

## **The Impact of Foreign Direct Investment on Employment Opportunities: Panel Data Analysis: Empirical Evidence from Pakistan, India and China**

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### **I. INTRODUCTION**

One of the most important and sensitive areas for developing countries is foreign direct investment (FDI). It is now defined as not only a simple transfer of money, but as a mixture of financial and intangible assets such as technologies, managerial capabilities, marketing skills and other assets. There is a major debate in the literature regarding the impact of FDI on economic growth. The traditional argument states that an inflow of FDI improves economic growth and thereby enhances employment opportunities. Most studies [Hill and Athukorala (1998) have shown that FDI's social and distributional impact on the host country has been generally favourable in developing countries of various regions. Apart from bringing in a package of highly productive resources into the host economy there have been a visible positive impact on the creation of jobs not only in those sectors attracting FDI inflows but also in the supportive domestic industries.

In recent years, Asia received a large amount of FDI from developed regions. With in the Asia, India and China received a major chunk of foreign direct investment and FDI flows to Pakistan also increased significantly. The objective of this study is to undertake an empirical study regarding creation of employment opportunities by FDI in the continent of Asia during 1985–2008. Our sample consists of three Asian countries i.e., Pakistan, India and China. We use the panel data technique in order to overcome some econometric problems (i.e., autocorrelation in time series data and heteroscedasticity in cross-sectional data) from the data, save the time for applying tests on each country individually and get results in disaggregated form. In addition, as panel data technique gives disaggregated results it will help us to recommend policies for each country individually. The paper has been organised as follows. A brief introduction is given in Section I while the review of literature is presented in Section II. Section III describes the methodology and data followed by empirical results which are discussed in Section IV. Section V provides summary and concluding remarks.

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## II. REVIEW OF LITERATURE

Nunnenkamp, Bremont, and Waldkirch (2007) raised the question whether foreign direct investment (FDI) contributed to employment generation in Mexico and, thereby, helped overcome the country's pressing labour market problems. The analysis drew on highly disaggregated FDI and employment data covering almost 200 manufacturing firms. They estimated dynamic labour demand functions for blue and white collar workers, including both FDI and its interaction with major industry characteristics. By employing the GMM estimator suggested by Arellano and Bond (1991), they accounted for the relatively short time dimension of the panel data (1994–2006). It turned out that FDI had a significantly positive, though quantitatively modest impact on manufacturing employment in Mexico. In contrast to a widely held view, this applies to both white collar and blue collar employment. Moreover, the positive effect on blue collar employment diminished with increasing skill intensity of manufacturing industries.

Another important study was done by Alzinger and Bellak (1999). The objective of this paper is to analyse, whether the relatively better domestic employment performance of domestic firms (direct FDI) compared to foreign-owned firms (indirect FDI) could be linked to FDI abroad.<sup>1</sup> Based on an analysis of the sales and trade structure of a sample of Austrian investors in Central and East European Countries (CEECs), this paper tested the hypothesis that these two groups of investors had different motives to invest in CEECs and therefore their activities in CEECs differ by type (sales affiliate, production abroad) and consequently the employment effects at home. Regression results confirmed that direct FDI were more strongly determined by labour costs and exhibit an employment pattern related to a deeper international division of labour (including production), while indirect FDI was based relatively more on market seeking investment. Empirical results also confirmed that employment effects at home differ. The positive (negative) effect of one additional unit of parent (affiliate) sales on domestic employment for indirect FDI compared to direct FDI was larger (smaller).

According to established theory, the activities of affiliates can be related to the motives of FDI, namely efficiency seeking, market seeking and strategic-asset seeking flows. The impact of these types of FDI on trade patterns are explained by distinguishing four kinds of trade linkages between the parent firm and her affiliates: (a) the substitution of former exports through FDI, (b) growing (re-)imports of goods and services produced abroad, (c) FDI associated exports of goods and services and (d) FDI induced exports of other product lines neither produced by the foreign affiliate nor exported earlier by the parent firm [Agarwal (1996); Alzinger and Winklhofer (1998)]. The overall impact of FDI on trade (and consequently on domestic employment) is the sum of negative (export substitution, re-exports) and positive effects (associated and induced exports) and can be tested only empirically. Any distinction between direct and indirect FDI is justified only if their trade linkages differ.

