

Do Foreign Inflows Benefit Pakistani Poor?

MUHAMMAD ALI and MUHAMMAD NISHAT

I. INTRODUCTION

Foreign Inflows plays an important role in development of a country. Although significance of such inflows is much larger in developing countries but it is not limited to them. Emerging economies, even developed countries, also need foreign inflows to manage their economy. However, size and the composition of such inflows are determined on the basis of country specific requirements. The need of foreign capital generally arises with the lack of capital in host country and low saving and investment ratios. Low household income reduces the government's earning from taxes and hence it reduces government expenditures and consequently growth of the country slows down. With the passage of time, less developed countries have become more and more dependent on foreign inflows due to which their growth is completely reliant on funds from other countries. The dependence usually results in a shock on host country when these inflows are completely or partially dried-up. Moreover, misallocation of funds is also a very critical issue. If inflows are not well directed and not supported with sufficient research on host country, they may adversely affect growth of a country because of increasing poverty and unemployment rate with low investment on human capital.

Foreign inflows are of critical importance to Pakistan. In addition to the low saving and investment ratios and lack of physical and human capital, Pakistan is faced with political and macroeconomic instability due to which large and continuous flow of foreign inflows is required to supplement its growth. As far as the composition is concerned, it has changed over the years for Pakistan. Share of remittances in total inflows decreased from 16.35 percent in 1980 to 12.48 percent in 2008 on the contrary share of FDI increased from 0.26 percent to 9.96 percent in the same period; depicting a huge shift in inflow concentration. Share of foreign debt on the other hand, followed increasing trend from 1985 to 2000 but in 2008 it fell to 76.5 percent as compared to 93.91 percent in 2000.

The impact of foreign inflows on poverty and economic development is found to be controversial in the literature. In some studies positive impact of foreign inflows was proved on poverty and economic development, while other studies highlighted its negative effects [Mohey-ud-din (2006)]. In case of Pakistan there are only few studies on the relationship between inflows and poverty, for example Siddiqui, *et al.* (2006), Zaman,

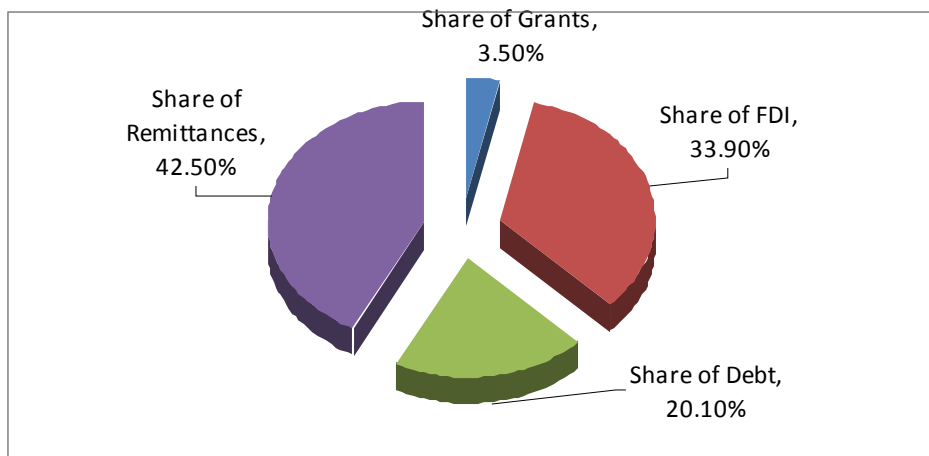
Muhammad Ali <alonline83@yahoo.com> is M.Phil Student, Applied Economics Research Centre, University of Karachi, Karachi. Muhammad Nishat <mnishat@iba.edu.pk> is Professor, Institute of Business Administration, Karachi.

et al. (2008) and Mohey-ud-din (2006). After thorough literature review and analysis, these authors have explained the relationship between foreign inflows and poverty but none of them have computed the extent of the impact between the two variables. This paper is therefore an attempt to fill this gap by numerically expressing the relationship between inflows and poverty. First, we would attempt to study the direct impact of foreign inflows on poverty reduction in Pakistan. Secondly, relationship between poverty and infant mortality in Pakistan would be derived to indirectly determine the relationship between inflows and infant mortality. Third, impact of inflows on total school enrolment in general and female enrolment in particular, would be examined to determine the impact on education sector. Fourth, impact of inflows on public expenditure on education and health would be examined.

II. STRUCTURE OF FOREIGN INFLOWS IN PAKISTAN

The composition of inflows in Pakistan for the year 2008 is illustrated in Figure 1. Highest share in the inflows is of remittances (42.5 percent) followed by FDI (33.9 percent), foreign debt (20.1 percent) and Grants (3.5 percent). In terms of percentage of GDP, remittances have the highest ratio (4.1 percent) with FDI on second place with 3.3 percent as percentage to GDP.

