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Openness and FDI in Pakistan: What Does the Data Tell Us?

Muhammad Zakaria, Hasnain A. Naqvi and Bashir A. Fida

COMSATS Institute of Information Technology, Islamabad, Pakistan

Abstract: The paper studies the impact of trade openness on foreign direct investment (FDI) in Pakistan using quarterly data for the period 1972 to 2010. The study reveals a significant positive effect of trade openness on FDI. The results are robust under alternative trade openness measures and different model specifications. The results indicate that the factors that drive foreign investment have a differential impact on FDI flows to Pakistan. Specifically, human and physical capitals, capital return, infrastructure development, terms of trade and urbanization promote FDI in Pakistan. Foreign debt and inflation are to deteriorate foreign investment in the country. Another important finding is that the effect of trade openness on FDI has been augmented after the inception of flexible exchange rate system in Pakistan. However, this result is not robust to alternative equation specifications.

Key words: Trade Openness · FDI · Pakistan

INTRODUCTION

Economic theory suggests that Foreign Direct Investment (FDI)[1] is an engine of economic growth in developing countries. Many of the East Asian tigers such as China, South Korea, Malaysia and Singapore benefited from investment abroad. The reason is that FDI inflows stimulate capital accumulation by adding to domestic savings and raising the recipient economy's efficiency, for instance, through improving resource allocation, job creation, increasing industrialization, instilling competition, scale economies, imitation, technology spillovers, improving human capital, deepening domestic financial markets and reducing local capital costs [1-3]. There are a number of reasons for firms to invest abroad. According to Dunning (1993), rent seeking, market seeking, efficiency seeking and strategic-asset are the most important factors of motivation for foreign investment. The rent-seeking motive involves foreign firms seeking cheaper factors of production and inputs of production such as primary products [4]. Market seeking FDI ideally involves foreign firms exporting or opening new markets in host countries in order to boost their sales. Efficiency seeking firms aim at using a few countries to serve larger market. The key factors in this category of FDI motive are location, resource endowments and government regulation. The last motive, strategic-asset, is more concerned with maintaining the foreign firms' international position and competitiveness. FDI inflow to developing countries is mainly vertical in nature because their markets are not matured i.e. they do not have well established institutions. The vertical FDI takes place when a firm relocates only a part of its production process but not the whole production [5]. Vertical FDI is usually driven by rent or efficiency seeking motives. FDI inflow to developed countries is usually horizontal investments because in these countries real income and thus domestic purchasing power is relatively high [5]. The horizontal investment replicates the complete production process of the home country in a foreign country. The horizontal FDI is driven by market seeking motives.

Many factors like political ideology, macro economic factors and development strategy of a country affect the FDI of the host country [6]. On the desegregated level,

[1] Foreign investment generally takes three forms; (a) Foreign Direct Investment (FDI); (b) Foreign Indirect Investment; and (c) Official Loans. FDI is an investment made to acquire lasting management interest (10 percent or more) in enterprises operating outside of the economy of the investor. It includes equity capital, reinvestment of earnings and other long and short-term capital as shown in the balance of payments. It excludes investment through purchase of shares. Foreign indirect investment includes commercial bank lending and bond finance. Official loans are loans from bilateral organizations mainly from governments of developed countries and multilateral organizations like the World Bank and the IMF.

Corresponding Author: Bashir Ahmad Fida, Modern College of Business & Finance, Muscat, Oman.

FDI depends on size and growth potential of a national economy, natural resource endowments and quality of workforce, access to international markets, institutions, geographical location, quality of physical, financial and technological infrastructure and openness to international trade [7, 8]. In fact, [9,10] recently acknowledge that export platforms may be a new motive for FDI. For instance, it may be a restrictive import-substitution strategy, which draws investment geared for the domestic market. Alternatively, it may be a less restrictive export orientation strategy that promotes investment for exports. There is no consensus among researchers regarding the effects of openness to international trade on FDI. Proponents argue that openness positively affects FDI. The intuition is that trade openness reduces the trade costs which will lead to higher probability of international vertical integration of multinational firms engaged in export-oriented investments. This will attract efficiency seeking and cost reducing FDI since it implies that foreign firms can now import cheaper intermediate goods which they may produce in some other country and export the final product to their home country or a third country [11]. According to Kumar (2002), markets that are more open are likely to create significant economic welfare gains through more efficient allocation of resources [12]. This economically conducive environment is likely to be a magnet for foreign businesses, causing FDI inflows to increase. This conclusion is also supported by [13-15] and others.

