

IMPACT OF FOREIGN DIRECT INVESTMENT ON POVERTY ALLEVIATION IN PAKISTAN BY USING CGE MODEL.

Faiz Muhamad Shaikh

Department of Agricultural Economics
Z.A.Bhutto Agricultural College- Dokri.
Larkana Sindh
Pakistan
faizshaikh@hotmail.com
Faizmuhamed_2000@yahoo.com

Abstract

The purpose of this paper is to analyze the impact of FDI on poverty alleviation in Pakistan by using CGE model framework. The first approach is Micro simulation CGE approach which consists of using large number of FDI role in reducing the poverty in Pakistan. The second approach is simple household CGE model in which FDI role in household spending in Pakistan. Consequently this paper makes strong statements and tries to argue its case from the perspectives of the urban- poor. The positions taken and arguments made are not new and may be found in the current development literature. They are also not comprehensive and may be just one side of the coin. Other positions and arguments may be just as valid. Participants at the High-level Regional Meeting are encouraged to voice their views on the issues raised and approaches suggested in this paper during the various symposia. The both approaches systematic positive results FDI has significant role in reducing the urban poverty in Pakistan but in rural poverty is increasing day by day with no significant impact on the rural household. While the issue of poverty has been the direct or indirect focus of development initiatives in Asia and special in case of Pakistan were recently huge FDI investment has been taken place in 1992-07. The poverty has gained prominence only in the last two to three decades. Two basic "levels" or "types" of poverty are identified in the development literature: absolute poverty and relative poverty. The FDI has invested 2,096 million in 2006-07. It has general impact on the urban population. Due to the poor policies made by the government rural household is not getting benefit on it.

Keywords: Computable General Equilibrium Model, FDI, Poverty, Alleviation, and Impact, Pakistan.

1. Introduction

An investigation of the link between FDI and poverty alleviation or reduction certainly has merit, and therefore it is perhaps surprising that so little work has been done on the subject. Poverty-related issues have typically been analyzed in their relationship to economic growth, without exploring the contribution of FDI, while poverty reduction/social development issues rarely figure in investigations of the link between FDI and growth. The underlying notion, correct or not, seems to have been that while the expansion of the private sector contributes to the development process through economic growth, the poorest members of society do not benefit from this process. Typically, the relationship between FDI and (income) poverty reduction is broken down into two elements – the relationship between FDI and (income) growth on the one hand and that between growth and poverty reduction on the other. Regarding the relationship between FDI and growth, it is generally found that inflows of FDI encourage more rapid economic growth. One study, for example, finds that per capita GDP growth rates over successive five-year periods were correlated with FDI flow ratios only in preceding and current five year periods, suggesting that the causation runs from FDI to growth rather than vice-versa. In another study, (*Borenzstein et al*) conclude that “FDI is an important vehicle for the transfer of technology, contributing relatively more to growth than domestic investment [but that] ... the higher productivity of FDI holds only where the host country has a minimum threshold stock of human capital. (*DFDI, Vietnam*)

Turning to the other side of the equation, it generally holds that the reduction of income poverty occurs with growth in average living standards, except in situations where there are large initial income inequalities. For example, one major study in 1997 by Roemer and Gugerty analyzes data for 26 developing countries in different time periods and finds that an increase in the rate of GDP growth produces an equivalent increase in the income growth rate of the poorest 40 per cent of the population - an income elasticity of one. In assessing the effects of FDI on human development and poverty reduction it is important

to draw a distinction between its direct and indirect impacts. FDI clearly does make a direct contribution, for example through measurable employment and income generation, but its aggregate impact seen in these terms is very small, and it is the indirect contribution that is of greater consequence. The indirect benefits of FDI for a host country’s economic development are transmitted through linkages (backward and forward), spillovers, demonstration effects, and so on. More important, however, are the more qualitative indirect impacts of FDI on a whole spectrum of human development issues, such as training, education, gender equality, housing, improved health, community development, and so on. It is extremely difficult to measure many of these effects, and so the main objective should be to encourage an understanding of how FDI can contribute to such human development objectives of host countries. (*Hafiz et al.2004*).

