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Does market size affect FDI? The Case of Pakistan

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Abstract
Market size normally remains a vital determinant for FDI inflows and it is endorsing the emergence of regionalization. The aim of this study is to investigate the impact of market size along with exchange rate and corporate tax rate on FDI inflows in a low income country like Pakistan. ARDL approach to cointegration and an error correction model based on ARDL is used to estimate relationships among variables. Time series data from 1984 to 2008 is used in this study. This study observes market size as the most important factor that affects FDI inflows. This work provides a better understanding about the role of market size in attracting FDI inflows to a developing country. On the other hand, it highlights the importance of regionalization for the purpose of increased market size for availing higher FDI inflows along with other supplementary benefits.

Key words: Market size, Corporate tax rate, ARDL, FDI, Pakistan.

1. Introduction

Foreign direct investment (FDI) is deemed as a blessing in developing countries as it results in enhancement of exchange reserves, increase in productivity, increase in employment level, rise in exports and indeed, increased pace of transfer of technology. The contribution of FDI as key participant in economic growth in developing countries has been widely acknowledged. In developing countries, it is regarded as most important source of external resources and make significant addition in capital formation even the share of developing countries in world distribution of FDI remain small or sometimes declining (Kumar,1997 and Pardhan, 2001) The traditional benefits of FDI are also important in uplifting the economic growth pace of a developing country like usage of local raw material, introduction of new techniques of management and marketing, increase in quality of labour through on job training facilities and no generation of repayment of principal and interests (as opposed to external debt) (Bhagwati, 1994). There are a lot of determinants of FDI like labour cost, real interest rate, openness, corporate tax rate, real exchange rate and infrastructure. Besides these traditional factors, market size has gained relative vital place in literature on FDI for developing and emerging economies.

Few among of a lot, who acknowledged the role of market size in attracting FDI inflows are Bander & White (1968), Schmitz & Bier (1972), Wheeler & Mody (1992), Pistoresi (2000). And among recent literature, Asiedu (2006), Mlambo (2006) and Zhang (2008) explored the pivotal importance of market size in attracting FDI inflows. These authors

argued that increased market size is a motivational factor for foreign investor. As far as literature on Pakistan about FDI is concerned, Aqeel & Nishat (2004) conforms to significant association between market size and FDI inflows.

This study attempts to supplement the literature on the determinants of FDI by posing special focus on the vital role of market size. The study uses time series data from 1984 to 2008 and Autoregressive Distributed Lag Model (ARDL) for empirical estimations. This is a unique study conducted with special focus on market size with ARDL with bounds testing approach to conintegration in case of Pakistan.

The rest of the discussion is organized as follows: Section 2 deals with the review of literature, Section 3 describes econometric modeling, data and variables, section 4 presents the empirical findings and last section 5 concludes the study with some policy recommendations.

2. Literature Review

Asiedu (2006) well recognizes the market size benefit of regionalism. The study suggests that there are three reasons of FDI enhancement due to regional economic cooperation. First is that regionalism can promote political stability by restricting membership only to elect democratic government. Second, coordination of policies among member countries which reveals curbing corruption, implementing sound, stable macro economic policies and investor friendly framework. Third, it expands the size of market, which makes region more attractive for foreign direct investment. The study also highlights the importance of regionalism to those countries which are small in size and in income. Small countries can also attract FDI in better manner as they join coalition in order to achieve large market size. Though, regionalism provides opportunity to enhance FDI, but policy coordination among member nations of bloc remains major issue to be addressed.

The regional distribution in huge market size may also have regionalized FDI determinants. Zhang (2008) narrates that regional distribution factors effecting FDI are incentives, historical and cultural linkages with foreign investor along with other location factors. Mlambo (2006) asserts the importance of regional infrastructure projects which serve the objectives of regional cooperation, integration and enhance of FDI. The study also recognizes regional power pool market which ensures sufficient availability of reliable and low cost energy supplies, integrated transportation, communications and other necessary elements.