Opponents argue that trade openness negatively influences FDI of the host country especially when investments are market-seeking [16], The reason stems from the 'tariff jumping' hypothesis, which argues that closed markets are more attractive to FDI since profits of local producers will be enhanced by limitations on competitive imports [17]. In turn, some researchers argue that the effect of trade openness on FDI is not clear as it depends on the underlying assumptions [18-20]. Further, the effects of trade openness on FDI depends on the nature of foreign investment (resource/ market/ efficiency seeking) and nature of trade, as trade associated with cross-border vertical integration may boost FDI by providing incentives of cost reduction, while intra-industry trade may discourage FDI that seeks economies of scale [11]. The effect of openness on FDI also depends on host and home countries political relationships, proximity, bilateral and multilateral trade and investment agreements [21] and some other factors such as foreign exchange rate stability, adequate infrastructure, domestic financial liberalization, good governance and local skills availability.

Empirically, some studies have found significant positive effects of trade openness on FDI [3, 22-25]. In turn, some studies like [37] argues that openness weakly determines FDI. Similarly, according to Bende-Nabende (2002) openness affects FDI in the long run only and its effects varies widely across countries [26]. Thus, like theoretical literature, empirical literature provides not only heterogeneous but often conflicting results. These differences can be attributed mainly to the theoretical underpinnings, the models' specification, data and estimation techniques, the degree of disaggregation of trade and FDI flows, the choice and measurement of the selected variables and the effort which was made to test for causality. This suggests the importance of further empirical investigations in assessing true FDI-trade relationships.

Analyzing FDI flows to Pakistan is important for several reasons. First, with regards to FDI, Pakistan remains under-researched. To the best of my knowledge, there is no rigorous empirical study on trade-FDI linkages that focuses exclusively on Pakistan.[2] Second, to the extent that FDI contributes to growth, it is important to know the factors that affect FDI flows to the slowest growth region, Pakistan. Third, to the extent that FDI to Pakistan is driven by different factors, policies that work in East Asia and Latin America may not work for Pakistan. Indeed, a number of Pakistani policy makers believe that the lessons from other countries do not apply to Pakistan because the circumstances differ so much. Therefore my analysis will shed light on ways via which policy makers in Pakistan can attract FDI.

The rest of the paper is organized as follows. Section 2 provides a brief history of trade openness and FDI in Pakistan. Section 3 discusses the theoretical literature and presents a model on the possible links between trade openness and FDI. Section 4 presents data overview and estimation of the model along with its interpretation. Section 5 provides sensitivity analysis. Section 6 concludes the paper with further interpretive remarks and by outlining several avenues for future research.

Trade Openness and Fdi: A Brief History

Trade Openness: At the time of independence in 1947, Pakistan implemented import substituting industrialization

[2]The only exception is Hakro and Ghumro (2007), which has found a significant positive impact of openness on FDI in Pakistan. The main limitation of the study is that it does not tackle the potential endogeneity problem among variables

policy to protect its nascent industrial units from international competition. The government facing the foreign exchange shortages after the war with India in 1965 further implemented different kinds of controls on imports. In December 1971, after the secession of East Pakistan (now Bangladesh) from West Pakistan (now Pakistan), government initiated the trade liberalization polices. The most important policies were the massive devaluation of domestic currency, the elimination of the export bonus scheme and the end of restrictive licensing. However, in late 1970s, when Pakistan faced an acute shortage of foreign exchange after the oil shock, imports were again restricted with new and more restrictive nontariff barriers. Under the auspices of the World Bank and the IMF, in late 1980s government started a comprehensive program of trade liberalization reforms. The most important initiatives were the reduction of tariffs on a number of raw materials, intermediate and capital goods, reduction in the number of banned items on restricted list, replacement of non-tariff barriers with tariffs and the establishment of Tariff Commission to make recommendations on fiscal anomalies and effective protection. The thrust of Pakistan's trade policies in the 21st century has been on greater openness through trade liberalization with minimal tariff and non-tariff barriers and the market based exchange rate system. Pakistan, like many other countries of the world, is in the process of implementing the provisions of the WTO guidelines and agreements.

