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The Determinants of Foreign Direct Investment in Pakistan: Is China crowding out investment in Pakistan?

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Abstract

China's emergence as the world's second largest economy, largest recipient of Foreign Direct Investment (FDI) and the single largest investor country in Pakistan have raised concernsthat it has success at the expense of other countries. With this backdrop, the study finds out whether China is crowding out investment in Pakistan. The study uses the ARDL bounds testing approach to co integration using annual date for the 1980-2014 period. The locationalfactors, including market size, human capital, openness and infrastructure are all important determinants of FDI inflows.Once these factors are controlled for, China does not appear to crow out inwardFDI in Pakistan. China's market size, its inward FDI and direct investment in Pakistan have positive and significant impact on the inflows of FDI to Pakistan. Besides, all locational factors market size of Pakistan, trade openness, human capital have showed positive and significant impact on FDI inflows. Only infrastructure has showed negative and significant impact. The results support the argument that foreign investors are more attracted to the country with a higher growth rate of gross domestic product (GDP) because it indicates a larger potential demand for their products and investors are attracted to a country with more liberalized economic reforms. The investing on human capital development also yields higher inflows of FDI.

KEY WORDS: Foreign direct investment, market size, human capital,trade openness, crowding out, ARDL

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I. Introduction

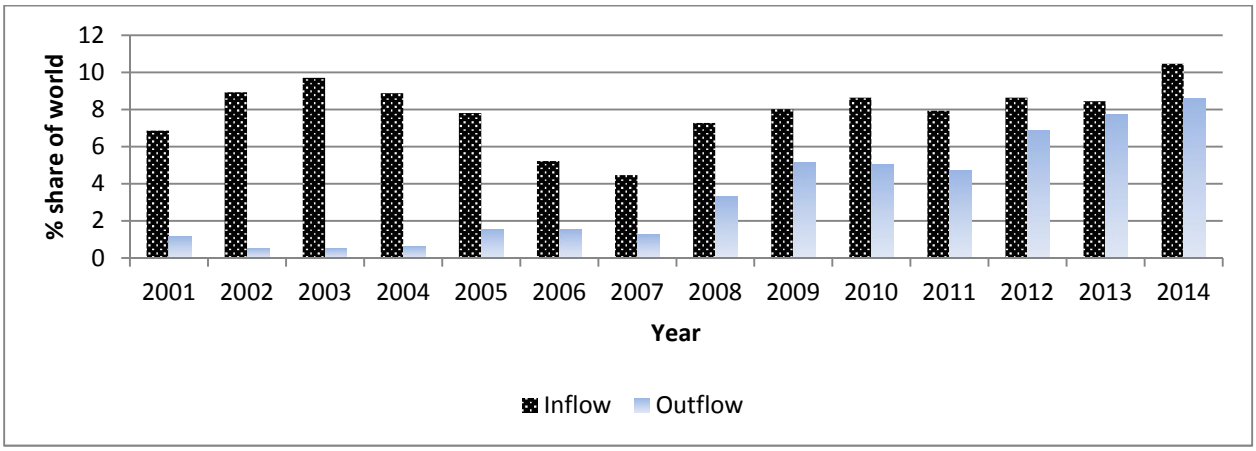
The developingcountries and emerging economies know the significance of foreign direct investment (FDI) for their growth and development. Its importance for the recipient is well documented in the literature. It stimulates the economy which adapts the advanced technological and management skills (De Mello, 1997; Urata and Kawai 2000; Lipsey, 2002; Johnson, 2006). It creates a virtuous circle of confidence building for the host country. It reinforces the existing local investment climate and lures both local as well as foreign investment. It helps the host countries to achieve their socio-economic objectives of employment generation, poverty alleviation and advancement of technology(Khan and Yun-Hwan, 1999).

In their efforts to make benefits of the FDI spillovers, countries have been undertaking reforms and offering competitive FDI policy packages to foreign investors. This phenomenon has generated a fierce competition among countries to attract the world FDI. According to the United Nations Conference on Trade and Development (UNCATD) statistics, global foreign FDI flows has jumped by 38 per cent to $1.76 trillion. FDI inflows to developed economies have almost doubled to $962 billion. Similarly, developing economies have seen their FDI inflows reach a new high of $765 billion which is 9 per cent higher than in 2014. Developing Asia has surpassed half a trillion dollars of FDI inflows and the region is the largest FDI recipient in the world. Among top 10 host economies for FDI inflows, half are from developing world (World Investment Report, 2016).

The Developing Asia is the largest recipient region of FDI inflows in the world. From the region, the four countries namely Hong Kong (China), China, Singapore and India have received more than three quarters of total inflows to developing Asia (WIR, 2016). China's share of FDI in developing Asia rose from about 10per cent in the early 1980s to over 50 per cent by the early 1990s (Mercereau, 2005). Chinahas been the largest recipient of FDI in the developing world since 1993(Tang, Selvanathan, &Selvanathan, 2008), and is the second largest FDI receiving economy with FDI inflows amounting to $128.50 billion in 2014, which corresponds

to 10.5 per cent of total world FDI[3] and is the third largest FDI provider in the world (WIR,2016). Figure 1 presents China's share of World FDI. On the other hand, Pakistan, a neighboring country of China and India, has not been traditionally a large recipient of FDI. Pakistan in the last decade experienced a short surge in FDI inflows. Historically, FDI did not constitute a high percentage of GDP of Pakistan. It remained less than one percent during 1970s and 1980s and it crossed the figure of 1 per cent in 1994. It remained the highest in 2006, 2007 and 2008 when it was 3.4, 3.9, and 3.7 respectively. Since then there is a sharp decline in FDI inflows and it was reported 1.16 per cent in 2010 and 0.67 per cent in 2014 (UNCTAD, 2016).