Market size may not be influencing factor in countries having FDI in export oriented industries. Coleman & Tetty (2008) persuade that the size of market may not play active role in the effecting FDI inflows, probably that most of the investors invest in sectors which are export oriented. The study also examines the exchange rate as one of the dominating factors for FDI inflows and reports the real exchange rate volatility significant negative impact on FDI inflows.

Bandera & White (1968), Lunn (1980), Dunning (1980), Culem (1988), Wheeler & Mody (1982), Tsai (1994) and Pistoresi (2000) observed positive impact on FDI. Among recent literature, Kok and Ersoy (2009) examined 24 developing countries with panel data including Pakistan and found positive role of market size on FDI. Aqeel & Nishat (2004) observed market size, along with other determinants, affect on FDI as positive in case of Pakistan.

The review of the above literature suggests the role of market size in attracting FDI inflows, yet studies ignored exclusive work on market size for a low income country like Pakistan. This study seeks to fill the gap in literature in this context.

3. Data and Methodology

3.1 Data and variables

This study uses four variables – foreign direct investment (FDI), market size (MS), exchange rate (ER) and corporate tax rate (CT) along with their theoretical and empirical explanation as given below. The Government of Pakistan prescribes different corporate tax rates for banking company, public company and all other companies. We calculated average of these three corporate tax rates for our estimation. The data for this variable is collected from various finance bills of the Government of Pakistan for the period 1984 to 2008. The data of FDI, ER and MS is obtained from World Development Indicators, Mark 2010 online from the official website of World Bank with the frequency on annual basis from 1984 to 2008.

3.1.1 Market Size

Market size generally remains the most dynamic and vital determinant for locating FDI, that is why countries try to avail the benefits of regionalization as it expands market size which results in more attraction for foreign investor in the region (Asiedu 2006). Investors pay more attention to market size factor among other variables as it results in economies of scales, reduction in tariff, more market to penetrate and much more incentives. Wheeler & Mody (1992), Asiedu (2006) and Kok & Ersoy (2009) found positive significant impact in attracting FDI. Gross domestic product current US$ is used as proxy for market size (MS) and we expect positive impact of market size on FDI.

3.1.2 Exchange Rate

Fluctuations in exchange rate can matter in FDI decision making. Currencies subject to higher depreciation have threat to foreign investor as their investment declines over periods. Zheng (2009) and Blonigen (1997) presented negative impact of exchange rate on FDI inflows. Official exchange rate of local currency units per US$ is incorporated in the model as proxy for exchange rate (ER). We expect negative sign ER coefficient.

3.1.3 Corporate Tax Rate

Corporate tax rate directly hits the earnings of companies. It is generally believed that higher the tax rate, lower the FDI inflows. But in some studies, corporate tax rate finds insignificant effect on FDI (Wheeler & Mody, 1992 and Porcano & Price, 1996). In Pakistan, the government specifies three different corporate tax rates for three different categories of companies. The categories are public company, banking company and all other companies. For the purpose of this study, we use these three corporate tax rates by averaging them, and data is collected from various finance bills by the Government of Pakistan. We hope a negative coefficient sign in case of corporate tax rate.

For dependent variable, we use per capita FDI in USD to measure the FDI inflows.

3.2 Econometric Model

As the aim of this study to analyze the role of market size in attracting FDI, the hypothesis is that increased market size of a low income country like Pakistan, more it is attractive for foreign firms. An appropriate proxy in reduced form specification is used for market size. We specify the following model in the form of equation to investigate the impact of market size on FDI along with exchange rate and corporate tax rate.

$$\ln(FDI_t) = \beta_0 + \beta_1 \ln(MS_t) + \beta_2 \ln(ER_t) + \beta_3 (CT_t) + Ut \qquad 3.1$$

Where, FDI_t, MS_t, ER_t and CT_t denote foreign direct investment, market size, exchange rate and corporate tax rate respectively. β_1, β_2 and β_3 are the parameters for long run elasticity of FDI with respect to MS, ER and CT respectively. Johansen-Juselius (1990) and Engle & Granger (1987) are mostly applied for examine long equilibrium relationship among variables. It is necessary that all variables must be stationary at first difference I(1) for application of these tests. Moreover, in case of small sample size, these tests are not fit to apply (Chaudhry and Chaudhry, 2006). Theses limitations can be avoided by applying autoregressive distributed lag (ARDL) approach to cointegration. The development of ARDL goes to Pesaran, Shin & Smith (1996) and later on Pesaran et al. (2001) made it famous. ARDL has recognized various econometric merits over other approaches as this approach does not required all the variables to be integrated at same order i.e. I(1). This approach is indifferently applicable in case of variables are stationary at I(0) and I(1). Moreover, it produces consistent output even in case of small sample size.