Due to highly restrictive commercial policy that Pakistan followed, particularly in its first two and a half decades, trade intensity ratio, that is the ratio of total trade (export plus import) to GDP, remained very low due to low levels of exports and imports as Figure 1 indicates. In 1972 when Pak-rupee was devalued from Rs 4.76 to Rs 11.03 per US dollar and later revised it to Rs 9.90, the levels of exports increased and hence the share of total trade in GDP also increased. In 1973 when oil price shock occurred imports and hence trade decreased. However, after the mid-1980s when Pakistan opened up its economy for international trade, the share of total trade in GDP increased as h exports and imports surged mainly due to the reduction of maximum import tariff rates, along with rescinding of non-tariff barriers, elimination of the taxes on exports and the implementation of managed floating exchange rate system.

Foreign Direct Investment: At the time of independence and during 1950s and 1960s the private sector was the main vehicle for industrial investment in the country and

Fig. 1: Trade and FDI as Percentage of GDP (1972 - 2010)

the role of the public sector was restricted to only three industries; arms and ammunition; generation of hydroelectric power; and manufacturing of railway wagons, telephones, telegraph lines and wireless apparatus. Foreign investment was not allowed in the field of banking, insurance and commerce. Similarly, the services sector was also reserved for local investors only. During 1970s, nationalization policy was adopted. The status of the public sector as a catalyst and gap filler in the 1950s and 1960s changed to that of repository of the commanding heights of the economy. All foreign investment was, however, exempted from the purview of the nationalization. After the miserable performance of the industrial sector following the nationalization process of the 1970s, in 1980s, government decided to pursue a pattern of a mixed economy, with the private and public sector reinforcing each other. At the same time, Pakistan began to implement a more liberal foreign investment policy. Liberalization of exchange rate regime was an important initiative in this regard. Further, to encourage foreign investment in export-oriented industries, an Export Processing Zone (EPZ) was set up in Karachi. Similarly, a one-window facility was also established to overcome difficulties in setting up new industries.

During 1990s government started to apply the same rules and regulations to foreign investors as to domestic investors. The requirement for government approval of foreign investment was removed with the exception of a few industries (arms and ammunition, security printing, currency and mint, high explosives, radioactive substances and alcoholic beverages). A number of fiscal incentives, including various tax holidays to all industries were granted to investors, together with special custom duty and sales tax concessions. A large number of tariff and nontariff barriers were removed and the negative and prohibited list of imports was also reduced. An important achievement of this period was the initiation of privatization and deregulation of public industrial units. During 2000s government based its foreign investment

policies on the principle of privatization, deregulation, fiscal incentives and liberal remittance of profits and capital. The policy is based on promoting investment in sophisticated, high-tech and export-oriented industries while almost the entire economic activity in other fields, encompassing agriculture, services, infrastructure, social sectors, etc. have been thrown open for foreign investment with identical fiscal incentives and other facilities, including loan financing from local banks.

Despite liberalizing its formerly inward-looking investment regime, significant removal of obstacles to foreign investors and giving various incentives, Pakistan's performance in attracting foreign investment has been lackluster. As shown in Figure 1, foreign direct investment (as percentage of GDP) remained less than five percent through out the period. The trend also shows that the share of foreign investment in GDP is not continuously increasing. Despite the sharp increase in FDI inflows to Pakistan since 2001, it started to decline after 2008. Factors responsible for this decreasing trend in FDI include high corruption, weak governance, poor infrastructure, policy uncertainty, unskilled labor force, complicated labor laws, among others. Pakistan is also perceived as being inherently risky due to poor law and order situation. The cultural and social taboos and lack of welcome to foreign investors by government agencies and officials have also been a problem.

Analytical Framework: Casson (1990) emphasized that the theory of the FDI represents an intersection of three theories; [27] (a) the theory of international capital markets, which defines the financing and risk-sharing arrangements; (b) the theory of the firm, which describes the location advantages, management and input utilization; and (c) the trade theory, which explains the motives for sales in the world economy. Each theory provides different insights on the FDI flows. The determinants of the FDI are taken from these three theories.[3] Referring to the variables highlighted in the theoretical literature and the explicit relationship shown in the theoretical model of [29], we introduce the following nine variables as potential determinants of FDI in Pakistan.[4]

