MC is Market capitalization share of GDP, olp is oil prices, remi is remittances inflow, exch is exchange rate and FDI is foreign direct investment, t-i represent the optimal lags selection.

Null and alternative hypothesis of bounds test are following.

$$H_0 = \varphi_1 = \varphi_2 = \varphi_3 = \varphi_4 = \varphi_5 = 0$$

$$H_1 = \varphi_1 \neq \varphi_2 \neq \varphi_3 \neq \varphi_4 \neq \varphi_5 \neq 0$$

On the basis of the examined value of F-statistics the null hypothesis can be accepted or rejected.

Autoregressive Distributed Lag (ARDL) model

ARDL model was recommended by Pesaran and Shin (1999); Pesaran et al. (2001). ARDL model have separate benefits as paralleled to other time series models. Haug (2002) specified that ARDL model can be applied with short time data. And it can also be used if the series are stationary at I(0), I(I) or both of them. Different lags can be adopted for independent and dependent variables of the study. The examined results of ARDL Bound test shows that cointegration exists among the study variables. This is the long run ARDL model.

$$MC_t = \alpha_0 + \sum_{i=1}^{q} \sigma_1 MC_{t-i} + \sum_{i=1}^{q} \sigma_2 OLP + \sum_{i=1}^{q} \sigma_3 REMI_{t-i} + \sum_{i=1}^{q} \sigma_4 EXCH_{t-i} + \sum_{i=1}^{q} \sigma_5 FDI_{t-i} + \varepsilon_t \quad (3)$$

In the above equation σ represent the long run difference in the study variables. Akaike information criterion was used to choose

suitable lags for each of the study variable. For the short run ARDL model the following error correction model was used.

$$MC_t + \alpha_0 + \sum_{i=1}^{q} \beta_1 \Delta \mathrm{MC}_{t-i} + \sum_{i=1}^{q} \beta_2 \Delta OLP_{t-i} + \sum_{i=1}^{q} \beta_3 \Delta REMI_{t-i} + \sum_{i=1}^{q} \beta_4 \Delta \mathrm{EXCH}_{t-i} + \sum_{i=1}^{q} \beta_5 \Delta \mathrm{FDI}_{t-i} + \varphi ECT_{t-i} + \varepsilon_t \quad ----------(4)$$

4. RESULTS AND DISCUSSION

Table 1. DESCRIPTIVE STATISTICS

VARIABLES	OBS	MEAN	S.D	MIN	MAX
Lnmc	33	23.71157	.8791805	22.31319	25.24357
Lnolp	33	3.540548	.6467057	2.668327	4.601037
Lnremit	33	22.03434	.9799673	20.71926	23.70935
Lnexc	33	3.846359	.6166898	2.768103	4.658286
Lnfdi	33	20.43375	1.104443	18.4764	22.44425

Where Lnmc is log of Market capitalization, Lnolp is log of oil prices, Lnrem is log of remittances inflow, Lnexc is log of effective exchange rate and Lnfdi is log of foreign direct investment.

The above tables reveals descriptive statistics such as mean, standard deviation, minimum and maximum of market capitalization, oil prices, remittances inflow, effective exchange rate and foreign direct investment during the period from 1985 to 2017 of Bangladesh. According to the above table market capitalization has mean value of 23.71 % and other variables i.e. oil prices, remittances inflow, exchange rate and foreign direct investment 3.54, 22.03, 3.84 and 20.43 respectively and the minimum values of market capitalization, oil prices, remittances inflow, effective exchange rate and foreign direct investment 22.31, 2.66, 20.71, 2.76 and 18.4 respectively. The maximum values of of market capitalization, oil prices, remittances inflow, effective exchange rate and foreign direct investment 25.24, 4.60, 23.70, 4.65 and 22.4 respectively.

Table 2. CORRELATION MATRIX

Variables	Lnmc	Lnolp	Lnremit	lnexch	lnfdi
Lnmc	1.0000				
Lnolp	0.7904	1.0000			
Lnremit	0.9116	0.8332	1.0000		
Lnexch	0.6803	0.7808	0.7555	1.0000	
Lnfdi	0.7467	0.7764	0.6785	0.8222	1.0000

The above table reveals the correlation matrix of dependent and independent variables for Bangladesh for 1985 to 2017 in which lnmc is dependent variable used as proxy for stock market development as a share of GDP and independent variables are oil prices, remittances inflow, effective exchange rate and foreign direct investment. The above table reveals that market capitalization have positive correlation with oil prices, remittances inflow, effective exchange rate and foreign direct investment.

Table 3. ARDL Bounds Test

Test Statistics	Value	K
F-statistics	16.72486	4
Critical Bounds Value		
Significance	I(0) Bound	I(I) Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

In this study the ARDL bounds test were adopted for the examination of long run connection among the series of this research study and the above table mainly shows the F-statistics results which were actually applies for the reason to decide the cointegration among the study variables & according to the examined F-statistics the values are bigger from upper bounds at the level of 10%, 5% and 2.5% significance that shows that there is cointegration among the study variables.