Following model is specified after considering the merits of ARDL.

$$\Delta \ln(FDI_t) = \beta_0 + \sum_{i=1}^{q} \beta_{1i} \Delta \ln(FDI_{t-i}) + \sum_{i=0}^{q} \beta_{2i} \Delta \ln(MS_{t-i}) + \sum_{i=0}^{q} \beta_{3i} \Delta \ln(ER_{t-i}) + \sum_{i=0}^{q} \beta_{4i} \Delta (CT_{t-i}) + \beta_5 \ln(FDI_{t-1}) + \beta_6 \ln(MS_{t-1}) + \beta_7 \ln(ER_{t-1}) + \beta_8 (CT_{t-1}) + U_t \qquad 3.2$$

Denotes first difference operator and q is the optimal lag length. Short run dynamics are represented by $\beta_1, \beta_2, \beta_3$ and β_4 whereas, long run relationships are denoted by $\beta_5, \beta_6, \beta_7$ and β_8. As ARDL approach is not applicable in case of I(2), we test the level of integration of all variables by using Phillips-Perron (PP) and Augmented Dickey-Fuller (ADF) test statistic. Bounds test of the equation 3.1 has been conducted by suing F-statistic with lower bound and upper bound in order to find out long run relationship . No cointegration is assumed for null hypothesis and null hypothesis is rejected in case the value of F-statistic is greater than the upper bound. If the value of F-statistic remains between lower and upper bound then it is termed as test is inconclusive. Akaike Information Criterion (AIC) is used for selection of optimal lag length of variables after testing cointegration test. An error correction version of equation 3.2 is given below

$$\Delta \ln(FDI_t) = \beta_0 + \sum_{i=1}^{q1} \beta_{1i} \Delta \ln(FDI_{t-i}) + \sum_{i=0}^{q2} \beta_{2i} \Delta \ln(MS_{t-i}) + \sum_{i=0}^{q3} \beta_{3i} \Delta \ln(ER_{t-i}) + \sum_{i=0}^{q4} \beta_{4i} \Delta \quad (CT_{t-i}) + \lambda EC_{t-1} + \varepsilon_t \qquad 3.3$$

tnemtsujda fo deeps eht si ג ,htgnel gal lamitpo setoned 4q dna 3q ,2q ,1q ,erehW parameter and EC expresses error correction term derived from long run relationship as given in equation 3.2.

4. Empirical Findings

Unit roots for all variables tested before applying ARDL approach to cointegration. Table 1 represents the results of Phillips-Perron test and Augmented Dickey Fuller test at level form and at first difference. According to results of both tests stated in table 1, ln(FDI), ln(MS) and CT are stationary at first difference at one percent significance level whereas, ln(ER) is significant at one percent in Augmented Dickey Fuller test and at five percent in Phillips-Perron test. ARDL approach to cointegration can be applied in this situation.

-------Table 1 here-------

Long run relatitonship results are closely sensitive to lag length selection in the model (Bahmani-Oskooee and Bohal, 2000). Table 2 represents the computed value of F-statistic to select best lag length in the model. With the lag length equal to three, lower and upper bond values at 99% significance level are 4.29 and 5.61 respectively (Pesaran et al., 2001). The computed value of F-statistic is 6.84 which is greater than the upper bond value of F-statistic which evidences against null hypothesis of no level effect. Hence, we conclude that there exists long run relationship among the variables.

-------Table 2 here-------

Akaike Information Criterion (AIC) has been used to select optimal lag length of the variables used in the model. Table 3 indicates the long run relationship among variables of the selected ARDL mode (3,1,1,2) using AIC.