$$fdi_t = \gamma_0 + \gamma_1 openness_t + \gamma_2 hc_t + \gamma_3 k_t + \gamma_4 P_t + \gamma_5 CR_t + \gamma_6 infr_t + \gamma_7 fd_t + \gamma_8 tot_t + \gamma_9 urb_t + \xi_t \quad (1)$$

where the lowercase letters denote that the underlying variables are in natural log form and where $\xi_t \sim N(0,\sigma^2)$. Various variables are defined as follows:-

fdi_t	=	Foreign direct investment
$openness_t$	=	Trade openness
hc_t	=	Human capital
k_t	=	Physical capital
P_t	=	Domestic inflation rate
Cr_t	=	Capital returns
$infr_t$	=	Infrastructure development
fd_t	=	Foreign debt
tot_t	=	Terms of trade
urb_t	=	Urbanization
$\underline{\xi}_t$	=	White-noise error term

Each of these variables and the relevant theory that justifies its inclusion in the model are explained turn by turn.

Openness: As explained previously openness of the economy is an important variable in explaining the FDI movements. It is believed that a country with a greater degree of trade openness, which is more directed towards the external market, would also be more open to foreign capital. Therefore a positive effect of trade openness on FDI is hypothesized.

Human Capital: There is strong theoretical and empirical evidence of the positive influence of educated labor force on FDI [8,30,31]. Large investments in education and training raise the supply of skilled labor, which creates highly effective partnerships with foreign investors to import, use and then develop high technology. The higher the level of education, the higher is the potential for an investment decision and achievement of expected outcome.

Physical Capital: Physical capital or domestic investment can be complement (crowding-in effect) or substitute (crowding-out effect) for foreign investment. For developing countries like Pakistan, where uncertainty prevails, domestic investment is likely to complement foreign investment as if domestic investors invest in home country then foreign investors will be persuaded to invest

[3]For a thorough empirical survey on FDI determinants, see Bloningen (2005).

[4]The selection of variables is dictated in part by the availability of data.

in local country. In turn, if domestic investors are not keen to invest in home country, foreign investors will also feel reluctant to invest.

Inflation: One of the classic symptoms of loss of fiscal or monetary control is unbridled inflation. Therefore, it is used to measure the overall macroeconomic stability of the country. Since investors prefer to invest in more stable economies that reflect a lesser degree of uncertainty, high inflation is expected to have a negative effect on foreign direct investment [32, 33]. Further, inflation also negatively affects investors' yield in real terms, which discourages foreign investment. High inflation also discourages FDI for re-exportation since the relative costs of production in the host country rise. In contrast, falling price levels and the resulting contraction in economic activities might trigger a deflationary spiral and eventually bankrupt the host country's firms. This can induce local investors to sell off their interests in the host country's companies to foreign investors at low prices, thereby expanding the inflow of FDI.

Capital Returns: A straightforward incentive for foreign investors is the level of capital return in the host country. FDI will flow into a country offering a higher rate of return (domestic interest rate on profits/incomes of the foreign investors) in relative terms. This stands to reason, as a high return on capital is one of the consequential incentives for FDI.

Infrastructure Development: Quality of the available infrastructure that facilitates the production and distribution processes of goods and services will induce FDI inflows. Thus, the availability of good physical infrastructure increases the productivity of investments and therefore will induce FDI inflows [34, 35].

Foreign Debt: Foreign debt works as substitute for foreign investment in developing countries as it is another source of foreign capital inflows. If government is borrowing loans it will not be much interested in taking measures to attract FDI. Thus, indebtedness has negative impacts on FDI. Another reason is that potential foreign investors steer clear of countries with high debt, fearingboth macroeconomic instability as well as potential devaluation, which cuts the dollar value of any remitted profit [23].

Terms of Trade: A somewhat ignored variable that affects FDI is terms of trade. An improvement in host country's term of trade might attract FDI for two reasons. First, relatively declined imported goods prices in the host country render the foreign firms to import capital goods relatively cheap, thereby motivating the foreign investment. Second, in cases where the FDI is invested for re-export to markets at home or in third countries, relatively high exported prices of host country will raise the investors' wealth. In cases where FDI is invested for the sale in the host market, on the other hand, improvement in terms of trade may not enhance investment inflows.

Urbanization: Urbanization is expected to attract FDI because it leads to industrialization, which in turn captures FDI. Urbanization also provides skilled labor force and good quality infrastructure, which also boost FDI. Thus a positive effect of urbanization is contemplated on FDI.