Figure 1: China's share of World FDI (Inflows and Outflows)



Data Source: United Nations Conference on Trade and Development (2016)

With this background, this research paper attempts to answer three questions. The first and the most significant question is: Will the rapid growth of a large country such as China that is rich with natural resources and large market size reduce the inflows of FDI to Pakistan? The other two questions are: What are the determinants of FDI inflows to Pakistan? How important are market size, human capital, government trade policy and infrastructure in directing FDI flows to Pakistan?

Answering the above-mentioned questions is very crucial for a few reasons. First, the inclusion of China's effect in the analysis is significant becauseChina is the second largest economy in the

[3] UNCTAD statistics available at http://unctadstat.unctad.org/

world with GDP growth rate 6.9 percent[4]. Moreover, FDI flowed to China an annual average rate of $2.7 billion between 1985 and 1990 and then surged to reach $40 billion annually in the late 1990s, making China the second largest recipient of FDI inflows in the world (Prasad & Wei, 2005). In 2005, China retained is position as the largest recipient of FDI in the region, with more than 271,963 Transnational Corporations (TNCs) operating in China (UNCTAD, 2000, 2006). Currently, it is the second largest FDI receiving economy with FDI inflows amounting to $128.50 billion in 2014[5]. With such level of FDI inflows, China has been blamed by its neighboring countries for the protracted loss of their FDI inflows (Das, 2007).

The question that needs to be investigated is "Does this huge amount of FDI in China crowd out FDI flows into its neighboring countries such as Pakistan or this influx has complementary nature"? Answering this question is importantherebecause a complementary relationship between two countries means a beneficial effect of FDI on growth irrespective of external market size. Otherwise, FDI in China may be detrimental to economic growth in Pakistan.

Secondly, FDI inflows to Pakistan from China amounted to $593.9 million in 2015-16, which is up 131.3 percent from 2014-15 and constitutes 46.3 percent of the total FDI Pakistan received during the year. But the countries that had traditionally invested in Pakistan now they are pulling out their investments. The United States has traditionally been a big source of FDI in Pakistan, but that trend is changing now. US investors have pulled out $71.9 million from Pakistan during2015-16. Besides USA, other countries that have pulled out their investment are Saudi Arabian (-$91.6 million), Egypt (-$41.7 million) and Germany (-$32.4 million). The question rises whether China crowding out investment from other countries in Pakistan.Do we have FDI inflows from China at the cost of inflows from other countries?

Thirdly, there is a wide range of literature available on the determinants of FDI and there is also a significant literature available on the topic. A search of research journal repositories especially the HEC Digital Library by using the keywords ''determinants of foreign direct investment'' resulted into considerable range of the studies on the subject. Though they focus on wide range

[4] http://data.worldbank.org/data-catalog/GDP-ranking-table
[5] http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx

of locational determinants of FDI, yetthe impact of Chinaon FDI inflows to Pakistan has not been explored. This is surprising because some studies have revealed that the emergence of China is crucial in affecting the pattern of its neighboring countries' trade and investment patterns, and hence, is a crucial determinant of FDI to the region (Wu et al., 2002; McKibbin& Woo, 2003; Das, 2007).

Lastly, knowing the determinants of FDI inflows is very important for the policy makers. They will know which factors are barriers and attractive for the FDI inflows. Then they can design their policies accordingly. Benefits accrued from this type of capital inflows will help the country to achieve its socio-economic objectives. Hence, this paper contributes to the literature by investigating the effect of host country's market size, neighboring country's (China) market size, its level of FDI inflows, investment in Pakistan, host country's trade openness, human capital, and infrastructure on FDI flows.

The remainder of the paper is organized as follows: Section 2 gives theoretical background and reviews the empirical literature.Section 3 explains the estimation techniques and data. Section 4 analyses the data, interprets and discusses the results, and lastly the Section 5 concludes.

2. Foreign Direct Investment: Theory and Empirics

The significance of FDI has led to the developments of theories to identify its determinants. It is recognized that there is no general single theory can comprehensively explain the phenomenon of FDI, the behaviour of multinational corporations(MNCs) and international production (Jadhave, 2012;Moosa, 2015).This viewpoint has been reinforced by several empirical studies which found that FDI theories do not replace each other. Instead of that, they all theories are relevant in explaining the determinants of FDI (Faeth, 2009). Vernon's product life cycle theory of investment (1966) sees FDI is a naturalstage of a new product's life cyclewhereas Caves (1971) makes adistinction between vertical and horizontal FDI and highlights the significanceof product differentiation in horizontal FDI. Knickerbocker'sfollow-the-leader-theory (1973) proposes that, in oligopolistic markets,other MNCs follow if one of them engages inFDI. The more modern theory of FDI originates from Hymer's theoryof firm-specific advantages (1970)

that stresses the fact that local firms haveadvantages over foreign firms in the domestic market due to their betterunderstanding of the local environment. In order to outweigh the domesticfirms' advantage, the foreign firm has to have some other firm-specificadvantage the local firms cannot obtain to compensate for the local firm's familiarity of the market (Craig, 2008).As an extension of Hymer's work, Dunning(Dunning 1980, 1993)developed the OLI(Ownership-Location-Internalization) paradigm based on a theory offirm-specific advantages. The acronym OLI stands for ownership, location and internalization (Yin, Ye &Xu, 2014). The OLI paradigm provides an ownership, location and internalization advantage-based framework to analyse why, whereand how MNCs would invest abroad.The OLI provides a way of condensing or harmonizing several FDI theories.

Ownership factors are farms' specific advantages for example technologicalknowledge, brand name, economies of scale, management skills, and reputation. They primarily address the decision of firms going abroad (why firms go abroad?) to take advantages of investment opportunities in foreign location. Location factors determine the decisions of MNCs locating foreign destinations for their investment ventures (where to go for investment?). These factors are location specific which can be exploitedwith firm specific advantages. There could be a variety of factors attracting MNCs for example policy, institutional and macroeconomic factors. In current competitive environment, countries have been offering competitive FDI incentives, for example tax holidays, tariff reductions, access to protected markets. Lastly, internalization addresses the question regarding different entry modes which MNCs could undertake (how to go abroad?). MNEs have various choices of entry mode for example wholly owned subsidiary and joint ventures (Hussain, 2012).

