

## Foreign Direct Investment and Trade Components in Context of Pakistan

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### Abstract

Objective of this paper was to evaluate the impact of foreign direct investment (FDI) on trade components (exports and imports) of Pakistan using annual data from 1975 to 2013. Engle and Granger two step cointegration method was used for conducting the analysis. This method was adopted because all the variables of interest were non stationary in level and stationary at first difference. Results provide evidence of long run cointegrating relationship as well as short run relationship between FDI and trade components. A rise in FDI causes both exports and imports to increase. Based on these empirical findings, we strongly recommend Government of Pakistan to focus on the strategy of investment liberalization as well as trade openness.

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**Keywords:** *FDI, exports, imports, stationary, liberalization, trade openness.*

### 1. Introduction

The increased globalization during the last ten years has affected inflows of foreign direct investment (FDI) which were at \$1.72 trillion for year 2012 (UNCTAD, 2012). However, trend of FDI has changed a shift over the last twenty years. During last hundred years, inflows of FDI from the rich

countries to other rich countries and developing countries were normal. However, a shift in the location of FDI occurred with the onset of new century. FDI flows to developing countries are common now a day. The change in location of FDI flows can be explained in terms of higher growth in these countries, particularly in after the period of recession 2009. During year 2010 developing countries received more than fifty percent of worldwide foreign direct investment (UNCTAD, 2011). The total foreign direct investment to less developed countries raised from US\$ 0.52 trillion in 1990 to US\$ 5.123 trillion in 2013. FDI is a financing source having no debt and empirical evidence indicate that there has been a clearly change in emerging and developing countries trust from flows having debt to flows having no debt like FDI since early 1990s.

FDI play an essential role in finding out external balance constancy. It is a major part of capital account; a part of balance of payments (BOP), and it could be used to finance the deficit in current account in short run (Yalta, 2011). However, long run backlash of FDI flows on current account balance may happen by different channels. First, inflow of foreign direct investment generally encourages exports by gross capital formation, technology transfer, productivity enhancement and competitiveness, introduction of new technology in production, better managerial skills, and open access to new markets etc. which makes better the current account balance (Krkoska, 2001; UNCTAD, 2002). Secondly, foreign firms coming to the receiver country can import fundamental inputs from their launched international suppliers or give royalties to their mother corporation for technical knowledge resulting raise in imports (Onwuka and Zoral, 2009). As a result, current account balance is likely to exacerbate. Finally, profit return of foreign capitalists appears in current account of balance of payment and larger outpouring on this account also aggravates current account balance (Yalta, 2011). The overall effect of foreign direct investment inflows on current account of balance of any country is therefore a function of relative intensities of the three ways mentioned above.

The interrogation of FDI inflows affecting capital account deficit seems surplus. As a result, the link between capital account and FDI does not demand much probe. FDI is progressively explained as determinant of economic growth and development that activates technology and knowledge overflows, lead to international trade and commerce by raising exports in especial and improves efficiency in production of the recipient country. Economic growth increases by improving FDI and trade in the host country. At the same time it has been discussed that expansion of deficit in current account is one of the unnecessary impacts foreign direct investment inflows. Calvo et al. (1996) said that developing countries normally face deficit in current account and a current rush in global capital flows to less developed

countries have concurred with spreading deficits in current account in many countries. Hence, relationship between FDI and external trade is an empirical issue rather than a settlement and there is need to further investigate it empirically.

Given this background, this paper focuses upon the effect of FDI on Pakistan's foreign trade. Evaluation of such a relationship is important for country like Pakistan where deficit in current account is the larger macroeconomic problem. At the same time, efforts were made by the policy makers to liberalize the FDI to bring foreign investment to Pakistan. The supposition behind such relaxation is that FDI increases domestic investment and gives chances for growth in the shape of technology and knowledge overflows along with providing employment opportunities. However, real costs or benefits of FDI are related with country's exposure to FDI as there is bear witness of FDI crowding in investment domestically. It is understandable that FDI is the complement of the domestic investment rather than an alternative. Remaining part of the paper proceeds as: section 2 reviews the earlier empirical literature on FDI and foreign trade followed by discussion on data, methodology and its time series properties. Results are given in section four and section five concludes.