In the area of employment creation, extrapolation from various sources suggests a possible direct employment effect of FDI in developing countries of

around 26 million jobs in 1997. Estimates of the indirect employment effect of FDI vary widely around a multiplier of 1.6 (i.e. 1.6 indirect jobs for every one direct job). Also, foreign-invested enterprises (FIEs) do generally pay higher wages than domestic companies, and even in low-wage, labor-intensive industries, FIE jobs are often considered better than the alternatives of unemployment or underemployment. However, investments in different industries clearly have different job-creation propensities which policymakers need to take into consideration. There is also an increasing recognition that ways of harnessing FDI to support small and medium enterprise (SME) sectors in developing countries, and associated employment creation, remain under-exploited. (*Heien, D, and Wessells, C.R. et al. 1990*)

Regarding employment practices, a key issue is the effect of FDI on female participation in the labor force. On the one hand, greater female employment at FIEs, in addition to helping level the playing field in terms of employment opportunities, results in a direct increase in household income and a higher proportion of income expended on meeting basic family needs. On the other hand, women are often paid less than men in comparable jobs, isolated from mainstream job advancement opportunities, and subject to greater employment instability. Another major issue is that of child labor, with subcontracting often making monitoring difficult, and many children serving as primary household earners. As a second-best solution to banning child labor and providing schooling instead, improved corporate governance on the part of governments, and improved corporate management on the part of companies are crucial. Progress in this area is a function of policy measures and their enforcement, and of greater dialogue and collaboration between the government and the (foreign and domestic) private sector. FIEs can make an important contribution in various ways to human capital formation in developing countries. They can help develop the skills of (often unskilled) workers and often generate training spillovers outside the firm. However, there is only so much that foreign investors can do by themselves and the role of host country policy is paramount, sometimes in collaboration with foreign investors. The economic and social returns to policies aimed at improving basic education levels in developing countries are by now well known, but there is also much potential in the area of promoting targeted vocational training in certain industries in conjunction with foreign investors. One good example at the higher end of the skill spectrum is the collaboration amongst Intel, the government of Costa Rica, and the country's educational institutions to promote vocational training for the electronics sector.

The observed effects of the Asian crisis have heightened concerns of this kind. So many millions who had been raised out of poverty during years of rapid economic growth have been thrown back into poverty. As a result, developing countries, and their bilateral and multilateral donors, are now focused on such core imperatives as sustainable human development (SHD) and equitable poverty reduction. So, in place of a blind faith that economic growth, and FDI within that context, leads to poverty reduction, it has become more important to understand how the various contributors to growth, including FDI, deliver

their benefits, and how policy measures can reinforce that delivery process. Conversely, some FDI may have had negative impacts, especially in the context of sustainable development and equitable poverty reduction, and it is important to understand how policy can help reduce such detrimental impacts (Carl Aoran et al 2004).

Sector and Country-wise Analysis of FDI (2000-2006)

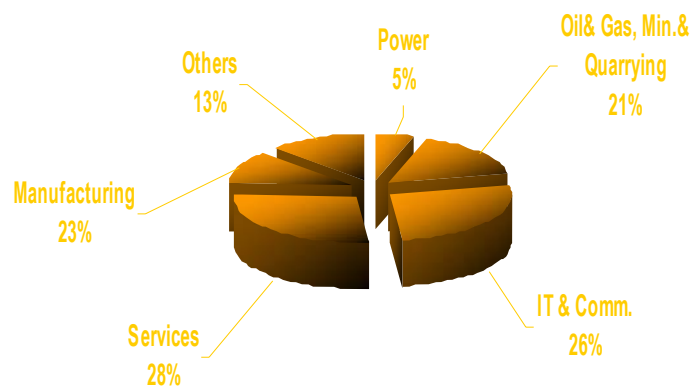
During FY04-06, Pakistan has cumulatively attracted \$8 billion foreign investment flows - 26.5% was sale proceeds of public assets and 49.2% from FDI, with remaining coming from foreign portfolio investment. These foreign inflows have come into banking, telecom and oil and gas sectors primarily. Prospects are that Pakistan will attract about US\$6.0 billion in FY07 – an all time high annual flow advent of deregulation, privatization, and liberalization policies initiated at the end of the 1980s. The amount of foreign investment rose from a tiny \$10.7 million in 1976/1977 to \$1296 million in 1995/1996, thus growing at the annual compound growth rate of 25.7 percent. However, it declined to \$950 million in 1996/1997. With overall liberalization program (1991/1992 onwards) the inflow of foreign investment grew at the compound growth rate of 15.2 percent. Investment inflows in 1995/1996 increased by 93.3% mainly due to the inflow of investment in power sector.