Fig. 1. Share of Each Component in Total Inflow Variable (2008)



Source: Author's Estimates based on Hand Book of Statistics 2005, Economic Survey (Various Issues).

Table 1 compares the shares of each inflow in the total inflow variable and also their percentage to GDP. From the table we can see that the composition has changed over the years for Pakistan. Share of remittances in total inflows followed mixed trend over the years. From 1975 to 1985 it increased from 17.9 percent to 62.9 percent then fell to 37.3 percent in 1995 and followed similar trend till 2008 when the share of remittances in total foreign inflows was 42.5 percent. Similar uneven trend was observed in terms of percentage share of remittances to GDP. The share increased from 2.1 percent in 1975 to 3.4 percent in 1995 and following the mixed trend it reached 4.1 percent in 2008. On the contrary, share of FDI in total foreign inflows showed overall positive trend. It increased

Table 1

Composition and Shares of Foreign Inflows

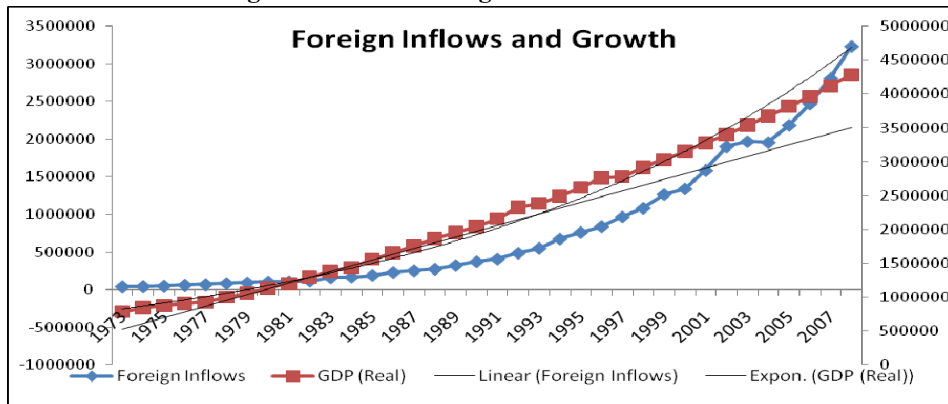
Obs	Share in Total Inflow				Percentage of GDP			
	Share of Remittances	Share of FDI	Share of Grant	Share of Debt	Rem Percent of GDP	FDI Percent of GDP	Grant Percent of GDP	Debt Percent of GDP
1975	17.9%	1.2%	5.2%	75.7%	2.1%	0.1%	0.6%	8.7%
1980	53.2%	0.9%	7.7%	38.2%	8.2%	0.1%	1.2%	5.9%
1985	62.9%	1.8%	9.8%	25.5%	8.7%	0.3%	1.4%	3.5%
1990	42.0%	4.7%	11.6%	41.7%	5.5%	0.6%	1.5%	5.4%
1995	37.3%	8.8%	6.1%	47.8%	3.4%	0.8%	0.6%	4.4%
2000	32.8%	15.7%	4.2%	47.4%	1.4%	0.7%	0.2%	2.1%
2005	50.8%	18.6%	4.3%	26.3%	4.0%	1.5%	0.3%	2.1%
2008	42.5%	33.9%	3.5%	20.1%	4.1%	3.3%	0.3%	1.9%

Source: Hand Book of Statistics 2005, Economic Survey (Various Issues).

from 1.2 percent in 1975 to 8.8 percent in 1995 and to 33.9 percent in 2008. Similar increasing trend was observed in FDI as a percent to GDP where it increased from 0.1 percent in 1975 to 0.8 percent in 1995 and further increased to 3.3 percent in 2008. The share of grants in total foreign inflows depicted U-shaped curve, from 5.2 percent in 1975, it increased to 11.6 percent in 1990 then it started falling and reached 3.5 percent in 2008. Grants as a percentage to GDP increased from 0.6 percent in 1975 to 1.5 percent in 1990 after that it started declining and reached 0.3 percent in 2008. As far as foreign debt is concerned, it followed mixed trend over the years. Its share in total foreign inflows decreased from 75.7 percent in 1975 to 47.8 percent in 1995 and to 20.1 percent in 2008. Similar trend was observed in foreign debt as percentage to GDP where it decreased from 8.7 percent in 1975 to 4.4 percent in 1995 and to 1.9 percent in 2008.

Figure 2 compares the trend of foreign inflows with real GDP. From the figure we can see that both series are increasing with time and real GDP is showing similar trend as of foreign inflows. The only irregularity in the inflow variable is in the year 2001 in which all the inflows experienced positive shocks following the attacks on World Trade Towers in USA.