If only the ownership advantages are available, then firms opt for exports, licensing and sale of patents to exploit the markets abroad. If internalization advantages are also available, then FDI is considered. But that depends on the location specific advantages to be conducive for firms to internalize in a foreign market.Among these OLI advantages, the location specific advantages are the only ones that can be manoeuvred by thehost governments (WIR, 1998).The present study assumes ownership and internalization factors as constant and focuses on location determinants of FDI in the case of Pakistan.

2.1 Review of Empirical Literature

China's dramatic success in attracting FDI has raised concernsthat it has success diverted FDI from other countries. The focus of the previous researches has been on China's effects on Asian economies particularly. Chantasasavat, Fung, Iizaka, and Siu(2004) estimate crowding out by China for eight Asian economies[6] from 1985 to 2001 period.By employing random effects model, they find that the level of China's foreign investment is positively related to the levels of theother economies' inward direct investment.Thus, increasing FDI in China is not at the expense of the Asian economies. Similarly, Mercereau(2005) estimates China's emergence onFDI flows to fourteen Asian countries[7] from 1984 to 2002. The findings show that China did not have much impact on FDI to other countries. In particular, lowincomeeconomies which compete with China for low-wage investment and countries withlow levels of education or scientific development do not seem to have been especiallyaffected.Zhou and Lall (2005) analyse the impact of FDI inflows to China on FDI in the seven South-East Asian economies[8] 1986-2001 period. The study employs uses fixed-effects estimation to test for the relationships between FDI in South-East Asian economies within a simple model of location determinants of FDI. The results suggest that China raised rather than diverted such investment into neighbouring economies.Wang, Wei, and Liu (2007)analyze howFDI in China has affected on nine Asian economies [9] .Theresults indicate that China has not divertedinwardFDI from the Asian economiesasa whole.At country level, diversion effects have occurred in Indonesia, the Republic ofKorea, Malaysia and the Taiwan Province of China.Eichengreen&Tong(2007)analyze China's emergence as a destination for FDI affecting other countries. Results suggest that encouraged FDI flows to other Asian countries viasupply-chain production linkages but diverted those from OECD countries. They explain this diversion effect by the negative effectof distance on supply-chain production linkages.China's rapid growth and attractions as a destination for FDI also encourages FDI flows to other Asian countries, as if producers in these economies belong to a

[6] These economies are: Indonesia, the Philippines, Hong Kong SAR, Korea, Singapore, Malaysia, Thailand and Taiwan.

[7]These economies are: China, India, Indonesia, Korea, Malaysia, Myanmar, Papua New Guinea, Philippines, Singapore, Sri Lanka, Taiwan Province of China, Thailand, and Vietnam.

[8] These economies are: Indonesia, Malaysia, Philippines, Republic of Korea, Singapore, Taiwan Province of China and Thailand.

[9] The economies are: Hong Kong(China), India, Indonesia, the Republic of Korea, Malaysia, the Philippines, Singapore, Taiwan Province of China and Thailand.

common supply chain. There is also evidence of FDI diversion from OECD recipients. This is interpreted in terms of FDI motivated by the desire to produce close to the market where the final sale takes place. Choong & Lam (2010) examine the determinants of FDI in Malaysia for 1970-2006period. The study uses real GDP of China as proxy for 'China effect' on Malaysia. The cointegration results show that market size of Chinahas positive and significant impact on FDI inflows toMalaysia. In addition, the results also demonstratethat market size of Malaysia, trade openness and human capital development have a positive and statistically significant effect on FDI inflows

Apart from Asian economies, researchers have also explored China's emergence on other economies. Cravino, Lederman, & Olarreaga (2007)explore the impact of the emergence of both China and India on ForeignCapital Stocks (FCS) on the Latin American and Caribbean (LAC) countries.The study used bilateral FCS data from 1990-2003. Theevidence suggests that the impact of foreign capital in China and India on othercountries' FCS has been positive.García-Herrero and Santabárbara (2007) find that FDI to China has no significant effect on FDI to Latin America as a region. But there was a significant negative effect of FDI to China on FDI to Mexico until 2001 and to Colombia after 2001. Finally, Resmini & Siedschlag (2013) analyze the effects of FDI in China on the FDI inflowsinto EU countries[10]over the period 1990–2004. The findings reveal that FDI flows to China have been complementary to FDIflows to other countries.

Our paper adds to the empirical evidence on the china effect on FDI flows to Pakistan in three ways. First, the impact of Chinese market size on the FDI inflows in Pakistan is examined. Second, weanalyse the crowding out phenomenon of FDI in China to FDI inflows in Pakistan. Second, Third, China is the largest FDI source country in Pakistan. But the countries that had traditionally been invested in Pakistan now they are pulling out their investments. The question rises whether China crowding out investment from other countries. Are FDI inflows from China

[10] Source countries are:Austria, Belgium, Czech R., Denmark,Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Luxembourg, Mexico, Netherlands, Poland, Portugal, Slovak R., Spain, Sweden, Switzerland,United Kingdom and the United States. The recipient countries include, besides the 23 OECD countries source countries, Brazil, Bulgaria, Cyprus, Estonia, India,Latvia, Lithuania, Malta, Romania, Russia Federation, and Slovenia.

at the cost of inflows from other countries? Lastly, there is a significant literature available on the determinant of FDI in the context of Pakistan (Shahzad & Zahid (2012); Zaman et al, 2006; Yousaf et al, 2008, Agiomigianaks et al, 2006, Shah and Ahmad, 2003 and Shah &Ahmed (2003); Hakro & Ghumro (2011) and Aqeel and Nishat, 2004), but to the best of our knowledge, impact of China on FDI inflows in Pakistan has not been explored.