Error Term: The error term represents the effects that are beyond the control of the country, such as shocks-related demand, wages, labor market conflicts, business cycle, international business situation as well as measurement error in the dependent variable and omitted explanatory variables. The error term is assumed to be independently and identically distributed with zero mean and constant variance.

Table 1 Provides the theoretically expected effects of explanatory variables on foreign direct investment.

Data, Estimation and Interpretation of the Results

Data Overview: Following the standard practice in literature, the dependent variable FDI is taken as ratio to nominal GDP.[5] Trade openness is defined as the ratio of sum of exports and imports to nominal GDP. Human capital is measured by the ratio of the corresponding segment of the population enrolled in secondary school.[6] To capture the effects of local investment

[5]We have used inward FDI, not net FDI. This may not be a problem for the poor developing countries like Pakistan that generally encounter inward FDI and where outward FDI is small and "disinvestment" of FDI is rare, except in the case of sudden political turmoil.

[6]Ideally one would decompose human capital into educational and health capital components. Health care expenditure or some rate of mortality or life expectancy is used to proxy health capital. Year of schooling is often used to proxy educational capital. To correct for input factor differences, it is desirable to use a quality-adjustemeasure of human capital, if available. Due to the high presence of missing values we have not been able to test any of these variables in the larger sample as determinants of FDI.

Table 1: FDI Determinants in Pakistan

Variables	Type of FDI	Expected Effect
Openness	Rent/efficiency seeking	Positive
Human capital	Efficiency-seeking /strategic-asset	Positive
Physical capital	Rent-seeking /strategic-asset	Positive
Inflation	Efficiency-seeking	Negative
Capital returns	Rent seeking	Positive
Infrastructure	Rent-seeking /strategic-asset	Positive
Foreign debt		Negative
Terms of trade		positive
Urbanization		Positive

(physical capital) on foreign investment we have used the ratio of domestic investment to nominal GDP. Inflation is measured as the growth rate of CPI. Unlike in other studies where the inverse of the real GDP per capita is used to measure the return on capital, we have defined capital return as relative interest rate that is domestic minus foreign (USA) interest rate. Infrastructure is proxied by share of paved roads in total roads. Foreign debt variable is constructed by dividing total foreign debt with nominal GDP. Terms of trade is defined as the relative price of exportable to importable. Urbanization is measured by share of urban population in total population. Quarterly time series data is collected for the period 1972Q1 to 2010Q2. The data is taken from International Financial Statistics (IFS), World Development Indicators (WDI) and various issues of Pakistan Economic Surveys and Pakistan Demographic Surveys.

Table 2 contains summary statistics for the variables used in this study, which may help in the interpretation of the coefficient estimates by providing the scale of the relevant variables. Table 3 presents the correlation matrix for the variables. Column (1) of Table 3 correlates foreign direct investment with all independent variables. The value of correlation coefficient of openness variable is 0.39, which indicates that foreign direct investment is positively correlated with trade openness. Figure 1 plots the simple regression between foreign direct investment and trade openness. The figure displays an apparent positive relationship between FDI and trade openness for Pakistan. The simple regression analysis, being essentially bivariate and simplistic, calls for exploration in a more rigorous framework. This is what the next section of the paper attempts to do.

Estimation and Interpretation of Results: To estimate our model we cannot apply least square method as the potential endogeneity of the variables can render the least square estimators biased and inconsistent.[7] Therefore, we have applied Generalized Method of Moments (GMM) estimation technique of [36-38] to estimate our model. The GMM estimators control for the potential endogeneity of the lagged dependent variable and for the potential endogeneity of other explanatory variables in the model [39]. Lagged values of the variables are used as instruments.[8]

Results of FDI equation (1) are reported in Table 4. The t-statistics on openness coefficient (3.582) indicates that there is a statistically significant positive relationship between trade openness and foreign direct investment in Pakistan.[9] The coefficient for the openness stood at 0.702, which means that a one-standard-deviation increase in openness (5.03) leads to about 3.53 percent increase in FDI to GDP ratio. In other words, one percent increase in openness will increase FDI in Pakistan by 0.702 percent. The fraction of the variation in FDI due to openness, as explained by column (2), is critical. The remaining columns of the table investigate the robustness of these results to some simple changes in specification. These changes alter the results only slightly. Thus, the estimated impact of trade openness on FDI is robust to alternative equation specifications with reasonable values of overall R-squares and adjusted R-squares. It seems reasonable to argue that reduction in tariffs and removal of quantitative restrictions on imports may have made conditions favorable for rent and efficiency seeking FDI and thus encouraged foreign investors to invest in Pakistan. This finding is consistent with the notion that trade openness boots FDI in developing countries. The results show that openness is autonomy for policymakers to enhance FDI in Pakistan. In estimations autoregressive (AR) process has been applied to remove autocorrelation problem from the models. The values of Durbin-Watson

[7]See Asiedu and Esfahani (2001) for a discussion on endogenizing FDI and trade policies.

