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FOREIGN DIRECT INVESTMENT AND BALANCE OF PAYMENTS IN PAKISTAN: TIME SERIES EVIDENCE

Foreign direct investment is considered to be the most important determinant of economic growth in a capital scarce country like Pakistan. Besides having positive and significant impact on economic growth, FDI enhances the productivity of human capital and physical capital through transfer of technology in recipient country. FDI accelerates the process of capital formation and generates more employment opportunities. In this study we use time series data in order to analyze the long-run impact of FDI on real imports and real exports and for this purpose Johansen cointegration technique is used followed by ECM for the short-run analysis. This study shows FDI inflows have positive impact on imports as well as exports of Pakistan and fortunately net impact of FDI on BOP is positive.

Keywords: foreign direct investment, real imports, real exports.

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ПРЯМІ ІНОЗЕМНІ ІНВЕСТИЦІЇ І ПЛАТІЖНИЙ БАЛАНС У ПАКИСТАНІ: ДАНІ ЧАСОВИХ РЯДІВ

У статті показано, що обсяг прямих іноземних інвестицій вважається найважливішим чинником, що визначає економічне зростання в країні з дефіцитом капіталу, такої як Пакистан. Окрім позитивного і істотного впливу на економічне зростання, ПІІ підвищують продуктивність людського і фізичного капіталів шляхом передачі технологій у країну-одержувача. ПІІ прискорюють процес накопичення капіталу і створюють більше можливостей для працевлаштування. У цьому дослідженні використано дані часових рядів для аналізу довгострокового впливу ПІІ на реальний імпорт і експорт, для цієї мети використано метод коінтеграції Йохансена з подальшою корекцією помилок для аналізу короткострокової перспективи. Показано, що приплив ПІІ має позитивний вплив як на імпорт, так і на експорт Пакистану, чистий вплив ПІІ на платіжний баланс є позитивним.

Ключові слова: прямі іноземні інвестиції, реальний імпорт, реальний експорт.

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ПРЯМЫЕ ИНОСТРАННЫЕ ИНВЕСТИЦИИ И ПЛАТЕЖНЫЙ БАЛАНС В ПАКИСТАНЕ: ДАННЫЕ ВРЕМЕННЫХ РЯДОВ

В статье указано, что объем прямых иностранных инвестиций считается самым важным фактором, определяющим экономический рост в стране с дефицитом капитала, такой как Пакистан. Кроме положительного и существенного влияния на экономический рост, ПИИ повышают продуктивность человеческого и физического капиталов путем передачи технологий в страну-получателя. ПИИ ускоряют процесс накопления капитала и создают больше возможностей для трудоустройства. В этом исследовании использованы данные временных рядов для анализа долгосрочного влияния ПИИ на реальный импорт и экспорт, для этой цели используется метод коинтеграции Йохансена с последующей коррекцией ошибок для анализа краткосрочной перспективы. Показано, что приток ПИИ оказывает положительное влияние как на импорт, так и на экспорт Пакистана, чистое влияние ПИИ на платежный баланс — положительно.

Ключевые слова: прямые иностранные инвестиции, реальный импорт, реальный экспорт.

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Introduction. FDI is considered to be the most important external source of capital formation for developing as well as developed countries. In a capital scarce country like Pakistan, FDI enhances the productivity of human capital and physical capital through technology transfer. FDI strengthens positive correlation between international trade and economic growth. FDI affects international trade in two dimensions. First, if FDI is concentrated in export promotion industries, it will increase the exports of a host country, which will improve BOP situation. Secondly, FDI inflows tend to increase imports of a recipient country because of MNCs import capital and intermediate goods and services which will deteriorate BOP of a host country. So if FDI is concentrated to import substitutes, then the volume of imports might be curtailed having positive impact on BOP.

Objective of the study. This article tries to explore the impact of FDI on real imports and real exports. We set the following statements for achieving this objective.

Proposition:

- FDI enhances the real imports and real exports of Pakistan.
- FDI inflows have positive impact on BOP of Pakistan.

Literature Review. Stonemanan (1975) studied the relationship between FDI and economic growth for developing countries. According to him, with more capital stock, FDI not only enhances productivity but also makes improvements in BOP.

Bhagwati (1978) deduces that FDI plays its role more efficiently in export-oriented country. According to him, a policy is said to be export-led policy if it results in equalization of average rate on exports with average exchange rate on imports. The countries which follow export-led growth strategy can acquire greater benefits from FDI inflows. Schnieder and Fry (1985) analyzed the effects of FDI in 80 developing countries and concluded that countries having higher per capita incomes had attracted more FDI inflows and as a result they had a favorable impact on their BOP.