Fig. 2. Trends in Foreign Inflows and Growth



III. THEORETICAL FRAMEWORK AND ECONOMETRIC TECHNIQUES

Foreign Inflows

The linkage between Foreign Inflows and poverty seems to be quite general but studies have shown that there are country specific outcomes of the foreign inflows on poverty [Zaman, *et al.* (2008)]. Foreign Inflows can affect poverty directly or indirectly. The direct impact comes from the increase in household income while indirect affect comes from the spillovers of different income generating activities directly affected by foreign inflows [Carvalho, *et al.* (1996)]. Siddiqui, *et al.* (2006) found that foreign inflows significantly affect poverty in presence of trade liberalisation.

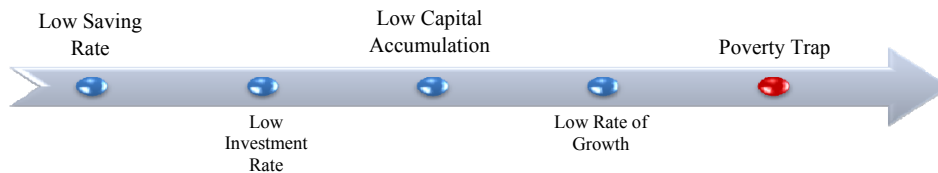
Foreign Assistance

Foreign assistance generally comprises of non-returnable grants (Aid) and returnable foreign loans (Debt) with interest. In this study, we have combined both Foreign Debt and Grant to form a foreign assistance variable and analysed its impact on different variables. It is argued that foreign assistance, particularly aid, has negative or insignificant impact on growth and poverty because it is not properly utilised. Masud, *et al.* (2005) portrayed three main arguments coming out of most of the aid effectiveness studies. (1) aid is often misallocated (given to wrong recipients), (2) aid is not properly used/utilised by the recipients and (3) GDP is not the correct measure for aid effectiveness Boone (1996). They further explained that the argument about the misallocation of foreign assistance is inappropriate most of the time because objectives of the donors are not always to assist the recipient countries in their development and poverty reduction but there is underlying agenda coupled with each assistance agreement which is more tilted in favour of donor's strategic interests. Keeping this situation in mind, one cannot expect the foreign assistance to help in poverty alleviation strategies and economic development. Gwin (2002) found that foreign assistance have decreased poverty in the host countries and increased their social development.

Kraay, *et al.* (2005) argued that the aid ineffectiveness is directly linked to the improper utilisation. A modest increase in aid can bring prominent results while huge amounts can end up giving zero net output from the agreement.

Figure 3 represents the channel through which countries fall in the poverty trap proposed by Kraay, *et al.* (2005). The authors proposed that, in order for the country to bring itself out of the poverty trap, it should direct the aid flows towards strategies that can increase the saving rate in the country, this will not only increase the investment rate but also with improve the capital accumulation in the country, resulting in better rate of growth and country would be able to come out of the poverty trap.

Fig. 3 Channel of the Poverty Trap



Source: Author's creation based on Kraay, *et al.* (2005).

Infant Mortality

Boone (1996) attempted to find the relationship between aid and infant mortality but found no significant impact on lower levels of infant mortality. In countries with weak economic management, there is no relationship between aid and change in infant mortality. While in countries with good economic management there is evidence that aid reduces the infant mortality in the host country Burnside, *et al.* (1998).

Pro-public Government Expenditures

Pro-public government expenditures are recognised in different categories in the literature. Verschoor (2002) identified the strongest candidates to be classified as pro-poor expenditures as the social sector expenditures (health, education and sanitation) while McGillivray (2004) included the expenditure on rural roads, micro-credit and agricultural extension and technology in the list of pro-public expenditures as they may also be beneficial to the poor.

Literature gives us evidence that incidence of pro-public expenditures is progressive i.e. marginal pro-public spending is progressive. Thus, it can be said that expenditures, particularly on health and education, increases human welfare [Gomanee, *et al.* (2003)]. In addition to the impact on the welfare of the individuals, it is also necessary to make sure that distribution of such impacts is desirable. There is a possibility that rich quintile of the population gets the maximum out of public expenditures. Castro-Leal, *et al.* (1999) proved the same by showing that there is a least possibility that poor will benefit from education and health expenditures.

In another research,¹ it is shown that there is a weak link between expenditures on health and education and poverty i.e., government social spending does not necessarily benefits the poor; hence such expenditures may not reduce poverty. On the other hand, this does not mean to reduce such expenditures as they may not benefit all the poor but the public as a whole do get the benefit [Gomanee, *et al.* (2005)]. More specifically, higher government spending on primary and secondary education has greater impact on measure of education attainment, higher spending on health results in reduction of infant mortality rates [Gupta, *et al.* (2002)].