3 Research Methodology

3.1 Estimating Crowding Out

There is no generally accepted theory of FDI. Many studies adopt a reduced formspecification[11] and estimate the following equation:

$$FDI_{j,t} = \beta X_{j,t} + \varepsilon_{j,t} \qquad (1)$$

Where $FDI_{j,t}$ Foreign Direct Investment isto country j at time t, $X_{j,t}$ is a vector of potential explanatory variables, and $\varepsilon_{j,t}$ is an error term. Now the natural way to estimate crowding out by China is to add an appropriate indicator of Chinato the regressors in equation (1). The study uses three indicators to measure this impact, market size of China, FDI inflows to China[12] and *Dummy* variables of Chinese FDI in Pakistan.

There are two arguments on the inclusion of market size of China in the research, *investment–diversion-effect* and *investment-creation- effect*[13]. The former views that MNCs while making investment decisions consider the location specific advantages of the host country. China would offer more competitive advantages to MNCs as compared to Pakistan. Therefore investing in China would then reduce FDI flows in Pakistan. While the latter argument points out that when China's economy grows, its market size is increased and it attracts more FDI inflows, as it is happening now. As a result, the demand for natural resources and inputs of production, for example aluminum,steel and petroleum, increases substantially and subsequently export-oriented investment would require corridors to export the products to foreign countries. At the same time,

[11]see Kamaly(2003) for details
[12]Chantasasavat et al. (2004) used the same proxy (FDI inflows) to examine the China Effect.
[13] For details see Chantasasavat et al (2004).

other MNCs would also invest in Pakistan to explore natural resources to export to a fast-growing economy of China which would require constant supply raw materials[14].

The following equation is estimated:

$$FDI_t = \beta X_t + \alpha China_t + \varepsilon_t \quad (2)$$

FDI_t: FDI inflows to Pakistan at time t, βX_t: Vector of explanatory variables, $China_t$: Indicator of "China Effect' (market size and FDI flows) and ε_t : Error term.

The variables in the vector X_t are FDI location determinants as suggested by the literature[15]. These determinants are: Market Size, Trade Openness, Human Capital Development and Infrastructure.

GDP Growth rate of Pakistan(GDPGRP) is proxied for market size of Pakistan and China.There are different proxies are used for the market size in empirical literature: Real GDP (Choong and Lam (2010), GDP per capita (Reschenhofer,Schilde, Oberecker, Payr,Tandogan, Wakolbinger (2012),Per capita Income (Ali, Chaudhary, Ali,Tasneem, & Ali(2013),GDP annual growth rate (Khan and Nawaz (2010). This paper uses GDP growth rate as proxy for market size as it represents a good approximation of the potential of economy and expects to have a positive and significant relation with FDI inflows. The share of exports and imports in GDP of Pakistan(X+M/GDP) is used for Trade Openness (TO), Education expenditure as percentage of GDP proxied for Human Capital Development (HC) and public sector development expendituresis used for Infrastructure (INFRA)[16]. These expenditures are incurred on a variety of

[14]China–Pakistan Economic Corridor (CPEC) is a mega investment venture consisting of several projects of construction, infrastructure, energy with investment of $44,413 million. CPEC will be an impetus for regional integration for economic development (Board of Investment, Pakistan).

[15]The survey of numerous empirical studies on the location determinants of FDI has led us to select a set of explanatory variables that are widely used and found to be significant determinants. Some of the recent studies are: Bekhet& Al-Smadi (2015), Dimitropoulou, McCann & Burke (2013), Ibrahim &Hassan (2013),Mohammadvandnahidi, Jaberikhosroshahi&Norouzi (2012), Choong& Lam (2010), Dumludag (2009), Moosa (2009).

[16]There are different proxies being used in empirical literature for the infrastructure: Number of telephone lines per 1000 people in a country (Mohammadvandnahidi et al. 2012; Alamand Shah, 2013); Expenditure on infrastructure (Kinuthia&Murshed, 2015; Hakro&Ghumro (2011);Sum of fixed and post-paid mobile phones per 10,000 inhabitants and the percentage of paved roads (Hoang &Goujon, 2014).

development projects.A summary of all the variables and corresponding data sources is placed at Annexure A.

Following three equations have been estimated:

Model 1

$$LPFDI_t = \beta_\circ + \beta_1 GDPGRP_t + \beta_2 GDPGRC_t + \beta_3 TO + \beta_4 HC_t + \beta_5 LINFRA_t + \varepsilon_t \quad (3)$$

Model 2

$$LPFDI_t = \beta_\circ + \beta_1 GDPGRP_t + \beta_2 LCFDI_t + \beta_3 TO + \beta_4 HC_t + \beta_5 LINFRA_t + \varepsilon_t (4)$$

Model 3

$$LPFDI_t = \beta_\circ + \beta_1 GDPGRP_t + \beta_2 TO + \beta_3 HC_t + \beta_4 LINFRA_t + \beta_5 DUMMY_t + \varepsilon_t \quad (5)$$

The annual time series data has been used for the period 1980-2014. Foreign Direct Investment Inflows in Pakistan (LPFDI) (Million US$) is the dependent variable. The selection of this variable is in line with the empirical literature (Anuchitworawong and Thampanishvong, 2015;AgyenimBoateng, XiupingHua, ShaistaNisar, Junjie Wu, 2015; Ismail, 2009).