The investment has now risen to a figure of \$ 3521 million in 2005-06. This depicts a 332% increase from 2001-02 to 2006-07 in case of direct foreign investment. Although significant by absolute terms, the increase appears trivial when compared to the relatively more buoyant economies of East and Southeast Asia. While FDI flows to all developing countries reached \$233.2 billion in 2004, East and Southeast Asia received the bulk of this share, total foreign investment consists of direct and portfolio investment. The major component of the total foreign investment is FDI. Despite yearly fluctuations, the amount of FDI rose from \$484.7 million in 2001-02 to \$million in 2006-07. Since the beginning of the liberalization program, FDI has grown faster than in the pre-liberalization period (1984/1985-1990/1991). In particular, 1995/1996 registered a phenomenal growth of 146.5% mainly due to the inflow of FDI in the power sector. FDI, on average, accounted for more than 100% of total inflows over the period 2001-02 to 2006-07.

Foreign Direct Investment Inflow (Country-wise) from 2000-01 to January 2007.

Country	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	July-Jan. 2007	Total	% of Total
USA	92.7	326.4	211.5	238.4	326.0	516.7	512.9	4,293.8	28.8
U.K	90.5	30.3	219.4	64.6	181.5	244.0	488.2	2,457.7	16.5
Japan	9.1	6.4	14.1	15.1	45.2	57.0	34.3	522.4	3.5
UAE	5.2	21.5	119.7	134.6	367.5	1,424.5	295.9	2,607.6	17.5
Germany	15.5	11.2	3.7	7.0	13.1	28.6	21.6	306.7	2.1
Korea	3.7	0.4	0.2	1.0	1.4	1.6	1.0	201.3	1.3
Saudi Arabia	56.6	1.3	43.5	7.2	18.4	277.8	9.5	489.9	3.3
France	0.7	-6.9	2.6	-5.6	-3.6	3.2	-1.5	81.3	0.5
Netherlands	4.8	-5.1	3.0	14.0	36.7	121.1	62.5	318.5	2.1
Hong Kong	3.6	2.8	5.6	6.3	32.3	24.0	26.2	168.1	1.1
Italy	1.3	0.1	0.2	1.9	0.4	0.0	0.0	17.7	0.1
Canada	0.1	3.5	0.5	0.5	1.9	4.8	1.6	24.1	0.2
Other	38.6	92.8	174.0	464.4	503.2	817.7	643.8	3,434.0	23.0
Total	322.4	484.7	798.0	949.4	1,524.0	3,521.0	2,096.0	14,923.1	100.0

**Country-wise FDI:
Sources of FDI (1990-2006)**

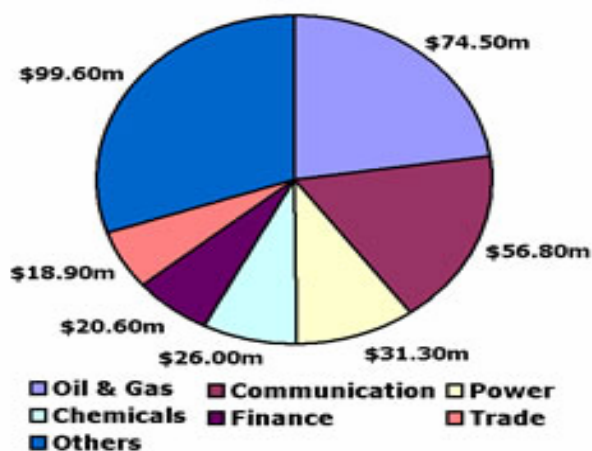


Foreign Direct Investment in different Sectors

Sector-wise Distribution of FDI Pakistan: Sectoral FDI (1990-2006).