FDI, Growth and Poverty

Economic literature is rich with studies related to FDI as its importance has been recognised by the economists since 1990's. FDI is less volatile as compared to other sources of capital flows and does not depict a pro-cyclical behaviour. Hence it is the favourite source of capital inflows for developing countries [Ozturk and Kalyoncu (2007)].

FDI provides capital, productive facilities, technology and latest managerial knowledge to the recipient countries [Hassan (2003)]. In addition to this, FDI also brings foreign exchange, competition and enhances the access to foreign markets [Mottaleb (2007); World Bank (1999); Romer (1993); UNCTAD (1991)]. FDI also complements

¹OECD Development Centre (2002), "Development Centre Studies: Education and Health Expenditure and Poverty Reduction in East Africa—Madagascar and Tanzania" Web address: http://www.oecd.org/document/4/0,3343,en_2649_33731_1835908_1_1_1_1,00.html.

domestic private investment which increases the employment; enhances the spillover and human capital, the enhancement boosts overall economic growth of recipient countries [Chowdhury and Mavrotas (2006)].

There are numerous studies on FDI and poverty separately but only few of them analysed the direct impact of FDI on poverty like White (1992), Carvalho and White (1996), and Siddiqui (1997). Other related studies have used the impact of FDI on GDP as a proxy to depict the impact of the same on poverty [Zaman, *et al.* (2008)]. For instance, Borensztein, *et al.* (1998) studied the impact of FDI on economic growth in framework of cross-country regression. They found FDI to be an important vehicle for technology transfer, and FDI contributes relatively more than domestic investment to growth. However, there is a complementary relationship between FDI and domestic investment as former causes the later to increase. De Mello (1999) used time series and panel data (1970–1990) for a sample of OECD and non-OECD countries, the results supported the findings of Borensztein, *et al.* (1998).

Bengoa, *et al.* (2003) used panel data for the period of 1970–1999 of 18 Latin American countries. Their findings suggest that there is a positive correlation between FDI and economic growth in the host countries. They noted that in order to benefit from long-term capital flows, the host country requires, adequate human capital, liberalised markets and economic stability. A panel data analysis of Li and Liu (2005) for the sample of 84 countries for the period 1970–1999 showed that through channel of human capital, FDI exerted a strong positive effect on economic growth.

Durham (2004) analysed data for 80 countries from 1979 to 1998 and found that foreign direct investment does not have direct positive effects on growth; effects are contingent on the ‘absorptive capacity’ of host countries. Herzer, *et al.* (2006) studied 28 developing countries and found that in majority of countries FDI has no statistically significant long-run effect on growth. In very few cases, both long run and short run relationship was found between FDI and growth. But for some countries, there is also evidence of growth-limiting effects of FDI in the short or long term.

Ozturk, *et al.* (2007) investigated the impact of FDI on economic growth of Turkey and Pakistan for the period of 1975–2004. The findings suggests that these two variables are co-integrated for both countries studied and GDP causes FDI in the case of Pakistan, while there is strong evidence of a bi-directional causality between the two variables for Turkey.

The overall inflows of FDI in Pakistan are increasing but their contribution to the growth is questionable. In Pakistan, FDI generally comes to the following sectors; energy, chemicals, foods and beverages, machinery, construction and textiles. From comparative point of view, despite of having increasing flows of FDI in the country, Pakistan is lacking far behind its potential to attract FDI in various sectors. The major reason behind the inability is perceptions of the investors and the law and order situation in the country which has significantly increased the risk associated with investment and hence increased the cost of doing business in the country [Zaman, *et al.* (2008)].

Remittances, Growth and Poverty

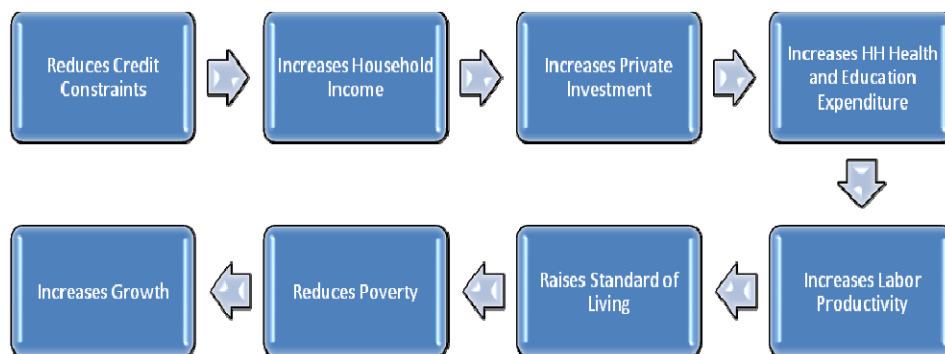
Research has shown that a very high proportion of remittances are spent on consumption instead of productive investments. Theoretically, however, the relationship

between remittances and growth can be positive or negative. Remittances may generate positive spillovers through efficient financial markets, easing the credit constraints of business as well as common men or on the contrary, it may increase consumption more than investment and negative chain of events can be triggered through low labour participation, low investments and so on [Goldberg, *et al.* (2008)].