Empirically, if different trade linkages between parent firms and affiliates exist for direct and indirect FDI, their effect on domestic employment will differ as well. Blomström, *et al.* (1997) argued, that rivalry for markets is one of the main reasons for a

<sup>1</sup>Indirect FDI is a characteristic of outward FDI made by any country's owned firms. While direct FDI is a characteristic of outward FDI in which a large part is carried out by firms, which themselves are affiliates of foreign Multinational Enterprises (MNEs) Alzinger and Bellak (1999).

positive relationship between foreign production and domestic employment, which provides one argument to distinguish market-oriented from efficiency-oriented FDI.

A related question is, whether the trade linkages change from the period of entry into a foreign market and the maturing of the FDI. Several theories suggest that entry occurs first via a sales subsidiary, which may be extended into a production unit later on e.g. [Bergsten, *et al.* (1978)]. In newly developed markets with low-cost production locations, some firms may switch their operations there over time. These considerations lead to a number of questions, such as: Do direct and indirect FDI follow different trajectories or are such strategies idiosyncratic to firms? Do they result in different trade linkages between parent firms and affiliates for direct and indirect FDI and consequently change the effect on domestic employment?

Ajaga and Nunnenkamp (2008) investigated the long-run relationships between inward FDI and economic outcomes in terms of value added and employment at the level of US states. Johansen's (1988) cointegration technique and Toda and Yamamoto's (1995) Granger causality tests were applied to data for the period of 1977 to 2001. They found cointegration as well as two-directional causality between FDI and outcome variables. This holds for both measures of FDI (stocks and employment in foreign affiliates) and independently of whether they considered the states' overall economy or their manufacturing sector alone.

Federico and Alfredo (2007) assessed the impact of Italy's outward foreign direct investment (FDI) on local (domestic) employment growth between 1996 and 2001 for 12 manufacturing industries and 103 administrative provinces. Their main result was that, controlling for the local industrial structure and area fixed effects, FDI is associated with faster local employment growth, relatively to the national industry average. They also found that employment in small plants was not negatively influenced by higher levels of FDI. Their findings did not support the idea that FDI was detrimental to local employment growth in the home country.

While the recent increase in foreign direct investment (FDI) to African countries is a welcome development, the question remains as to the impact of these resource inflows on economic development. Ndikumana and Verick (2008) investigated a key channel of the impact of FDI on development is through its effects on domestic factor markets, especially domestic investment and employment. In this context, they analysed the two-way linkages between FDI and domestic investment in Sub-Saharan Africa. Their results suggested that firstly, FDI crowds in domestic investment, and secondly, countries will gain much from measures aimed at improving the domestic investment climate. Moreover, they identified alternatives to resource endowments as a means of attracting foreign investment to non-resource rich countries.

Buffie (1993) analysed the impact of foreign investment on underemployment and domestic capital accumulation in a two-sector dual economy model. He found that foreign investment in the high-wage manufacturing sector crowded out domestic capital on a greater than one-for-one basis and lowered the level of manufacturing sector employment in the long-run. By contrast, foreign investment in an enclave sector or in the primary export sector crowded in domestic capital and unambiguously reduces underemployment. Furthermore, under weak conditions, foreign investment in the enclave or primary export sector was unambiguously welfare enhancing viewed over the entire transition path.

Broadly the literature survey shows that MNE employment can promote growth and poverty reduction in host countries in four ways.

### **(i) MNE Employment has a Direct and Indirect Impact on Domestic Employment**

FDI often generates new employment (direct employment is higher in green field investments) and creates jobs (indirectly) through forward and backward linkages with domestic firms. Estimates for a number of developing countries indicate that FDI has a multiplier effect on domestic employment. Aaron (1999) estimated that FDI in developing countries created about 26 million direct jobs and 41.6 million indirect jobs in 1997 (a multiplier of about 1.6). Iyanda (1999) obtained a higher estimate for Namibia: about 2 to 4 jobs were created for each worker (directly) employed by foreign affiliates.