	2002-03	2003-04	2004-05	2005-06	2006-07
Country	% age	% age	% age	% age	% age
U.S.A.	26.51	25.1	21.4	14.7	24.5
U.K.	27.49	6.8	11.9	6.9	23.3
U.A.E.	15.00	14.2	24.1	40.5	14.1
Switzerland	-	21.6	9.0	4.8	6.2
Netherlands	-	-	2.4	-	3.0
Mauritius	-	-	-	-	2.1
Saudi Arabia	5.45	-	-	7.9	-
Norway	-	15.4	-	7.2	-
Japan	1.77	1.6	3.0	-	-
Others	23.78	15.2	28.2	18	26.8
Total	100	100	100	100	100.0

Sector-wise Graphical Presentation



Poverty in Pakistan is an increasing social problem and represents the critical challenge to be addressed by the Government of Pakistan. It is estimated that about 32% of Pakistan's population are below the food poverty line rising from a level of 26% in 1988 (GoP, 2002), and about 44% are below the poverty line on the human poverty index (UNDP, 2002).

Model: The Micro simulation method proposed in this paper relationship of both a CGE model and Household model. What distinguish from this model from the work of (Janvry et al .1992), (Ajitha et at 2004-05) and (Bourguignon et al 200). Is its bi directional relationship. The model lin with the flow of FDI and poverty on both household and rural spending.

Description of the Model.

Model.1: FDI investment and poverty derived from Cob Douglas utility unction.

Model. 2. FDI and Rural household, employment and consumption

Model 3. FDI and Urban, employment and consumption.

Computable General Equilibrium Model (CGE).

To compare the impact of FDI on rural and urban population we started with the simple model, which however integers all the standard characteristics of the CGE model of small under developed country. The demand system is derived from the cobb Douglas utility function with two factors of FDI and poverty relationship. Regarding the household model we have an income fuction consisting of rural projects of FDI and their general impact on the rural households on consumption.

Household Model.

The rural household model is used to calculate the impact of FDI on the employment and consumption pattern of rural household. Based on the behavioral equation based on the CGE Model. The household model operates as follows the income equations are specified in the CGE model but at disaggregate level and we introduced the demand system which specified the marginbnal consumption system.

$$\lambda_i, \Pr(Y_i = y_i | x_i) = \frac{e^{-\lambda_i} \lambda_i^{y_i}}{y_i!}, y_i = 0,1,2,\dots$$

$$z_i = \frac{[(y_i - \hat{\mu}_i)^2 - y_i]}{\sqrt{2\hat{\mu}_i}} \text{ on } w_j = \frac{g(\hat{\mu}_i)}{\sqrt{2\hat{\mu}_i}}; i$$

$$\text{Var}(y_i | x_i) = (1 + \alpha \exp(x'_i \beta)) \exp(x'_i \beta)$$

λ_i = Measures the i th food security (%) in the food intake for Y_i = Calories, Protein and iron.

P_n = Weighted food group prices

Y_i = Aggregate output (kg) for the household.

Z_i = Vector of productive resources

Var= Real food expenditure

Results Analysis of Household Model.

We only performed one simulation to illustrate the approach's contribution. Different simulation have been tested to verify weather the conclusions reached in terms of impact of FDI on the rural and urban population inequalities .

Model.1. FDI and Poverty.

Variables		Base Value	Model 1 AR	Rural	Model 2 RH	Urban Poverty	Model U-C	Change
W1	Formal Wages	0.5	-0.76	-.05	-0.5	+0.1	0.5	0.5
W2	Informal wages	0.1	NA	NA	NA	NA	NA	NA
Mps	Marginal propensity to save	0.1	0.5	-0.2	0.3	+0.5	+ 0.6	0.6
FDI	Foreign direct investment	20900000	0.3	-0.4	-0.6	+0.54	0.58	0.5
GDP	Gross domestic Product	15265435.1	0.01	-0.2S	-0.5	+0.57	0.57	0.33
Rh	Rural household consumption	1455676776	0.25	0.24	-0.25	+0.787	0.56	0.44
Uc	Urban house hold consumption	324355455	0.55	0.88	-.25	+0.75	0.88	0.55

Model.2. Rural Household Model.

Table.1: Results of FDI on Rural Poverty.