Shabbir and Mehmood (1992) using simultaneous equilibrium model explained the impact of FDI on macroeconomic stability in Pakistan. According to their findings, FDI is positively correlated with GDP but negatively related with savings.

Fry (1996) analyzed the impact of FDI on 6 Asian countries (Korea, the Philippines, Indonesia, Malaysia, Singapore and Thailand). According to his findings, FDI affects the BOP of these 6 countries in 5 different dimensions, so FDI had positive relationship with savings, exports, imports and investment - with lagged response for exports.

Khan and Kim (1999) deduced that inward FDI has positive impact on imports and exports of Pakistan. The elasticity of imports and exports with respect to FDI is 1.8 and 0.6 respectively. It means with 1% increase in FDI imports will increase by 1.8% and exports will increase by 0.6%.

Zang (2001) deduced that FDI is supposed to be the engine of economic growth for the host country in following different dimensions:

- FDI boosts up the pace of capital formation and opens more employment opportunities;
- inflows of FDI positively affect the current account of BOP;
- FDI enhances the productivity of human capital in a host country;
- when FDI enters into the geographical boundaries, it becomes a cause of transfer of technology and managerial skills.

Hossain (2005) found a positive impact of FDI on imports and exports for Bangladesh. According to him FDI can potentially generate employment opportunities, transfer of technology and skills, enhances productivity and promotes exports, thus contributes to economic growth of a recipient country.

Yousaf et al. (2008) concluded that FDI imports are positively linked in short run as well as in long run. As far as exports are concerned, they follow a negative relationship with FDI in short run, but this negative relationship transforms into positive relationship in the long run for Pakistan. They also concluded that Pakistan should provide conducive environment for attracting FDI as it is more suitable for import substitution industry.

The Model. The functional equations used in this research are borrowed from Khan and Kim (1999) model which is followed by Yousaf et al. (2008).

$$M_t = f(GDP_t, PM_t, ERM_t, FDI_t)$$

$$X_t = f(GDP_t, PX_t, ERX_t, FDI_t)$$

The linear form of import and export model is as follows:

$$\ln(M_t) = \alpha_0 + \alpha_1 \{\ln(GDP_t)\} + \beta_1 \{\ln(PM_t)\} + \gamma_1 \{\ln(ERM_t)\} + \lambda_1 \{\ln(FDI_t)\} + \phi_t \quad (1)$$

$$\ln(X_t) = \alpha_0 + \alpha_2 \{\ln(GDP_t)\} + \beta_2 \{\ln(PX_t)\} + \gamma_2 \{\ln(ERX_t)\} + \lambda_2 \{\ln(FDI_t)\} + \phi_t \quad (2)$$

where:

M = real demand for imports;

X = real exports;

GDP = gross domestic product;

PM = price index for imports;

ERM = exchange rate for imports;

FDI = foreign direct investment;

PX = price index for exports;

ERX = exchange rate for exports;

Φ_t = error term;

ln = natural log.

Yousaf et al. (2008) did not use exchange rate as an independent variable in the import and export models. In this research, we have included exchange rate as an independent variable

Empirical Findings. In order to test the long-run relationship between two or more than two time series, cointegration technique is used. So, in this research we use Johansen cointegration test to investigate the long-run relationship between dependent and independent variables.

Most of the times, dealing with the time serial data, it often shows the property of non-stationarity at level form. We have tested the stationarity of the data through unit root tests. In this regard, the augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests are used.

Unit Root Test Results. In this research we have used both PP and ADF tests in order to test the stationarity of the data.

Augmented Dickey-Fuller Test Statistics

Table 1.a. Augmented Dickey-Fuller (ADF) Test Statistics

Variable name	At level	At first difference
Mt	-2.34	-5.26
Xt	-1.42	-4.09
PMt	-1.17	-4.27
PXt	-1.25	-7.86
GDPt	-0.67	-4.15
ERMt	-0.86	-6.36
ERXt	-0.63	-5.42
FDIt	-0.69	-8.18

At the 5% level of significance the critical value is -2.95

The results of the augmented Dickey-Fuller (ADF) are presented in Table 1.a. These results reveal that at the level form the estimated values of t-statistics for all the variables are not significantly negative. Therefore, the data are not stationary at level form.

The results of the differenced variables show that the estimated values of t-statistics are significantly negative at the 5% level of significance. So, according to ADF, all the variables are stationary at first difference.