## **2. Literature Review**

Furthermore, the impact of FDI on foreign trade is assessed without looking at its impact on current account deficit. Empirical literature gives a mixture of evidence regarding the impact of FDI on the host countries' exports and imports. There are certain empirical studies that provide evidence of positive effect of FDI on receiving countries' exports (Pfaffermayer, 1994, Yamawaki, 1991, Dritsaki et al., 2004, Hossain, 2008, Vural and Zortuk, 2011 and, Chavez and Dupuy, 2012). There is also evidence of negative consequences of FDI on recipient countries' current account (Jeon, 1992, Svensson, 1996 and Türkan, 2006). The differing impact of FDI on recipient countries' exports and imports in the empirical literature could be explained by type of foreign direct investment. Foreign direct investment could be either vertical or horizontal. In case, foreign direct investment is horizontal, subsidiaries operation in recipient countries are pitched for servicing domestic markets and hence export are not facilitated to be promoted (Zhang, 1999). However, vertical FDI motivates to specialization in production stages particularly in host countries with their comparative advantages and so level of export to the production networks in raised (Lipsey, 2004).

Similar to the double sided impact on exports, impact of FDI on imports may be positive or negative. Imports are raised due to FDI when multinational companies import the materials that are not already available in

the recipient country (Alguacil and Orts, 2003). On the other side, if Import substituting industry is being targeted by FDI, then it will not affect the imports positively because the products that were imported earlier would now be made in the recipient country by multinational companies (Blonigen, 2001). Kinoshita (2011) shows that during 2000-07, FDI inflows concentrated to non-tradable sector of fifteen Eastern European countries. As a result of it, local demand rather than supply in host countries increased at a reasonable pace. This situation would lead to imports more, and then to high level of current account deficit.

The literature on relationship between current account and FDI is rather sparse. A number of studies have analyzed the influence of FDI on balance of payment in general and current account balance in particular. A negative influence of FDI on CAB has been reported by several studies (Bosworth et al, 1999; Doraisami, 2007; Jaffri *et. al.*, 2012; Jansen, 1995; Mencinger, 2008; Seabra and Flach, 2005; Siddiqui and Ahmad, 2012). Interestingly, a number of studies attribute decline in CAB to profit repatriation and higher import intensity.

Analyzing the data for Turkey, Yalta (2011) noted that while FDI resulted decline in exports, increase in imports and profit remittances outflow and thus de-stabilized CAB. In Barbados, possible gains derived from FDI might be import of goods and services and income payment to non-residents Campbell (2003). Faster growth in imports vis-à-vis exports resulted chronic imbalance in current account balance in Uganada (Muwanga-Zake and Katamba, 2005). A similar conclusion was derived by Higgins, et al. (2006) who noted adverse implications of the US net income payments and CAB scenario. Liuyong and Yanping (2007) also found negative effect of FDI on current account and positive effect on capital and financial account for China for 1983 to 2005 period.

However, there has been ample evidence of positive influence of FDI on CAB in the literature. Fry et al. (1995) noted that FDI is independent of current account, and neutrality increases with rise in openness of the exchange system. Samsu, et al. (2008) provides evidence of positive effect of FDI on Malaysian exports. Similar conclusions are derived by Ehimare (2011) for Nigeria a country rich in natural resources and large population which signifies a large market. Fry (1996) also reports positive association between FDI and CAB for six Pacific Basin economies.

### **3. Material and Methods**

Annual data that was taken from World Development Indicators is used for conducting the analysis. The sample period is from 1975 to 2013. All the

data is used in log form. The variables used in the analysis are foreign direct investment, exports and imports.

### 3.1. Tests for Unit Root

It is understood that most of the time series data is non stationary and use of such a data may lead to spurious regression and the results of each statistical test can be nonsense. We use Augmented Dickey Fuller (ADF) test that is wider version of standard Dickey Fuller (DF) test to check the non stationarity of variables of interest.

Table 1 ADF Test in level and 1<sup>st</sup> Difference

Variables	ADF Test			
	Levels		First Difference	
	Intercept	Intercept + Trend	Intercept	Intercept + Trend
$fdi_t$	-0.37	-3.15	-5.50 <sup>a</sup>	-5.44 <sup>a</sup>
$exp_t$	-1.99	-1.86	-4.85 <sup>a</sup>	-2.59 <sup>a</sup>
$imp_t$	-1.40	-2.64	-5.40 <sup>a</sup>	-5.70 <sup>a</sup>
5% critical values	-2.60	-3.19	-3.57	-4.16

Note:  $fdi_t$ ,  $exp_t$  and  $imp_t$  denote foreign direct investment, exports and imports. Lower case letters show that all variables are used in log form. 5% one sided critical values are taken from McKinnon (1996). Superscript *a* indicates the significance of the estimated parameters at 5 percent significance level. Akaike information criterion was used for choosing the lag length.