Variables	Districts									
	Larkana		Shikarpur		Khairpur		Sukkur		Jacobabad	
	Coefficient	t-ratio	Coeff.	t-ratio	Coeff.	t-ratio	Coeff.	t-ratio	Coeff.	t-ratio
Extension ser.	0.25	1.45	0.33	1.32	0.55	1.54	-0.3	-1.64	1.33	0.33
Hired Labor	0.27	1.34	0.54	1.10	-	-	0.25	1.30	0.20	0.22
Improved Seed	-	-	0.40	1.22	0.32	1.01	-	-	1.40	0.55
Credit Facilities	-0.53	-1.88*	0.09	-0.17	-	-	-	-	-0.087	-1.9
Farming land	0.34	1.7*	0.31	1.80*	-0.10	-0.17	-0.28	-1.71	-0.12	-0.35
Family Head	.43	-1.78*	0.089	-0.19	-	-	0.015	1.23	-0.098	-0.66
In size	0.43	-1.88*	1.09	0.25	0.68	3.48	0.90	7.12	-	-
R ²	0.31		0.21		0.33		0.23		0.19	

Note. Significant at 90% level of significant.

Women's education results indicate significant positive effects on the overall household food production in Shikarpur and Sukkur. Educated women have a

capacity to process and apply the information passed to them, such as better farm methods and seed selection. Overall, the primary education of the woman had a higher impact on household food production than the other variables in the case of Sukkur. Women's education affected not only household food production but also food security. Unlike the consumption side of the model, time spent on the productive activities by a woman was positive and significantly affected household food production expect for Sukkur. The impact was slightly higher for Khairpur. Despite differences in signs time spent on production activities by a rural woman affects both her household production and consumption decisions. A joint test on all women-specific variables was statistically significant (p-value < 0.088) for all districts. The elasticity with respect to the time a man spent on productive activities was highly significant and positive for Shikarpur and Sukkur.

Women Labor Supply

The results of labor supply from a non-separable agricultural household model are reported in Table.3. The number of significant variables varied from district to district. More than 50% of the variables were found significant for Jacobabad and Khairpur and only less than 50% for Sukkur.

Table.3. Results of FDI on Women Family Labor Supply

Variables	Districts									
	Larkana		Shikarpur		Khairpur		Sukkur		Jacobabad	
	Coefficient	t-ratio	Coeff	t-ratio	Coeff.	t-ratio	Coeff t-ratio	Coeff.	t-ratio	
In meat	0.03	1.20	-0.02	-1.11	-0.02	-0.48	-0.03	-0.38	0.04	0.10
In cereals	0.01	0.27	-0.10	-2.48	0.00	0.20	0.25	1.30	0.20	0.22
In oils	0.02	1.35	0.40	1.22	0.32	1.01	-	-	1.40	0.55
In Fresh Vegetable	0.45	-1.88*	0.09	-0.17	0.010	0.03	-0.02	0.20	-0.087	-1.9
In legumes	0.34	1.7*	0.31	1.80*	-0.10	-0.17	-0.28	-1.71	-0.12	-0.35
Edu.1	.43	-1.78*	0.089	-0.19	-	-	0.015	1.23	-0.098	-0.66
Constant	0.43	-1.88*	1.09	0.25	0.68	3.48	0.90	7.12	-	-
R ²	0.33		0.34		0.33		0.28		0.24	

Note. Significant at 90% level or better used two tailed test & significant at 90% level of significant or better using a one tailed test.

The impact of exogenous variables on a woman labor supply varied considerably from district to district. The elasticity with respect to woman's access to extension services had a higher impact on her labor supply than any other variable on the case of Larkana. In Sukkur headship had a higher impact and size in the case of Shikarpur than any other variables included in the model. Primary education showed a higher influence than health variable in Shikarpur and Jacobabad. Furthermore non-reparability of woman labor supply and household production showed up in different variables across the districts, for instance cereals and vegetable price in Larkana and extension service in Jacobabad. The significant of joint test on women-specific variables

for woman labor supply and household food production in the case of Shikarpur further confirm the non-separability. There is also evidence to justify the non-separability of household food security and woman labor, although it varied considerably across the districts. Such variables include education of woman size and vegetable price in Jacobabad district and joint test on women specific variables in Sukkur.