[8]Using ADF unit root test, stationarity properties of the variables are checked. ADF test results show that all variables are not of the same order of integration. Therefore, bounds testing approach (ARDL) is employed to ascertain the existence of long run cointegrating relationship among the variables. The results of ARDL test show that there exists a long run cointegrating relationship among the variables of FDI equation. The results of both unit root and ARDL tests are not reported here to conserve space. However, they are available from the author on request.

[9]To check the non-linear effect of openness on FDI, a squared term of openness was included in the FDI equation. However, its effect on FDI turned out to be statistically insignificant and hence excluded from the estimation.

Table 2: Summary Statistics for the Variables (1972Q1 - 2010Q2)1

	Mean	Median	Std. Dev.	Minimum	Maximum	Count
FDI (% of GDP)	0.92	0.59	1.11	0.01	6.27	154
Trade Openness (%)	34.03	34.07	5.03	16.61	52.80	154
Human Capital (%)	29.48	29.66	5.61	18.98	41.49	154
Physical Capital (% of GDP)	18.01	18.29	2.56	6.06	22.82	154
Inflation Rate (%)	2.30	1.81	2.11	-1.15	15.26	153
Capital Returns (%)	2.31	2.08	4.33	-8.40	14.37	154
Infrastructure (%)	51.00	52.09	10.25	34.60	69.28	154
Foreign Debt (% of GDP)	228.35	227.37	53.75	128.70	369.37	154
Terms of Trade	1.50	1.52	0.37	0.72	2.58	154
Urbanization Rate (%)	29.33	28.81	3.24	23.48	38.82	154

Table 3: Correlation Table for the Variables Included in the Regression Model (1972Q1 - 2010Q2)

	Foreign Direct Investment	Openness	Human Capital	Physical Capital	Inflation Rate	Interest Rate	Relative Infrastructure	Foreign Debt	Terms of Trade	Urbanization
Foreign Direct Investment	1									
Openness	0.39	1								
Human Capital	0.13	0.06	1							
Physical Capital	0.49	0.28	-0.08	1						
Inflation Rate	-0.07	0.26	0.04	-0.04	1					
Capital Returns	0.42	0.22	-0.13	0.29	0.01	1				
Infrastructure	0.69	0.35	-0.05	0.41	-0.12	0.56	1			
Foreign Debt	-0.55	-0.12	0.15	-0.39	0.25	-0.28	-0.72	1		
Terms of Trade	0.63	-0.34	0.01	-0.48	0.06	-0.49	-0.80	0.68	1	
Urbanization	0.65	0.39	-0.08	0.47	-0.11	0.60	0.97	-0.76	-0.80	1