### **(ii) MNE Employment Boosts Wages in Host Countries**

A number of studies have shown that MNEs pay higher wages than domestic firms even after controlling for firm and worker characteristics [see Lipsey (2002) for a survey]. Furthermore, the presence of multinationals sometimes generates wage spillovers: wages tended to be higher in industries and in provinces that have a higher foreign presence [Lipsey (1994); Lipsey and Sjöholm (2001)].<sup>2</sup>

### **(iii) MNE Employment Fosters Technological Transfers**

One of the most common and least expensive ways by which foreign technology gets diffused in host countries' is through labour turnover, as domestic employees (especially employees in higher level positions) move from foreign firms to domestic firms.<sup>3</sup> Bloom (1992) found substantial technological transfer in South Korea when production managers left multinationals to join domestic firms. Indeed, foreign firms sometimes pay higher wages in order to retain their workers, and thereby prevent domestic firms from appropriating their superior technology [cf., Glass and Saggi (2002)].

### **(iv) MNE Employment Enhances the Productivity of the Labour Force in Host Country**

Several studies have shown that workers in foreign owned enterprises (FOEs) are more productive than workers in domestic owned enterprises (DOEs). For example, Harrison (1996) analysed differences in labour productivity between FOEs and locally owned firms in Morocco and Cote d'Ivoire.

In 8 out of 12 industries in Morocco, output per worker was higher in FOEs than in domestically owned firms, with a difference in productivity ranging from 50 percent in electronics to about 130 percent in nonmetallic minerals. In Cote d'Ivoire, the productivity gap existed in fewer industries (3 out of 12), however the gap was wider: ranging from 50 percent in chemicals to about 500 percent in oil.

Ramachandran and Shah (1998) also report that added value per worker is 59 percent higher for wholly owned foreign enterprises than for local firms in Kenya, 178

<sup>2</sup>The conclusions of Lipsey (1994) and Lipsey and Sjöholm (2001) are based on data from the United States and Indonesia, respectively. The empirical evidence regarding wage spillovers is mixed. For example, Aitken, *et al.* (1996) do not find evidence of wage spillovers in Mexico and Venezuela. For a discussion of this issue see Lipsey (2002).

<sup>3</sup>See Blomstrom and Kokko (1998) for a survey of the literature on FDI and technological spillovers.

percent higher for FOEs in Zimbabwe and 1,422 percent higher for FOEs in Ghana. The worker productivity gap may be partly explained by the differences in training opportunities for workers in FOEs and DOEs.

### **III. METHODOLOGY**

#### **III.1. Data**

In this study, we consider a balanced panel of three countries i.e. Pakistan, India and China over the period of 24 years from 1985–2008. Three variables (i.e. employment, foreign direct investment and gross domestic product) are used for empirical investigation. All of the data except gross domestic product (GDP) of Pakistan is taken from IFS. The GDP of Pakistan is taken from various issues of Economic Survey of Pakistan. In order to remove the biasness from the estimates due to differences in sizes of the economies we use employment to labour force ratio and FDI to GDP ratio. Moreover, GDP is used in the form of growth. The E-views 6.0 is used for empirical work.

#### **III.2. Estimation Techniques**

In order to find out the long run relation between three variables we first check the order of integration by applying the unit root tests given by Im-Pesaran-Shin (IPS). Then, after getting the order of the integration the Pedroni's test of cointegration is applied. Finally, a Seemingly Unrelated Regression (SUR) test is applied to find out whether FDI has an impact upon employment in case of Pakistan, India and China.

#### **III.3. Unit Root Test**

The first step in determining a potentially cointegrated relationship is to test whether the variables involved are stationary or non-stationary. If all the variables are stationary traditional estimation methods can be used to estimate the (causal) relationship among variables. If, however at least one of the series is non-stationary more care is required. There are many tests available for testing unit root in panel data which are;

- Fisher's ( $p\lambda$ ) test (1932).
- Maddala and Wu (1999).
- The Levin-Lin (LL) tests (2002).
- The Im-Pesaran-Shin (IPS) test (2003).