One important feature of remittances is that it can indirectly affect labour supply. This could reduce economic growth through reduced labour supply. Moreover, large and consistent remittance inflows could make the exports less profitable through appreciated real exchange rate. However, remittances can reduce poverty through increase in income of the recipient households which finances their consumption and hence improves their standard of living [Jongwanish (2007)].

The positive impacts of remittances can emerge through a number of channels. Figure 4 shows that channel through which remittances affects poverty and economic growth. Remittances ease the credit constraints often faced by citizens of developing countries by increasing their household income. This does not only increase their consumption level but also increases their savings which ultimately translates themselves to private investments. The higher level of disposable income allows the households to spend more on health and education, through which the overall labour productivity increases, raises their standard of living and ultimately reduces poverty. Calderon, *et al.* (2008) found negative impact of remittances on poverty and inequality for their study on 10 Latin American Countries [Zaman, *et al.* (2008)]. Jongwanish, (2007) found that there is direct and significant impact of remittances on poverty reduction through higher per capita income and ease of credit constraints.

Fig. 4. Channels of Remittances Impact on Poverty and Growth



Source: Author's creation.

Some studies on the issue found positive relationship between remittances and growth [Stark and Lucas (1988); Taylor (1992); and Faini (2002)]. On the contrary, Chami, *et al.* (2003) found negative and IMF (2005) found no impact of remittances on economic growth. Brown (1994) found positive relationship between remittances and savings and investment in Tonga and Samoa basing on micro-level analysis. Yang (2004) found that remittances improves child enrolment in schools and increases education expenditure. Mesnard (2004) for Tunisia using a life-cycle model found that remittances ease the credit constraint of workers whose access to the

financial market is limited. In terms of poverty, Adams and Page (2005) studied the impact of remittances on poverty in 71 developing countries and found that remittances do help in poverty reduction. Stahl (1982) however argues that while remittances acts as a blessing to the household, there is a cost associated with it. The most obvious one is of migration itself. Since migration is not cheap, poor are least likely to be recipient of remittances from abroad hence the impact may be negligible on poverty or it may even increase the levels of poverty and inequality in the country [Jongwanish (2007)].

Adams (2002) found positive impact of remittances on the savings in Pakistan during the 1980s and early 1990s. The marginal propensity to save out of international remittances was found to be 0.71 compared to the marginal propensity to save out of rental income of just 0.085.

Nishat, *et al.* (1991) analysed the impact on remittances on economic growth in Pakistan for the period 1959-60 to 1987-88. The results indicated a strong positive impact of remittances on GNP, consumption, investment and imports. They argue that remittances increase the dependency on imports through increase in consumption of imported goods and worsen balance of payments problems.

IV. ECONOMETRIC MODELLING

Time series data usually suffer from the unit root problem thus involving a serious violation of assumptions of ordinary least square method of estimation. Keeping this in view, the data was first checked for stationarity before applying conventional Ordinary Least Square method of estimation.

Augmented Dicky-Fuller (ADF) test uses following equation to test whether there is unit root in the time series:

$$\Delta y_t = \beta_1 + \beta_2 t + \alpha y_{t-1} + \gamma \sum \Delta y_{t-1} + \varepsilon_t \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (1)$$

Where ε_t is white noise error term and t represents time trend. The null hypothesis in ADF test is that variable has unit root.

In addition to ADF, the Phillips-Perron (PP) [1988] unit root test is also used in the study, which is a nonparametric system of controlling for serial correlation while testing for the stationarity of variables. The PP method estimates the following equation:

$$Y_t = \alpha_0 + \alpha_1 y_{t-1} + \alpha_2 \left(t - \frac{n}{2}\right) + \varepsilon_t \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (2)$$

Where Y_t is the corresponding time series, n is the number of observations and ε_t is the error term. The null hypothesis of a unit root is $H_0: \alpha_1 = 1$.