Table 4: GMM Estimates of the Relationship between FDI and Openness (1972Q1 - 2010Q2)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Intercept	-1.390	5.423	-1.308	-2.686	-1.027	-2.141	0.280	0.578	-1.263	5.924	-3.501	-1.204	0.435	2.090
	(-3.434)*	(2.348)*	(-7.303)*	(-1.437)	(-4.433)*	(-6.865)*	(0.246)	(0.376)	(-6.339)*	(2.213)*	(-1.834)**	(-4.585)*	(0.480)	(5.770)*
Openness	0.702	0.824	-0.304	0.487	0.485	0.606	0.642	0.208	-0.251	0.149	0.435	-0.609	0.843	0.943
	(3.582)*	(4.564)*	(-1.334)	(2.913)*	(2.316)*	(2.930)*	(2.596)*	(2.106)*	(-1.066)	(2.451)*	(2.773)*	(-1.338)	(3.834)*	(5.515)*
Human capital	0.693		0.694								0.735			
	(2.619)*		(1.065)								(2.459)*			
Physical capital	-0.491			2.722							2.242			
	(-0.741)			(2.399)*							(1.944)**			
Inflation	-5.481				-2.377							-0.605		
	(-0.780)				(-2.715)*							(-1.129)		
Capital returns	0.093					0.099						0.213		
	(2.222)*					(2.215)*						(4.250)*		
Infrastructure	1.422						0.899						1.442	
	(5.908)*						(6.504)*						(2.663)*	
Foreign debt	-0.634							-0.679					-0.270	
	(-3.151)*							(-5.536)*						(-0.256)
Terms of trade	1.624								-0.052					0.981
	(2.454)*								(-0.988)					(3.036)*
Urbanization	0.990									0.334				0.821
	(3.630)*									(3.598)*				(5.894)*
AR(1)	0.284	0.497	0.749	0.766	0.863	0.745	0.333	0.406	0.777	0.438	0.760	0.660	0.380	0.111
	(3.935)*	(6.593)*	(2.562)*	(2.084)*	(2.281)*	(3.322)*	(2.778)*	(6.164)*	(8.001)*	(3.587)*	(3.029)*	(8.450)*	(3.168)*	(1.842)**
R^2	0.500	0.136	0.564	0.558	0.394	0.528	0.672	0.515	0.372	0.622	0.564	0.383	0.660	0.522
Adjusted R^2	0.464	0.124	0.556	0.549	0.382	0.519	0.665	0.505	0.359	0.615	0.552	0.366	0.651	0.509
Std. Er. of reg.	0.880	1.123	0.802	0.808	0.945	0.834	0.696	0.845	0.961	0.745	0.805	0.958	0.711	0.842
DW statistics	2.020	2.092	2.406	2.493	2.606	2.433	2.171	1.775	2.582	2.197	2.471	2.033	2.245	1.741

Note: Values in parentheses denote underlying student-*t* values. The *t* statistics significant at 5 % and 10 % levels of significance are indicated by * and ** respectively.

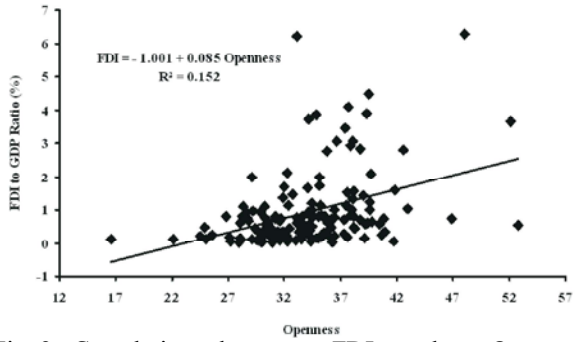

Fig. 2: Correlation between FDI and Openness (1972Q1 - 2010Q2)

(DW) statistics are reasonably close to the desired value of two, indicating the absence of autocorrelation problem.

Other explanatory variables affect FDI in theoretically expected directions. Human capital has a significant positive effect on FDI, which means that availability of skilled manpower would improve environment for foreign investment in the country. Significant positive coefficient on physical capital (domestic investment) indicates that an increase in the domestic investment level will increase foreign investment. This shows that domestic investment works as complementary role for foreign investment. Inflation, a proxy measure for macroeconomic instability, is found to have significant negative influence on FDI. However, this result is not robust to alternative equation specifications. The coefficient on capital return variable is positive and statistically highly significant. This is a strong indication that the capital return plays an important role in attracting foreign investment in Pakistan. Indeed, countries with the lowest GDPs can be expected to have the thinnest stock of capital and the smallest capital-labor ratio, hence the highest rate of return on capital. This stands to reason, as a high return on capital is one of the consequential incentives for FDI. In this scenario, foreign investments use Pakistan as a production base and export their products rather than targeting the Pakistani market itself (the level of GDP). However, if the present risky environment continues in Pakistan both in terms of law and order and policy reversal risk, higher returns may not induce more foreign investments in future. The reason is that the risk-adjusted return may be low, too low that it may deter foreign investment.