Phillips-Perron (PP) Test Statistics

Table 1.b. Phillips-Perron (PP) Test Statistics

Variable name	At level	At first difference
Mt	-2.74	-4.41
Xt	-1.28	-5.27
PMt	-1.56	-7.81
PXt	-1.88	-8.63
GDPt	-1.25	-3.27
ERMt	-0.81	-5.42
ERXt	-0.75	-6.36
FDIt	-0.04	-16.75

At the 5% level of significance the critical value is -2.95

The results of the PP test are presented in Table 1.b. The table reveals that at the level form the estimated values of t-statistics for all the variables are not significantly negative. Therefore, the data are not stationary at the level form.

The results of the differenced variables show that the estimated values of t-statistics are significantly negative at the 5% level of significance. So, all the variables are said to be integrated of order I (1).

Results of Johansen Cointegration. Cointegration of two or more variables means there exists a long-run relationship between them. Johansen (1988) and Johansen and Juselius (1990) developed the cointegration technique to test the long-run relationship between variables.

There are two basic criterion of Johansen cointegration results: trace statistics and Eigen value. If trace statistics and Eigen value are greater than critical value at 5%, then there exists a long-run relationship between variables. In this study all the equations results of trace statistics and Eigen values reveal there exists at least one cointegrating vector.

Real Demand for Import Equation. The estimated form of real demand for import equation:

$$\ln(M_t) = 0.069 + 0.58\{\ln(GDP_t)\} + 1.72\{\ln(PM_t)\} + 0.58\{\ln(ERM_t)\} + 0.17\{\ln(FDI_t)\} + \phi_t \quad (3)$$

(4.85) (- 6.41) (-3.89) (4. 01)

The above estimated equation of real demand for imports reveals that all long-run coefficients are significant. Long-run elasticity of imports with respect to FDI is 0.17 which means with 1% increase in FDI, imports will increase by 0.17%.

Table 1.3. Short-Run Dynamics for Real Demand for Imports

The ECM estimates for Real Demand for Imports		
Regressors	Short Run	Long Run
Constant	0.042[0.64]	0.069
Dln M _t	0.39 [1.37]	1.00
Dln PM _t	-0.824 [-0.84]	-1.72[-6.41]
Dln GDP _t	1.41 [1.61]	0.58[4.85]
Dln ERM _t	0.69 [0.61]	-0.58[3.78]
Dln FDI _t	0.002[0.046]	0.17[4.01]
ECM	-0.51	

The level of significance is 5%.

D indicates differences of the variables used.

The results in Table 1.3 reveal that all short-run coefficients are insignificant. The value of ECM is -0.51 which indicates the speed of convergence of short-run deviation towards the long-run equilibrium path. The short-run deviation will be corrected by 0.51% in the current period.

Real Export Equation

The estimated form of the real export equation:

$$\ln(X_t) = 18.41 + 1.92\{\ln(GDP_t)\} + 0.62\{\ln(PX_t)\} + 0.12\{\ln(ERX_t)\} + 0.58\{\ln(FDI_t)\} + \phi_t \quad (4)$$

(4.724) (- 0.724) (-2.78) (-5. 23)

The above estimated equation of real demand for imports reveals that coefficients of GDP and FDI are significant. Long-run elasticity of imports with respect to FDI is 0.58 which means with 1% increase in FDI, exports will increase by 0.58%.

Table 1.4. Short-Run Dynamics for Real Exports

The ECM estimates for Real Exports		
Regressors	Short Run	Long Run
Constant	0.13	18.41
Dln M _t	0.201[0.501]	1.00
Dln PX _t	0.117[0.153]	-0.62[-0.724]
Dln GDP _t	-0.005[-0.021]	1.92[4.724]
Dln ERX _t	-0.317[-0.318]	0.124[-2.78]
Dln FDI _t	-0.057[-0.89]	0.582[-5.23]
ECM	-0.571	

The level of significance is 5%.

D indicates differences of the variables used

The results in Table 1.4 reveal that all short-run coefficients are insignificant. The value of ECM is -0.571 which indicates the speed of convergence of short-run deviation towards the long-run equilibrium path. The short-run deviation will be corrected by 0.571% in the current period.

Conclusions and Recommendations

Conclusions. Inflows of FDI increase both imports and exports of a host country simultaneously but magnitude of the elasticity of exports with respect to FDI is 0.582 which is greater than elasticity of imports with respect to FDI which is 0.17. So although both imports and exports are increasing along with FDI but exports are

increasing at a relatively faster rate than imports. Hence, net impact of FDI on BOP is positive.

Recommendations. The inflows of FDI into Pakistan are very small in magnitude, we need to invest more in human capital formation and enhance the managerial skills, so that skilled labor force maybe able to attract more FDI. Further with an improved infrastructure, transportation & communication, political stability, law and order and friendly business environment, Pakistan can enhance FDI inflows.

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