After testing for stationarity our next step would be to investigate the long run and short run relationship between the variables. There are several econometric techniques available to study such relationship. Uni-variate co-integration includes Engle-Granger (1987) and Fully Modified Ordinary Least Squares (FMOLS) of Philips and Hansen (1990); and multivariate co-integration techniques includes Johansen (1988); Johansen and Juselius (1990); and Johansen's (1995). Although these tests are most commonly

Female Enrolment Equation

$$\begin{aligned}
\Delta \ln FENR_t = & \alpha_1 + \beta_1 \sum_{i=0}^n \Delta \ln A_{t-i} + \beta_2 \sum_{i=0}^n \Delta \ln POV_{t-i} + \beta_3 \sum_{i=0}^n \Delta \ln Y_{t-i} + \beta_4 \sum_{i=0}^n \Delta \ln ER_{t-i} \\
& + \beta_5 \sum_{i=0}^n \Delta \ln EDEX_{t-i} + \beta_6 \sum_{i=1}^n \Delta \ln FENR_{t-i} + \gamma_1 \Delta \ln A_{t-1} + \gamma_2 \Delta \ln POV_{t-1} \\
& + \gamma_3 \Delta \ln Y_{t-1} + \gamma_4 \Delta \ln ER_{t-1} + \gamma_5 \Delta \ln EDEX_{t-1} \\
& + \varepsilon_t \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (6)
\end{aligned}$$

Health Expenditure Equation

$$\begin{aligned}
\Delta \ln HEEX_t = & \alpha_1 + \beta_1 \sum_{i=0}^n \Delta \ln A_{t-i} + \beta_2 \sum_{i=0}^n \Delta \ln POV_{t-i} + \beta_3 \sum_{i=0}^n \Delta \ln Y_{t-i} + \beta_4 \sum_{i=0}^n \Delta \ln ER_{t-i} \\
& + \beta_7 \sum_{i=1}^n \Delta \ln HEEX_{t-i} + \gamma_1 \Delta \ln A_{t-1} + \gamma_2 \Delta \ln POV_{t-1} + \gamma_3 \Delta \ln Y_{t-1} + \gamma_4 \Delta \ln ER_{t-1} \\
& + \varepsilon_t \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (7)
\end{aligned}$$

Education Expenditure Equation

$$\begin{aligned}
\Delta \ln EDEX_t = & \alpha_1 + \beta_1 \sum_{i=0}^n \Delta \ln A_{t-i} + \beta_2 \sum_{i=0}^n \Delta \ln POV_{t-i} + \beta_3 \sum_{i=0}^n \Delta \ln Y_{t-i} + \beta_4 \sum_{i=0}^n \Delta \ln ER_{t-i} \\
& + \beta_7 \sum_{i=1}^n \Delta \ln EDEX_{t-i} + \gamma_1 \Delta \ln A_{t-1} + \gamma_2 \Delta \ln POV_{t-1} + \gamma_3 \Delta \ln Y_{t-1} + \gamma_4 \Delta \ln ER_{t-1} \\
& + \varepsilon_t \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (8)
\end{aligned}$$

Where $\ln POV$ is the per capita poverty headcount in natural log, A is the set of Foreign Inflows, Foreign Assistance, Remittances and Foreign Direct Investment used separately which splits Equation 3 in four different equations. $\ln EDEX$ is the federal education expenditure in natural log, $\ln TENR$ is natural log of total enrollment in schools, $\ln ER$ is natural log of exchange rate, $\ln HEEX$ is natural log of federal health expenditure, $\ln IM$ is natural log of Infant Mortality, $\ln FENR$ is natural log of Female Enrollment, $\ln Y$ is natural log of per capita GDP and ε_t is the white noise error term. The parameters γ_i where $i = 1, 2, 3, 4$ are the corresponding long-run multipliers, β_i where $i = 1, 2, 3, 4$ are the short dynamic coefficients of the underlying ARDL model. We test the null hypothesis of no co-integration i.e., $H_0 : \gamma_i = 0$ or $\gamma_1 = \gamma_2 = \gamma_3 = \gamma_4 = 0$ in Equation 3, against the alternative using the F-test with critical values tabulated by Pesaran and Pesaran (1997) and Pesaran, *et al.* (2001).

If there is evidence of long-run relationship in the model then in order to estimate the long run coefficients, the following long run model will be estimated:

Poverty Equation

$$\begin{aligned} \Delta \ln POV_t = & \alpha_1 + \beta_1 \sum_{i=0}^n \Delta \ln A_{t-i} + \beta_2 \sum_{i=0}^n \Delta \ln EDEX_{t-i} + \beta_3 \sum_{i=0}^n \Delta \ln TENR_{t-i} + \beta_4 \sum_{i=0}^n \Delta \ln ER_{t-i} \\ & + \beta_5 \sum_{i=0}^n \Delta \ln HEEX_{t-i} + \beta_6 \sum_{i=0}^n \Delta \ln Y_{t-i} + \beta_7 \sum_{i=0}^n \Delta \ln POV_{t-i} \\ & + \varepsilon_t \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (9) \end{aligned}$$