Consistent with the previous findings good quality infrastructure development has a significant positive influence on foreign investment. In turn, foreign debt has a significant negative effect on foreign investment, which stipulates that external debt works as substitute for foreign investment in Pakistan. If government is getting foreign capital through foreign debt, it will not pay much attention to boost FDI in the country. In accordance with the theory, terms of trade has a significant positive effect on FDI in Pakistan. Results with respect to terms of trade imply that an improvement in terms of trade invites an inflow of FDI as increased relative export prices will increases wealth of the foreign investors and relatively decreased import prices will decrease the cost of production. The incentives from improved terms of trade are particularly important for firms which use the host country as a production base and export the products to markets at home (origin) or in third countries. Finally, the significant positive coefficient on urbanization indicates that FDI increases with the increase in urbanization rate. This finding is consistent with the previous results in literature that greater percentage of urban population leads to environment conducive for investment.

Sensitivity Analysis

Shift in Exchange Rate Regime: An important change occurred in Pakistan's economy in early eighties when Pakistan adopted the flexible exchange rate system in 1982. It is believed that shift from fixed to flexible exchange rate system has boosted the trade openness process which in turn has affected the FDI to a considerable extent. To check this hypothesis we have introduced an interaction term 'Openness*Exchange rate system' in the model. The variable 'exchange rate system' takes the value 1 from 1982 onwards and zero for the previous period. Column (1) of Table 5 provides the estimated results. The results support the previous hypothesis that trade openness after adopting flexible exchange rate system has increased the FDI in Pakistan as the coefficient of the interaction term is positive and is statistically significant. The value of the coefficient indicates that trade openness after shift from fixed to flexible exchange rate will increase FDI by 0.159 percent. This result, however, is not robust with alternative equation specifications.

Alternative Trade Openness Measure: An important issue while examining the effect of trade openness on FDI is the absence of any suitable measure of trade openness. As a result, different researchers have used different openness measures to examine the effect of openness on FDI. Although trade intensity ratio (i.e. trade to GDP ratio) is widely used as a proxy measure for trade openness,

binary variables are also used to measure trade openness. One important binary measure of trade openness which is commonly used in recent literature is [40] dichotomous variable.[10] This variable takes the value of 1 if an economy is open and zero otherwise. In Pakistan it takes the value of 1 from 2001 onwards and zero for the previous period. To verify our results, we have used this binary variable in our estimation instead of trade intensity ratio. The results are reported in column (6) of Table 5. Significant positive coefficient on 'dummy' corroborates our previous findings that trade openness has attracted FDI in Pakistan. This result is also robust with alternative model specifications. Not only the remaining variables have maintained their sings but their statistical significance have also increased.

CONCLUSION

The paper empirically examines the impact of trade openness on FDI in Pakistan using quarterly data for the period 1972 to 2010. The estimated results support many of the findings of previous research in this area. In particular, trade openness has a significant positive impact on FDI inflows. This result is consistent under alternative model specifications and trade openness measures. It suggests the presence of large benefits associated with reducing restrictions to trade in terms of FDI. Our results corroborate the previous findings that, in emerging economies, trade and FDI are mainly complement and not substitute, which weakens the tariff-jumping argument for FDI going to these countries[11] This complementarity between trade and FDI also validates the concept that most of the FDI going to emerging countries is vertical i.e. the parent firm either supplying inputs to its foreign affiliate or exporting its output. Other factors also affect the FDI inflows in the theoretically expected directions. Specifically, human and physical capitals, capital returns, infrastructure development, terms of trade and urbanization promote FDI in Pakistan. Macroeconomic instability (proxied by inflation rate) affects FDI negatively and being highly indebted is a significant deterrent to FDI. Another important finding is that the effect of trade openness on FDI has been augmented after the inception of flexible exchange rate system in Pakistan.

The results have some important policy implications. First, to enhance FDI inflows, Pakistan needs to introduce credible trade reforms to liberalize its trade further. Second, good infrastructure is important for non-natural resource based investments. Hence Pakistan needs to improve its infrastructure in order to attract non-natural resource based investments. Thirdly, government needs to remove macroeconomic instability/uncertainty in the country. Fourthly, Pakistan needs to enhance FDI in export oriented industries, which will resolve the problem of trade imbalance. Finally, Pakistan needs to improve law and order situation to attract foreign investment. One of the issues not discussed in this paper is the effect of efficiency of the institutions on FDI. There is also need to explore the effects of capital account openness on FDI. Further, there is need to carry out research at the detailed industry or even firm level, given that the FDI-trade linkage can be industry and even firm specific. All these issues are left for future research.

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[10]Wacziarg and Welch (2003) have updated this index.

[11]The tariff-jumping FDI is bound to become even less relevant as many developing countries are in the process of liberalizing their trade regime.

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