3.2 ARDL Model Specification

The use of the ARDL bounds testing approach is based on three validations. First, Pesaran, Shi, and Smith (2001)) advocatedits use for the estimation of the level relationships because the model suggests that once the order of the ARDL has been recognised, the relationship can be estimated by OLS. Second, the bounds testing allows a mixture of order of integration I(1) and I(0) variables as regressors. The order of integration of variables may not necessarily be the same. Therefore, the ARDL technique has the advantage of not requiring a specific identification of the order of the underlying data. Third, this technique is suitable for small or finite sample size. The selected lag length is maximum 3 for difference variable for estimation of ARDL equation. Because of limited number of observations, all insignificant variables from model, by

following general to specific technique, have been omitted. To check the reliability and accuracy of the model under estimation, different diagnostic tests have been applied[17].

The null and alternative hypotheses are as follows:

$H_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$ (no long-run relationship)

Against the alternative hypothesis

$H_0 \neq \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq 0$ (a long-run relationship exists)

The computed *F*-statistic value will be evaluated with the critical values. According to Pesaran, et al. (2001), the lower bound critical values assumed that the explanatory variables x_t are integrated of order zero, or I(0), while the upper bound critical values assumed that x_t are integrated of order one, or I(1). Therefore, if the computed *F*-statistic is smaller than the lower bound value, then the null hypothesis is not rejected and we conclude that there is no long-run relationship between FDI and its determinants. Conversely, if the computed *F*-statistic is greater than the upper bound value, then FDI and its determinants share a long-run level relationship. On the other hand, if the computed *F*-statistic falls between the lower and upper bound values, then the results are inconclusive.

4. Estimation Results and Discussions

4.1 Unit Roots Tests

Before we apply the ARDL bounds testing, we check the stationarityof all variables to determine their order of integration. This is to ensure that the variables are not I(2) so as to avoid spurious results. Accordingto Ouattara(2004) in the presence of I(2) variables the computed F-statisticsprovided by Pesaran et al.(2001) are not valid because the bounds test is basedon the assumption that the variables are I(0) or I(1). Therefore, the implementation of unit root tests in the ARDL procedure might still be necessary in orderto ensure that none of the variables is integrated of order I(2) or beyond.The standard Augmented Dickey-Fuller (ADF) unit root test

[17] Such as LM test for serial correlation, ARCH test for heteroscedasticity, normality test and CUSUMSQ for structural stability

was exercised to check the order of integration of the variables. The results obtained are reported in Table (1). ADF statistics reveal that out of six variables, 3 have unit root i.e., LPFDI, TO and LINFRA, while GDPRP, GDPGRC and HC are I(0) variables. Noticeably, the mixture of both I(0) and I(1) variables gives a good justification for using the ARDL bounds testing approach.

Table 1: ADF Unit Root Tests on Variables

Variables	At Level	At First Difference	Decision
LPFDI	0.6427	-5.701791*	I(1)
GDPGRP	-3.743664*		I(0)
GDPGRC	-3.776190*		I(0)
TO	-2.870655	-8.129495*	I(1)
INFR	0.825347	-6.797613*	I(1)
HC	-3.304833*		I(0)

Source: Authors calculation. *, ** and *** indicate the rejection of the null hypothesis of non-stationary at 1%, 5% and 10% significant level, respectively.

The next is the computation of the F-statistic which tests the joint null hypothesis that the coefficients of the lagged level variables are zero (i.e. no long-run relationship exists between them). Table (2) reports the ARDL Bound test results of all three models.

Table 2: Table ARDL Bound Test Results

	Model(1)		**Model (2)**		**Model(3)**	
F-statistics	4.936237		6.111431		5.041846	
Significance level(%)	**I0 Bound**	**I1 Bound**	**I0 Bound**	**I1 Bound**	**I0 Bound**	**I1 Bound**
10	2.75	3.79	2.75	3.79	2.75	3.79
5	3.12	4.25	3.12	4.25	3.12	4.25
2.5	3.49	4.67	3.49	4.67	3.49	4.67
1	3.93	5.23	3.93	5.23	3.93	5.23

Source: Authors' calculation

The computed *F*-statistic of all three models are greater than the lower critical bound values, thus indicating the existence of a steady-state long-run relationship among variables.The results of the bounds co-integration test demonstrate that the null hypothesis of against its alternative is rejected at the 5% significance level.

After establishing the long run relationship, next step is finding short run as well as long run estimates of the model. The results of the short-run of Model 1, 2 & 3 are reported in Table 3, 4 & 5 respectively.

Table 3: Short Run Estimates of ARDL Model 1

ARDL (1, 2, 3, 3, 3, 2) selected based on SBC. Dependent Variable is LogPFDI				
Regressor	**Coefficient**	**Standard Error**	**T-Statistics**	**Probability**
D(GDPGRC)	0.101577	0.036677	2.769526	0.0182
D(GDPGRC(-1))	-0.073455	0.032533	-2.257887	0.0453
D(GDPGRP)	-0.018769	0.052537	-0.357249	0.7277
D(GDPGRP(-1))	-0.184652	0.055935	-3.301205	0.0071
D(GDPGRP(-2))	-0.130052	0.058496	-2.223256	0.0481
D(TO)	0.038165	0.041906	0.910715	0.3820
D(TO(-1))	-0.048285	0.047170	-1.023636	0.3280
D(TO(-2))	-0.046303	0.050424	-0.918272	0.3782
D(HR)	0.103568	0.294596	0.351560	0.7318
D(HR(-1))	-0.408866	0.408828	-1.000092	0.3388
D(HR(-2))	-0.496363	0.308486	-1.609031	0.1359
DLOG(LINFRA)	0.321237	0.769323	0.417558	0.6843
DLOG(LINFRA(-1))	1.091394	0.647838	1.684671	0.1202
D(@TREND())	0.332475	0.081862	4.061385	0.0019
CointEq(-1)	-1.234589	0.239637	-5.151921	0.0003
ECM =Cointeq = LPFDI - (0.1473*GDPGRC + 0.2700*GDPGRP + 0.1224*TO + 1.2332*HR -0.9385*LINFRA + 1.9910 + 0.2693*@TREND)				
R-squared= .98 Adjusted R-Squared = 0.95 F-statistics= 30.76 (0.000001)				
SER=0.296 RSS=0.966 DW-statistics= 2.082936				
Akalike Info Criterion=0.651 Schwarz Criterion = 1.612				