Although the Fisher test can be applied but the disadvantage is that the p-values have to be derived through Monte Carlo simulation. So, we apply Im-Pesaran-Shin (IPS) test for unit root because it does not have only comparative advantage over all other tests but it is appropriate for our data as well. More over IPS test is the most powerful test as compared to the other tests. Another reason for using IPS test is that we have a balanced panel instead of different time series for different samples. In addition, the IPS test is the most cited unit root test in the literature. Another advantage of using the IPS test is that it is based on heterogeneity of the autoregressive parameters (there is a possibility of heterogeneity in the error variances and the serial correlation structure of the errors).

### III.4. Cointegration Test

With confirmation on the integrated order of variables of interest, the question is that they might or might not have a common stochastic trend, or, they might or might not be cointegrated. We resolve this question by looking for a long-run relationship among the variables using the panel cointegration technique. The available methods for panel data cointegration are given as follows.

- Johansen (1988).
- Larsson, Lyhagen and Lothgren (2001).
- Pedroni (1999).

We apply the Pedroni (1999) test of cointegration. This technique is a significant improvement over the conventional cointegration tests applied on a single series. As explained in Pedroni (1999), conventional cointegration tests usually suffer from unacceptable low power when applied on data series of restricted length. The Panel cointegration technique addresses this issue by allowing one to pool information regarding common long-run relationships between a set of variables from individual members of a panel. Further, with no requirement for exogeneity of the regressors, it allows the short-run dynamics, the fixed effects, and the cointegrating vectors of the long-run relationship to vary across the members of the panel. Furthermore, it provides appropriate critical values even for more complex multivariate regressions. Pedroni (1999) refers to seven different statistics for testing unit roots in the residuals of the postulated long-run relationship. Of these seven statistics, the first four are referred to as panel cointegration statistics; the last three are known as group mean panel cointegration statistics. In the presence of a cointegrating relation, the residuals are expected to be stationary. A positive value for the first statistic and large negative values for the remaining six statistics allows rejection of the null hypothesis.

### III.5. Seemingly Unrelated Regressions (SUR)

The seemingly unrelated regression (SUR) method, also known as the multivariate regression, or Zellner's method, estimates the parameters of the system, accounting for heteroskedasticity and contemporaneous correlation in the errors across equations.

### III.6. Impulse Responses

An impulse response function traces the effect of a one-time shock to one of the innovations on current and future values of the endogenous variables.

## IV. EMPIRICAL FINDINGS

We used the Im-Pesaran-Shin (IPS) test (2003) in order to find out order of the integration of all three series used in the study. The Appendix Table 1 reports these results. The  $t$ -value of Employment to GDP ratio (EMP/GDP) is  $-3.67$  at level with zero lag, FDI and GDP ratio (FDI/GDP) is  $-4.94$  at level with zero lag and GDP growth is  $-3.66$  at level with zero lag. Therefore each variable was seen to have a unit root at level so we could investigate cointegration of the series at level.

After knowing the order of integration we applied the test of cointegration given by Pedroni (1999). Results are given in Appendix Table 2. The result shows that first panel statistic is positive ( $\nu = 0.5$ ) and rest of three panel statistics is negative ( $\rho = -1.15$ ,  $PP = -2.22$  and  $ADF = -2.24$ ). On the basis of Pedroni test we can conclude that series are cointegrated and have a long run relationship.

Then we used Pooled Estimation of Seemingly Unrelated Regression (SUR) approach described in Agosin and Mayer (2000). In this model we used one lag for estimating the equation. The optimum lag length is found through Schwarz Information Criteria (SIC). Our result suggests that only GDP has a significant impact upon level of employment in all of the three countries. Results are reported in Appendix Table-3. In addition, FDI does not have any impact upon the creation of employment in Pakistan, India and China.

We also used standard techniques for estimating the impulse response shocks of employment to the only significant variable including in our model i.e. GDP growth. The results are prescribed in Appendix Graph A. We found that GDP shocks explain 0.75 percent change in employment during the second year then it gradually bottom out.