-------Table 3 here-------

Table 3 presents that MS is the most significant factor of foreign direct investment of Pakistan. The positive effect of MS on FDI is significant at one percent. This result is in consistent with the findings of Root & Ahmad (1979), Wheeler & Moody (1992) & Pistoresi (2000) The coefficient (5.60) indicates that one percent increase in MS directs 5.60 percent rise in foreign direct investment in long run. Exchange rate is another negatively significant variable of foreign direct investment. This result supports the studies of Caves (1988), Froot & Stein (1991) and Blonigen & Fenstra (1996). The coefficient of ln(ER) is (-3.42) shows that one percent increase in exchange rate

deteriorates foreign direct investment by 3.42% in the long run in Pakistan. Corporate tax rate, however, not effects foreign direct investment in long in Pakistan. This result is in accordant with the findings of Wheeller & Mody (1992), Jackson & Markowski (1995) and Porcano & Price (1996). These results provide guidelines to concerned authorities interested in uplifting foreign direct investment level in Pakistan.

-------Table 4 here-------

Error correction representation of the selected ARDL model has been made in Table 4. Coefficients with Δ sign of the variables show short run elasticity. Results indicate that market size is insignificant factor of foreign direct investment in short run in case of Pakistan, whereas, the most significant variable in short run is Δln(ER) with coefficient (-4.77) which reveals that one percent change in exchange rate pulls foreign direct investment down by 4.77%. Δ CT effects negatively to foreign direct investment with coefficient (-0.02) which indicates that rise of CT by one percent decrease foreign direct investment by 0.02%. Both factors, Δ ln(ER) and CT, are significant at one percent level. The coefficient of error correction term (ECM(-1) = -0.64) is significant at one percent level. Existence of long run relationship among factors has been reinforced by highly significance of error correction term. The coefficient (-0.64) depicts that the speed of adjustment from previous year's disequilibrium in foreign direct investment to current year's equilibrium is 64%. The value of R^2 is 0.82 which reflects that 82% variations in the dependent variable are explained by the independent variables. The value of adjusted R^2 is 0.70. F-statistic value is 9.42 is significant at less than 0.1% which indicates that the model is a good fit.

-------Figure 1 & 2 here-------

Cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMSQ) are used to investigate the stability ARDL selected error correction model. This stability technique was presented by Brown et al. (1975). It is concluded that the model is structurally stable as CUSUM and CUSUMSQ plots remain within critical bond at 5% level of significance as show in figure1 and figure 2.

5. Conclusions

The objective of this work was to investigate empirically the impact of market size on FDI inflows into a developing country like Pakistan. This was motivated by the fact that market size is considered as a significant determinant of FDI inflows and we deemed it important to undertake this work as no exclusively empirical work has been carried out by using ARDL approach to cointegration in case of Pakistan. The study estimated market size impact on FDI inflows along with exchange rate and corporate tax rate in Pakistan from 1984 to 2008. The study finds that market size as the most dominating positive impact factor to attract FDI inflows in long run and there by confirming other studies that market size tends to enhance FDI inflows into any country, whereas no influence of market size on FDI inflows in short run can be found. The study also found exchange rate as significant negative impact determinant in long run and as well as in

short run. As far as corporate tax rate impact is concerned, we could not find any influence on FDI in long run. Thus market size has positive association whereas exchange rate and corporate tax have negative relationship on FDI inflows in case of Pakistan. These findings are consistent with our expectations.

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Annexure

Table 1: Unit Root Test

Variables	Augmented Dickey Fuller Test Statistic (At Level)	Augmented Dickey Fuller Test Statistic (At First Difference)	Phillips-Perron Test Statistic (at level)	Phillips-Perron Test Statistic (at first difference)
lnFDI	-0.71	-5.00*	-0.73	-5.00*
lnMS	1.84	-3.84*	1.94	-3.81*
lnER	-1.49	-3.86*	-1.43	-3.60**
CT	-0.27	-4.27*	-0.31	-4.28*