Man Labor Supply

The results of the men labor supply are in Table.4. The education and age variables included were those for men. Results suggest that as a man older, his labor allocated to productive activities increase in case of Sukkur and Shikarpur contrary to expectations. The age of man significantly affected his labor supply in Larkana, Jacobabad and Khairpur. In absolute terms, the impact of age was slightly higher in Sukkur. The positive sign on the age of a man was contrary to that of woman in Sukkur. The explanation for the positive sign could be as follows. The younger men were more likely to be involved in activities other than farming than the older ones. The poor health of other members of the household negatively affected the time men spent on productive activities in Jacobabad. The explanation may be that since men were mostly responsible for setting the medical bills, they had to put in more time so as to earn more.

Table.4. Results of FDI on Poverty for Men Family Labor Supply

Variables	Districts									
	Larkana		Shikarpur		Khairpur		Sukkur		Jacobabad	
	Co-efficient	t-ratio	Coeff	t-ratio	Coeff	t-ratio	Coeff	t-ratio	Coeff	t-ratio
In meat	-0.11	-0.07	-0.02	-1.11	-0.02	-0.48	-0.03	-0.38	0.04	0.10
In cereals	0.11	0.27	-0.10	-2.48	0.03	0.68	0.16	1.66	-0.04	-1.09
In oils	0.12	1.35	0.40	1.22	0.32	1.01	0.00	0.00	1.40	0.55
In Fresh Vegetable	0.25	-1.88*	0.09	-0.17	0.010	0.03	-0.02	0.20	-0.087	-1.9
In legumes	0.34	1.7*	0.31	1.80*	-0.10	-0.17	-0.28	-1.71	-0.12	-0.35
Edu.1	0.03	-1.78*	0.089	-0.19	0.05	0.34	0.41	0.74	-	-
Constant	0.23	-1.88*	1.09	0.25	0.68	3.48	0.90	7.12	0.015	1.23
R ²	0.24		0.22		0.33		0.28		0.45	
Note. Significant at 90% level or better-used two-tailed test & significant at 90% level of significant or better using a one-tailed test.										

Results suggest that household size was negative and significantly affected a husband's labor supply in Shikarpur. On the contrary household size was not statistically different from zero in Sukkur and Larkana, although positive. However the consumer worker ratio in the case of Jacobabad increased a husband's labor supply as expected. Results suggest that a woman's access to hired labor significantly increased a husband's Labor supply in the case of Khairpur. The reverse was true for Sukkur district. In Shikarpur a woman's

access to improved seeds significantly increased the husband's labor supply. In Khairpur a woman's access to credit facilities significantly increased a husband's time. This was contrary to what was observed for a woman labor supply in the same district.

Policy Implications

The results provide significant implication of FDI on the rural poverty in Pakistan. No single policy can be prescribed for reducing the rural poverty in Pakistan which is tend to be increasing even though lot more investment made by the FDI. In contrast, urban population they are getting benefit of the FDI and huge employment and investment in the different sector provides the positive results for the urban population and there is significant change in the production and consumption of urban population

Conclusion

The purpose of this paper is to analyse the impact of FDI on poverty alleviation in Pakistan by using CGE framework. We started with the comparative exercise of FDI and its role in reducing poverty in Pakistan. The Household Model this model limited only capture the heterogeneity element in household behavior. There are two main factors FDI and rural poverty and FDI and Urban poverty. In the second model linear expenditure system (LES) replaces the demand of system derived from Cobb-Douglas utility function. This exercise highlighted the contribution household disaggregating in the context of CGE modeling exercise and marginal contribution of introducing the heterogeneity elements. According to the results, FDI has significant impact on the urban population where poverty has declines due to the huge FDI investment in the different sectors, and as for the rural poverty is increasing and significant impact of the FDI on the reducing rural population. CGE Model has been gaining importance in policy analysis of the inequalities of poverty. FDI policies can affect poverty reduction, and poverty reduction policies can affect FDI. The task of the policymaker is to coordinate policies affecting the two areas in such a way as to optimize the contribution of FDI to poverty reduction. The poverty reduction effects of different FDI-related policies will be discussed in more detail in a forthcoming FIAS paper, along with a consideration of which policy sets are more desirable from this standpoint.

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