Infant Mortality Equation

$$\begin{aligned} \Delta \ln IM_t = & \alpha_1 + \beta_1 \sum_{i=0}^n \Delta \ln FENR_{t-i} + \beta_2 \sum_{i=0}^n \Delta \ln HEEX_{t-i} + \beta_3 \sum_{i=0}^n \Delta \ln EDEX_{t-i} + \beta_4 \sum_{i=0}^n \Delta \ln POV_{t-i} \\ & + \beta_5 \sum_{i=0}^n \Delta \ln Y_{t-i} + \beta_6 \sum_{i=0}^n \Delta \ln IM_{t-i} + \varepsilon_t \quad \dots \quad \dots \quad \dots \quad (10) \end{aligned}$$

Total Enrolment Equation

$$\begin{aligned} \Delta \ln TENR_t = & \alpha_1 + \beta_1 \sum_{i=0}^n \Delta \ln A_{t-i} + \beta_2 \sum_{i=0}^n \Delta \ln EDEX_{t-i} + \beta_3 \sum_{i=0}^n \Delta \ln Y_{t-i} + \beta_4 \sum_{i=0}^n \Delta \ln POV_{t-i} \\ & + \beta_5 \sum_{i=0}^n \Delta \ln TENR_{t-i} + \varepsilon_t \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (11) \end{aligned}$$

Female Enrolment Equation

$$\begin{aligned} \Delta \ln FENR_t = & \alpha_1 + \beta_1 \sum_{i=0}^n \Delta \ln A_{t-i} + \beta_2 \sum_{i=0}^n \Delta \ln POV_{t-i} + \beta_3 \sum_{i=0}^n \Delta \ln Y_{t-i} + \beta_4 \sum_{i=0}^n \Delta \ln ER_{t-i} \\ & + \beta_5 \sum_{i=0}^n \Delta \ln EDEX_{t-i} + \beta_6 \sum_{i=0}^n \Delta \ln FENR_{t-i} + \varepsilon_t \quad \dots \quad \dots \quad \dots \quad (12) \end{aligned}$$

Health Expenditure Equation

$$\begin{aligned} \Delta \ln HEEX_t = & \alpha_1 + \beta_1 \sum_{i=0}^n \Delta \ln A_{t-i} + \beta_2 \sum_{i=0}^n \Delta \ln POV_{t-i} + \beta_3 \sum_{i=0}^n \Delta \ln Y_{t-i} + \beta_4 \sum_{i=0}^n \Delta \ln ER_{t-i} \\ & + \beta_5 \sum_{i=0}^n \Delta \ln HEEX_{t-i} + \varepsilon_t \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (13) \end{aligned}$$

Education Expenditure Equation

$$\begin{aligned} \Delta \ln EDEX_t = & \alpha_1 + \beta_1 \sum_{i=0}^n \Delta \ln A_{t-i} + \beta_2 \sum_{i=0}^n \Delta \ln POV_{t-i} + \beta_3 \sum_{i=0}^n \Delta \ln Y_{t-i} + \beta_4 \sum_{i=0}^n \Delta \ln ER_{t-i} \\ & + \beta_5 \sum_{i=0}^n \Delta \ln EDEX_{t-i} + \varepsilon_t \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (14) \end{aligned}$$

If we find the evidences of long run relation then in the 3rd step we utilise the following equation to estimate the short run coefficients:

Poverty Equation

$$\begin{aligned} \Delta \ln POV_t = & \alpha_1 + \beta_1 \sum_{i=0}^n \Delta \ln A_{t-i} + \beta_2 \sum_{i=0}^n \Delta \ln EDEX_{t-i} + \beta_3 \sum_{i=0}^n \Delta \ln TENR_{t-i} + \beta_4 \sum_{i=0}^n \Delta \ln ER_{t-i} \\ & + \beta_5 \sum_{i=0}^n \Delta \ln HEEX_{t-i} + \beta_6 \sum_{i=0}^n \Delta \ln Y_{t-i} + \beta_7 \sum_{i=0}^n \Delta \ln POV_{t-i} + \phi_1 ECM_{t-1} \\ & + \varepsilon_t \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (15) \end{aligned}$$

Infant Mortality Equation

$$\begin{aligned} \Delta \ln IM_t = & \alpha_1 + \beta_1 \sum_{i=0}^n \Delta \ln FENR_{t-i} + \beta_2 \sum_{i=0}^n \Delta \ln HEEX_{t-i} + \beta_3 \sum_{i=0}^n \Delta \ln EDEX_{t-i} \\ & + \beta_4 \sum_{i=0}^n \Delta \ln POV_{t-i} + \beta_5 \sum_{i=0}^n \Delta \ln Y_{t-i} + \beta_6 \sum_{i=0}^n \Delta \ln IM_{t-i} + \phi_1 ECM_{t-1} \\ & + \varepsilon_t \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (16) \end{aligned}$$