Table 1 shoes estimates of ADF test in log level and log first difference. It indicates that we cannot reject null of unit root for all variables in levels because the estimated ADF test statistics are greater than 5 percent critical values. However, in first null of unit root is rejected for all variables. Hence, we can safely find out that all variables of interest are  $I(1)$  in log level and  $I(0)$  at first difference. Thus the condition required for using Engle & Granger cointegration (two step method) that all variables should be  $I(1)$  in level and  $I(0)$  in first difference is satisfied.

### 4. Results and Discussions

We estimate bivariate linear regression model to evaluate the effect of FDI on exports and imports in Pakistan. Engle and Granger two step cointegration procedure is adopted. It is called two step procedure because at first step equation of interest is estimated using ordinary least square approach. In second step, stationarity properties of the residuals are checked. Stationary residuals imply that variables of interest are cointegrated with each other. We estimate following equation to evaluate the effect of FDI on exports and imports:

$$\text{exp}_t = \alpha + \alpha_1 dfi_t + u_t \tag{1}$$

$$\text{imp}_t = \beta + \beta_1 dfi_t + v_t \tag{2}$$

$\alpha_1$  and  $\beta_1$  are expected to be positive. It implies that FDI inflows cause both import and export to increase.  $u_t$  and  $v_t$  are models error terms.

OLS estimates of equation (1) and (2) are given as:

$$\text{exp}_t = 6.23 + 0.43 dfi_t \tag{1a}$$

$$(29.04)(17.11)^a \quad R^2 \quad 0.89$$

$$\text{imp}_t = 8.31 + 0.21 dfi_t \tag{2a}$$

$$(85.51) (18.81)^a \quad R^2 \quad 0.90$$

Estimate of equation (1a) and (2a) show that FDI has positive effect on both exports and imports. FDI estimate in both equations is positively signed and is significant at five percent significance level. A one percent increase in FDI results 0.43 and 0.21 percent rise in exports and imports of the country. Residuals obtained from both equations were tested for stationarity. Table 2 confirms stationarity of residuals of both estimated equations in levels. This implies that there is long run relationship between FDI and trade components (exports and imports).

Table 2 Residual ADF Test

Variable	ADF Test in Levels
ect(exports)	-4.75(-3.61) <sup>a</sup>
ect(imports)	-4.75(-3.61) <sup>a</sup>

Note: ect denotes error correction term and is proxy for residuals obtained from the estimated import and export equation. Value in parentheses is 5 percent critical value taken from McKinnon (1996). Akaike information criterion was used for choosing the lag length.

In second step, we re-estimate equation (1) and (2) in log difference form using error correction estimate as an additional regressor to find out if there is evidence of short relationship among variables of interest. The equations that we estimate in second step are given as:

$$\Delta \text{exp}_t = \alpha + \alpha_1 \Delta dfi_t + ect \tag{3}$$

$$\Delta \text{imp}_t = \beta + \beta_1 \Delta dfi_t + ect \tag{4}$$

Negative estimate of error correction term suggest presence of short run relationship. Overall we can say that cointegration exists between dependent and independent variables.

Table 3 Error Correction Estimates of Export and Import Equations.

	$\Delta fdi_t$	$ect(-1)$
$exp_t$	0.028(0.66)	-0.34(-1.71) <sup>b</sup>
$imp_t$	0.11(3.46) <sup>a</sup>	-0.59(-3.93) <sup>a</sup>

Note: *a* and *b* shows the significance of estimated parameter at 5 and 10 percent significance level.

Table 3 shows error correction term in both export and import equation is correctly signed and significant at ten and five percent significance level. The estimates of error correction term further show 34 and 59 percent deviation from equilibrium value in export and import equation is adjusted each year.

## 5. Conclusion

In this paper, we evaluated the effect of FDI on trade components (exports and imports) of the country using annual data from 1975 to 2013. Engle and Granger two step cointegration method was used for conducting the analysis. This method was adopted because all the variables of interest were nonstationary in level and stationary at first difference. Results provide evidence of long run cointegrating relationship as well as short run relationship between FDI and trade components. A rise in FDI causes both exports and imports to increase. Based on these empirical findings, we strongly recommend Government of Pakistan to focus on the strategy of investment liberalization as well as trade openness.

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