## **V. CONCLUDING REMARKS AND POLICY RECOMMENDATIONS**

Our results are similar to those of Ndikumana and Verick (2008). The policy implication is that whatever other benefits may accrue from FDI it should not be expected to create employment opportunity in any of the three countries directly and FDI enhancement policies must be supplemented by the other measure to stimulate employment growth. Our estimation of the impulse response shows that the growth elasticity of employment on average in the three countries is extremely low and employment enhancing policies must be priorities. Employment growth will not occur in these three countries as a spontaneous consequence of growth in GDP. As rising formal sector unemployment especially of technical and professional manpower is becoming and increasingly important problem in all three countries.

However some important limitations of the research must be noted. We did not explicitly differentiate between direct and indirect impact of DFI growth as was done by Altzinger and Bellak (1999). Had we done so, their results might have been modified? Also it is likely that employment impact of FDI might vary from industry to industry and the over all insignificant relationship between FDI and employment growth might reflect a canceling out of positive and negative impact of FDI flows on employment in different industries. Therefore disaggregating the data at least at an ISIC 3-digit level might also identified significant relationship between manufacturing employment and FDI flows in a group of industrial branches. We did not find impact of FDI on employment opportunities in Pakistan, India and China. It may be due to time lag because FDI can also have impact on employment through economic growth.

Appendix Table 1

*Im, Pesaran and Shin Test of Unit Root*

Variable	Test for Unit Root in	Lag Length
Employment	Level	0
FDI	Level	0
GDP	Level	0

Appendix Table 2

*Pedroni Residual Cointegration Test*

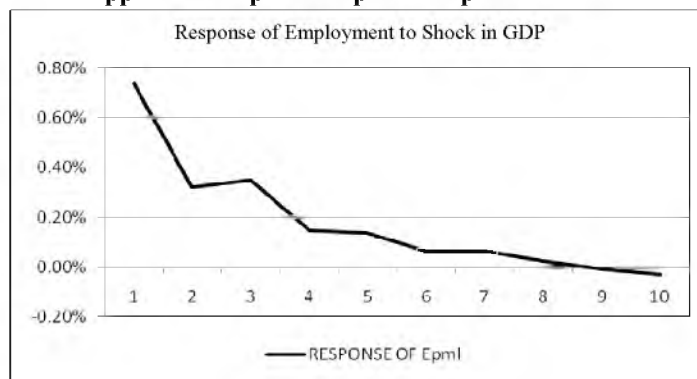
	Statistic
Panel v-Statistic	0.57
Panel rho-Statistic	-1.15
Panel PP-Statistic	-2.22
Panel ADF-Statistic	-2.24

Appendix Table 3

*Seemingly Unrelated Regression*

		Coefficient	Std. Error	t-Statistic	Prob.
<b>Pakistan</b>	Intercept	0.860	0.039	21.947	0.000
	GDP <sub>t</sub>	-0.017	0.007	-2.237	0.027
	GDP <sub>t-1</sub>	-0.010	0.006	-1.681	0.095
	FDI <sub>t</sub>	0.002	0.004	0.664	0.508
	FDI <sub>t-1</sub>	0.000	0.004	0.108	0.915
<b>India</b>	Intercept	0.854	0.039	22.150	0.000
	GDP <sub>t</sub>	-0.009	0.005	-1.620	0.107
	GDP <sub>t-1</sub>	-0.017	0.005	-3.072	0.002
	FDI <sub>t</sub>	0.001	0.003	0.457	0.648
	FDI <sub>t-1</sub>	0.001	0.003	0.473	0.637
<b>China</b>	Intercept	0.853	0.039	21.874	0.000
	GDP <sub>t</sub>	-0.003	0.006	-0.564	0.574
	GDP <sub>t-1</sub>	-0.022	0.007	-2.976	0.003
	FDI <sub>t</sub>	0.000	0.003	0.145	0.885
	FDI <sub>t-1</sub>	0.002	0.004	0.427	0.670



**Appendix Graph-A. Impulse Response Function****REFERENCES**

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