Source: Authors' calculation

Table 4: Short Run Estimates of ARDL Model 2

ARDL (1, 0, 2, 0, 1, 0)selected based on SBC. Dependent Variable is LogPFDI				
Regressor	**Coefficient**	**Std. Error**	**T-Statistics**	**Probability**

DLOG(CFDI)	0.440700	0.165006	2.670804	0.0140
D(GDPGRP)	0.033280	0.037296	0.892312	0.3819
D(GDPGRP(-1))	-0.154091	0.043289	-3.559628	0.0018
D(TO)	0.019642	0.039994	0.491107	0.6282
D(EDUEXP)	0.138105	0.241532	0.571789	0.5733
DLOG(DEVE)	-0.021759	0.347828	-0.062558	0.9507
D(@TREND())	0.044797	0.059828	0.748764	0.4619
CointEq(-1)	-0.649409	0.125039	-5.193636	0.0000
Cointeq = LOG(PFDI) - (0.6786*LOG(CFDI) + 0.4276*GDPGRP + 0.0302*TO + 0.8368*EDUEXP -0.0335*LOG(DEVE) -6.5514 + 0.0690*@TREND)				
R-squared= 0.96 Adjusted R-Squared = 0.94 F-statistics= 55.59608 (0.000000)				
SER=0.320497RSS=2.259799DW-statistics= 2.669884				
Akalike Info Criterion=0.823312Schwarz Criterion = 1.322148				

Source: Authors' calculation

Table 5: Short Run Estimates of ARDL Model 3

ARDL(1, 2, 2, 0, 1, 1)selected based on SBC. Dependent Variable is LogPFDI				
Regressor	**Coefficient**	**Std. Error**	**T-Statistics**	**Probability**
D(GDPGRP)	-0.010004	0.045054	-0.222041	0.8267
D(GDPGRP(-1))	-0.114936	0.043606	-2.635774	0.0163
D(TO)	0.075235	0.044018	1.709210	0.1037
D(TO(-1))	-0.058093	0.039598	-1.467080	0.1587
D(EDUEXP)	0.342441	0.228550	1.498319	0.1505
DLOG(DEVE)	0.036522	0.459599	0.079465	0.9375
D(DUMC)	-0.431892	0.433020	-0.997394	0.3311
D(@TREND())	0.199670	0.055093	3.624222	0.0018
CointEq(-1)	-0.712364	0.148670	-4.791594	0.0001
Cointeq = LOG(PFDI) - (0.2466*GDPGRP + 0.3540*TO + 0.4807*EDUEXP - 1.3862*LOG(DEVE) + 1.1547*DUMC + 2.2319 + 0.2803*@TREND)				
R-squared= 0.96 Adjusted R-Squared = 0.94 F-statistics= 42.87780 (0.000000)				
SER=0.320927RSS=1.956890 DW-statistics= 2.395489				
Akalike Info Criterion=0.861211Schwarz Criterion = 1.496093				

Source: Authors' calculation

The equilibrium correction coefficients estimated have the required sign (-1.234589), (-0.649409) and (-0.712364) for Model 1, 2 & 3 respectively and are highly significant. It

demonstrates a fairly high speed of adjustment to equilibriumafter a shock. The regression for the underlying ARDL models fits well at R^2=98%, R^2=96% and R^2=96%.

The Long-Run estimates of all three Models alongwith results of diagnostics tests are reported in Table (6) .The estimated coefficients of the long-run relationship show that GDP growth rate of China which is proxied for market size of China show significant positive effect on FDI inflows in Pakistan.The estimation results are reported in column (2) of Table (6). This finding is in line with Choong& Lam (2010). China's emergence has a leading economy does not crowd out FDI inflows in Pakistan.The market size of Pakistan is also a significant and positive determinant of FDI inflows in Pakistan. There are several studies which have confirmed the importance of the size of the host country market and its growth rate in attracting FDI inflows [(Chakrabarti, 2001, Choong and Lam (2010), Anwar and Nguyen (2010)]. Foreign investors consider the size of the foreign market among other variables as it results in economies of scales, more market to penetrate, reduction in tariff and much more incentives (Mohammadvandnahidi et al. 2012). Higher GDP growth rate attracts foreign investors as it signals a larger potential demand for their products. Aqeel&Nishat (2004), Awan, Khan and Khair-uz-Zaman(2011),Khan and Nawaz (2010) observed market size, along with other determinants that have positive effect on FDI inflows in case of Pakistan. Market size considers being 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).

In Model 2, the log of FDI inflows to China shows a positive and highly significant at 1% significance level. The estimation results are reported in column (3) of Table (6). The finding is in line with Chantasasavat et al. (2004), Mercereau (2005), Zhou and Lall (2005) and Resmini&Siedschlag (2013). FDI inflows in China do not crowd out FDI inflows in Pakistan.

In Model 3, a dichotomous dummy variable[18]for 'Chinese Effect' has been used in the model replacing market size of China and FDI inflows in China (Model 1 & Model 2). In Pakistan it

[18]The use of dichotomous dummy variable is common in empirical literature. It is used for trade liberalization (Aqeel and Nishat, 2004), political risk (Azam&Kahttak, 2009), type of government (Yasmin,Jehan, Chaudhary, 2006).

takes the value of 1 from 1998onwards and zero for the previous period. Pakistan has been receiving Chinese FDI since 1998. The computed *F*-statisticsvalue 5.041846 is greater than the lower critical bound value of 3.12at the 5% significance level (Table 2). It shows the existence of a steady-state long-run relationship among variables.The estimation results are reported in column (4) of Table (6). Significant positive coefficient on 'dummy'corroborates the previous findings that China's investment in Pakistan is not crowding out investment from others countries in Pakistan.