Table 4. Long Run ARDL Model

Variable	Coeff	Std.Error	T-stat	P-Value
Lnolp	0.4049	0.0999	4.51	0.0040
Lnrem	0.4571	0.0588	7.77	0.0000
Lnexc	-0.9811	0.0301	-12.66	0.0000
Lnfdi	0.9985	0.0222	15.24	0.0000
R-squared	0.9906		Adj R-squared	0.9099

The above table indicates the results of long run ARDL mode. The examined results of lnolp (oil prices) indicate positive and statistically significant effect on stock market capitalization in Bangladesh. The examined results of oil prices indicate that 1 % increase in oil prices have positive effect on the stock market development in Bangladesh and affect the stock market development in Bangladesh about 40 % per year. Oil prices play very important role in stock market

development of any country. Remittances inflow indicates positive and significant effect on the stock market capitalization in Bangladesh. The examined results of remittances indicates that 1 % increase in remittances inflow positively affect the stock market capitalization in Bangladesh about 45 % per year. Remittances play a vital role and positive impact on productivity and employment directly and indirectly through its effect of investment. (Leon et al. 2004). The examined results of exchange rate indicate negative and statistically significant effect on stock market development in Bangladesh. The examined results indicate that 1% increase in exchange rate have negative effect on the stock market development in Bangladesh and effect it 98 % per year. The examined results of foreign direct investment indicate positive and significant effect on the stock market in Bangladesh. 1% increase in foreign direct investment indicate positive effect on the stock market in Bangladesh and causes to boost the stock market in Bangladesh about 99% per year. The examined R-squared value indicates that 99% variation in the dependent variable is explained by the used independent variables. All the independent variables have positive and significant effect on market capitalization in the long run which can easily be seen in the table.

Table 5. Short Run ARDL Model

Variable	Coeff	Std.Error	T-stat	P-Value
Lnolp				
D1.	-2.0738	0.3885	-5.3400	0.0020
LD.	-1.1644	0.3428	-3.4000	0.0150
L2D.	-1.5401	0.3113	-4.9500	0.0030
L3D.	-.68127	0.2043	-3.3300	0.0160
Lnrem				
D1.	-2.3287	0.4644	-5.0100	0.0020
LD.	-2.1581	0.4173	-5.1700	0.0020
L2D.	-1.3978	0.4167	-3.3500	0.0150
L3D.	-1.2049	0.2962	-4.0700	0.0070
Lnexc				
D1.	-3.5543	1.1612	-3.0600	0.0220
LD.	-1.6538	1.0543	-1.5700	0.1680
L2D.	-5.1726	1.0350	-5.0000	0.0020
L3D.	-2.4164	0.91559	-2.6400	0.0390
Lnfdi				
D1.	-0.5723	0.1806	-3.1700	0.0190
LD.	-0.2776	0.1487	-1.8700	0.1110
cons	28.8145	4.6985	6.1300	0.0010

The above table indicates the results of short run ARDL model. The examined results of short run ARDL indicate that all the variables have negative and significant effect on the stock market development in Bangladesh in the short run. Oil prices have negative effect on the stock market capitalizations in Bangladesh in the short run. The examined results indicate that 1% increase in oil prices in the short run negatively affect the stock market in Bangladesh. The examined results of remittances inflow in the short run indicate negative effect on the stock market capitalization in Bangladesh. The results of short run ARDL indicates that 1% increase in remittances inflow indicate negative affect on the stock market capitalization in Bangladesh. On the other hand the results of oil prices, exchange rate and foreign direct investment indicate negative and statistically significant effect on the stock market development in Bangladesh. The short run ARDL indicates that oil prices, exchange rate and foreign direct investment have significant affect the stock market deployment in Bangladesh.

5. CONCLUSIONS AND RECOMMENDATIONS

Stock market is the face of economy and therefore stock market development is very vital for any country, there are many foreign and domestic factors which influence the stock market development i.e. oil prices, remittances inflow, foreign direct investment and exchange rates. The purpose of this research was to scrutinize the effect these factors on stock market development in Bangladesh from 1985 to 2017. ARDL model were utilized to scrutinize the short run and the long run impact of the selected variables on stock market development in Bangladesh. All the variables have positive and significant effect on stock market development in Bangladesh in the long run while in short run except remittances all variables have negative and significant effect on stock market development. Remittances have negative effect in the short run but not significant effect on the stock market development in Bangladesh. . It is recommended that policy makers should attract foreign investors, and immigrants through perfect fiscal and monetary policy and also should stabilize exchange rate for stock market development.

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