Note: *and ** show significance level at 1% and 5% respectively

Table 2: F-Statistic for Testing the Existence of Long-Run Relationship

Order of Lag	F-Statistics
3	6.84

Note: The lower and upper bound values 4.29 and 5.61 at 99%) for F-Statistics are taken from Table CI(iii) case III: Unrestricted intercept and no trend given in Pesaran et al. (2001)

Table 3: Long Run Results of ARDL (3,1,1,2) Model
Dependent Variable "ln(FDI)"

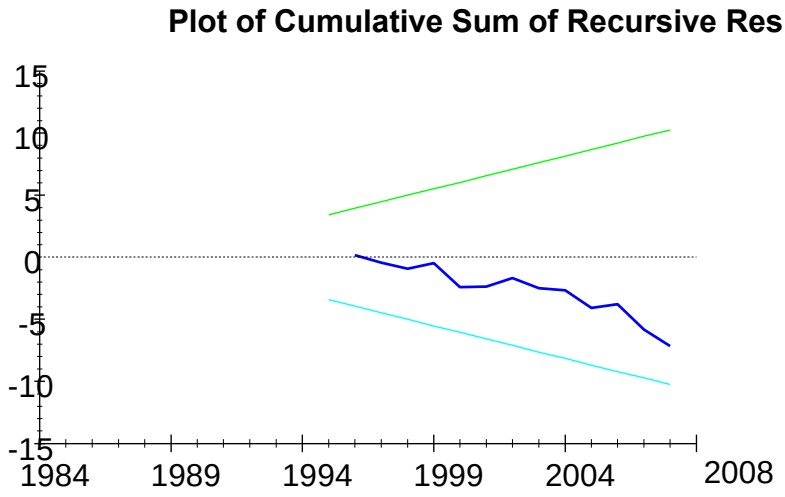
Regressor	Coefficient	Standard Error	t-Ratio	p-value
Constant	-123.56	29.26	-4.22	0.001
ln(MS)	5.60	1.28	4.36	0.001
ln(ER)	-3.42	1.03	-3.32	0.005
CT	-0.02	0.04	-0.44	0.670

Table 4: Error Correction Representation of the Selected ARDL (3,1,1,2) Model
Dependent Variable "Δln(FDI)"

Regressor	Coefficient	Standard Error	t-Ratio	p-value
Δ ln(MS)	-0.56	0.84	-0.67	0.513
Δ ln(ER)	-4.77	1.28	-3.73	0.002
Δ CT	-0.02	0.01	-3.37	0.004
ECM(-1)	-0.64	0.16	-3.93	0.001

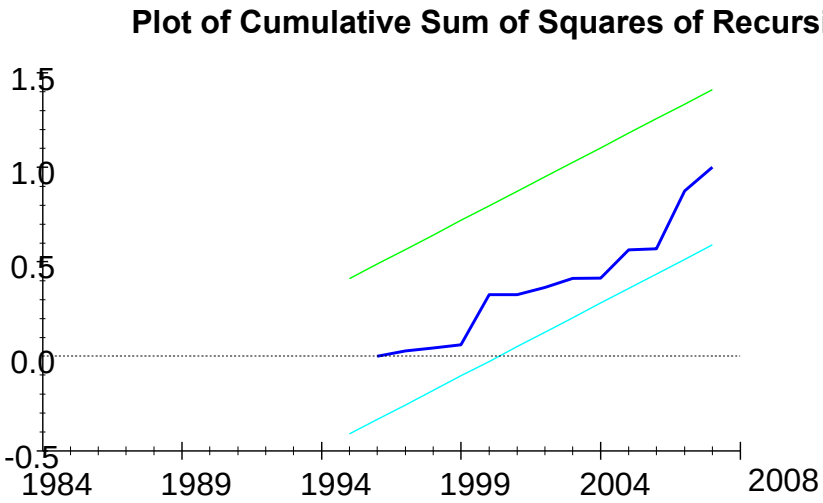
R^2= 0.82 . Adj. R^2= 0.70. F(7,17)=9.42(0.000). D.W.Statistic=1.92

Figure 1



The straight lines represent critical bounds at 5% significance level

Figure 2



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