On the question of location determinants of FDI in Pakistan, trade openness has a positive and significant relationship with FDI inflows for Model 1&3. But it shows insignificant with the inclusion of FDI inflows in China (Model 2). It is generally believed that trade openness reduces the trade cost which ultimately increases the profitability of the firms especially those MNCs which are engaged with export-oriented investments. It attracts efficiency seeking FDI because it provides incentives to foreign firms to import cheap raw material or intermediate goods to export to other countries as finished products (Goldar andBanga, 2007). The greater the degree of openness, thelower the degree of restrictions imposed by the host location on international trade and therefore the lower the cost of doing business in the host country. This is consistent with the observation that international investments and trades are more prevalent in countries with open economy. High degree of openness leads to more economic relations of the host countrywith other countries (Nahidi, 2010). This positive relationship is endorsed by other empirical studies (Chakrabarti, 2001; Ismail, 2009; BekhetandAl-Smadi, 2015).

Another location determinant, Human Capital (HC) shows positive and significant relationship with FDI inflows for Model 1&2. But it shows insignificant with the inclusion of *Dummy* of Chinese FDI in Pakistan. (Model 3).Investing in human capital development results into greater amounts of FDI inflows.The countries with more human capital are likely to grow faster and the increased growth rate would, in turn, motivate foreign investors to invest. Our positive relationship is in line with by other empirical studies (ShahAbadi & Mahmoodi, 2006; Mohammadvandnahidi et al. 2012).

Lastly, it is proven that quality infrastructure tends to attract greater FDI inflows. Countries with good infrastructures are therefore expected to attract more FDI [(ShahAbadi, 2006; Mohammadvandnahidi et al., 2012)]. The availability of adequate and quality infrastructure minimizes the cost of doing business by providing cost efficient transportation networks. A reliable and robust infrastructural system in form of transportation, information and communication is crucial for the movement of inputs (Yin, Ye and Xu, 2014). Foreign investors prefer locations for investment which have a well-developed network of air-ports, roads, water supply, uninterrupted power supply, telephones, and internet access. Poor infrastructures increase the cost of doing business and reduce therate of return on investment. Contrary to studies, infrastructure (LINFRA) shows negative and significant relationship with FDI inflows for Model 1&3. But it shows insignificant with the inclusion of FDI in China (Model 2).The paper uses public sector development expenditures as proxy for infrastructure. The negative sign may be justified as major share of budgetary expenditures consume on non-development expenditure.

The robustness of the model has been definite by the diagnostic tests such as Breusch- Godfrey serial correlation LM test, ARCH test, Jacque-Bera normality test and Ramsey RESET specification test. All the tests results show that the modelshave the aspiration econometric properties; the model's residuals are serially uncorrelated, normally distributed and homoskedastic. Hence, the results reported are valid for reliable interpretation (Table 6).

We further tested the stability of the selected ARDL models by using cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares residuals (CUSUMSQ), stability technique given by Brown et al. (1975). Figures2, 3, 4show the CUSUM and CUSUMSQ. Since both plots remain within 5% critical bonds at 5% level of significance, we conclude that the models are structurally stable.

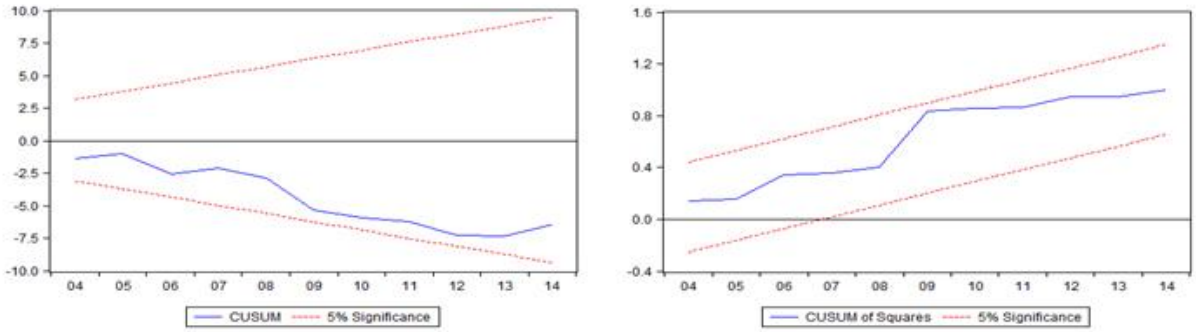


Figure 2: Graphs of CUSUM and CUSMSQ for Stability of Parameters of Model 1

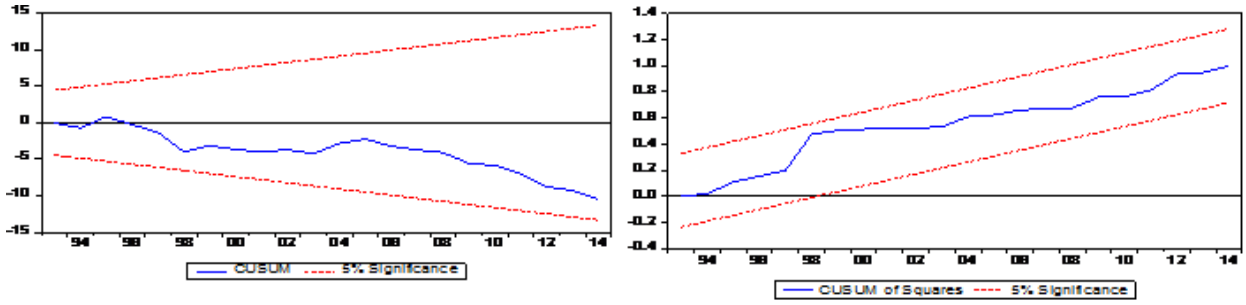


Figure 3: Graphs of CUSUM and CUSMSQ for Stability of Parameters of Model 2

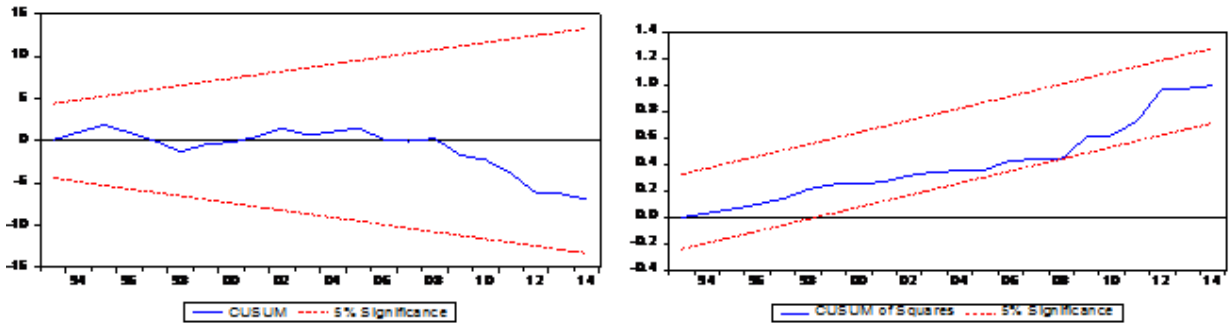


Figure 4: Graphs of CUSUM and CUSMSQ for Stability of Parameters of Model 3

Table 6: Estimated Long Run Coefficient using the ARDL (Dependent Variable: LogPFDI)

Variables	Model 1 Inclusion of Market Size of China	Model 2 Inclusion of FDI in China	Model 3 Inclusion of Dummy of Chinese FDI in Pakistan
GDPGRC	**0.147252(0.032168)***		
GDPGRP	0.270018(0.076743)*	0.427576(0.100782)*	0.246569(0.095647)*
TO	0.122437(0.047238)**	0.030245(0.061323)	0.353975(0.075894)*
HC	1.233168(0.382012)*	0.836764(0.385048)**	0.480711(0.327427)
LINFRA	-0.938527(0.325619)*	-0.033506(0.536705)	-1.386184(0.516063)*
Dummy of Chinese FDI in Pakistan			**1.154715(0.659640)*** **
Log of FDI in China		**0.678617(0.240918)***	
Jarque-Bera Normality Test	1.82(0.40)	1.63(0.441990)	1.03(0.597)
Breusch-Godfrey Serial Correlation LM Test	0.328042(0.7286)	1.700374(0.2008)	0.915435(0.4192)
Heteroskedasticity Test: ARCH	0.544736(0.4664)	0.255042(0.6172)	0.311094(0.5811)
Ramsey RESET Test	1.673806(0.2410)	0.153676(0.6990)	0.272469(0.6080)

Note: *, ** and *** indicate leve1 of significance at 1%, 5% and 10% respectively. Standard errors are reported in parentheses.

5. Conclusions

The study investigates the impact of China using three different measures (market size, FDI inflow and Chinese FDI in Pakistan) on FDI flows to Pakistan using annual data from 1980 to 2014.It aims to contribute to the debate on whether China crowd out FDI flows to Pakistan. To find the answer, the ARDL econometric approach has been used to examine the long run and short run relationships. The locationalfactors, including market size, human capital, openness and infrastructure are all important determinants of FDI inflows.Once these factors are controlled for, China does not appear to crowd out inwardFDI in Pakistan.So China is not an adversary for investment in Pakistan. The findings show that China's market size, its inward FDI and direct investment in Pakistan all have positive and significant impact on the inflows of FDI in Pakistan. The emergence of China as a global economic player seems to be good omen for Pakistan. The policy makers need to reap the fruits from China's thrust for regional integration and globalization.

The market sizeof Pakistan has positive and statistically significant impact on FDI inflow to Pakistan and it supports the argument that foreign investors tend to be more attracted to the country with a higher growth rate of gross domestic product (GDP) because it indicates a larger potential demand for their products. In addition, the results also demonstrate that trade openness showing the liberalization policy of Pakistan has a positive and statistically significant effect on FDI inflows which supports the hypothesis that FDI can be attracted to a country with more liberalized economic reforms. The results also show that human capital has significant positive while infrastructure has negative and significant effect on FDI inflows.Policymakers concerned about attracting foreign investors into Pakistan should focus their efforts on the fundamental determinants of FDI. The mega investment in the form of China–Pakistan Economic Corridor (CPEC) would yield quality infrastructure and would create further investmentopportunitiesfor investors other than China.

Lastly, it is suggested that policies that facilitate closer economic cooperation (or integration) between Pakistan and China, greater openness, greater stock of human capital and improvements in the infrastructures will no doubt lead to higher FDI inflows to Pakistan.

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Annexure A: **Independent variables, their expected signs and data sources**

Variables	**Symbol**	**Proxy /Measure**	**Source**	**Expected signs**
Foreign Direct Investment Inflows	LFDI	Net FDI inflows in Million US$	UNCTAD	
Foreign Direct Investment Inflows	LFDIC	Net FDI inflows in Million US$	UNCTAD	(+/-)
Market Size of Pakistan	GDPGRP	GDP Growth rate of Pakistan	World Development Indicators	(+)
Market Size of China	GDPGRC	GDP Growth rate of China	World Development Indicators	(+/-)
Trade Openness	TO	Share of exports and imports in GDP of Pakistan	World Development Indicators	(+)
Human Capital Development	HC	Education Expenditure as share of GDP	World Development Indicators	(+)
Infrastructure	LINFR	Public Sector Development Expenditures	Economic Survey of Pakistan (various issues)	(+)

Note: + means positive and+/- means mixed effect

-0-0-0-0-0-0-