Total Enrolment Equation

$$\begin{aligned} \Delta \ln TENR_t = & \alpha_1 + \beta_1 \sum_{i=0}^n \Delta \ln A_{t-i} + \beta_2 \sum_{i=0}^n \Delta \ln EDEX_{t-i} + \beta_3 \sum_{i=0}^n \Delta \ln Y_{t-i} + \beta_4 \sum_{i=0}^n \Delta \ln POV_{t-i} \\ & + \beta_5 \sum_{i=0}^n \Delta \ln EDEX_{t-i} + \phi_1 ECM_{t-1} + \varepsilon_t \quad \dots \quad \dots \quad \dots \quad \dots \quad (17) \end{aligned}$$

Female Enrolment Equation

$$\begin{aligned} \Delta \ln FENR_t = & \alpha_1 + \beta_1 \sum_{i=0}^n \Delta \ln A_{t-i} + \beta_2 \sum_{i=0}^n \Delta \ln POV_{t-i} + \beta_3 \sum_{i=0}^n \Delta \ln Y_{t-i} + \beta_4 \sum_{i=0}^n \Delta \ln ER_{t-i} \\ & + \beta_5 \sum_{i=0}^n \Delta \ln EDEX_{t-i} + \beta_6 \sum_{i=0}^n \Delta \ln FENR_{t-i} + \phi_1 ECM_{t-1} \\ & + \varepsilon_t \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (18) \end{aligned}$$

Health Expenditure Equation

$$\begin{aligned} \Delta \ln HEEX_t = & \alpha_1 + \beta_1 \sum_{i=0}^n \Delta \ln A_{t-i} + \beta_2 \sum_{i=0}^n \Delta \ln POV_{t-i} + \beta_3 \sum_{i=0}^n \Delta \ln Y_{t-i} + \beta_4 \sum_{i=0}^n \Delta \ln ER_{t-i} \\ & + \beta_7 \sum_{i=0}^n \Delta \ln HEEX_{t-i} + \phi_1 ECM_{t-1} + \varepsilon_t \quad \dots \quad \dots \quad \dots \quad \dots \quad (19) \end{aligned}$$

Education Expenditure Equation

$$\Delta \ln EDEX_t = \alpha_1 + \beta_1 \sum_{i=0}^n \Delta \ln A_{t-i} + \beta_2 \sum_{i=0}^n \Delta \ln POV_{t-i} + \beta_3 \sum_{i=0}^n \Delta \ln Y_{t-i} + \beta_4 \sum_{i=0}^n \Delta \ln ER_{t-i} + \beta_7 \sum_{i=0}^n \Delta \ln EDEX_{t-i} + \phi_1 ECM_{t-1} + \varepsilon_t \quad \dots \quad \dots \quad \dots \quad \dots \quad (20)$$

Where ϕ_1 is the error correction term in the model which indicates the pace of adjustment towards long run equilibrium following a short run shock, ECM_{t-1} represents the error correction term derived from long-run con-integration equation through a newly developed technique of ARDL, $\beta_i (i = 1, 2, 3, 4)$ are constant terms, and δ_i is the serially uncorrelated random disturbance term with mean zero. Long-Run relationship can also be verified through the model specified in Equation (5), with the significance of the lagged ECM by t -test.

The ARDL approach involves two steps for estimating the long run relationship Pesaran, *et al.* (2001), first step is to investigate the long run relationship among the variables specified in the equation, and the second step is to estimate short run causality. The second step is only applied when existence of long run relationship is found in the first step [Narayan, *et al.* (2005)]. Two sets of asymptotic critical values are provided by Pesaran and Pesaran (1997) and Pesaran, *et al.* (2001). The first set assumes that all variables are $I(0)$ while the second based on the assumption of $I(1)$. The null hypothesis of the no co-integration will be rejected if the calculated F-statistic is greater than the upper bound critical value, implying that there exists long run relationship among the variables. If the computed statistics are less than the lower bound critical values, we cannot reject the null hypothesis. Lastly, if the computed F-statistics falls within the two bound critical values discussed above, the result will be inconclusive.

In addition to the ARDL approach for the investigation of a long run relationship between the variables in multivariate models, the Johansen co-integration technique will also be used in this study. Johansen (1988) and Johansen and Juselius (1990) presented the method to estimate the maximum likelihood estimators in multivariate models [Yuan, *et al.* (1994)]. They also present two likelihood ratio tests, one based on maximal eigenvalue with H_0 that the number of co-integrating vectors is less than or equal to r against the H_1 of $r+1$ co-integrating vectors and other test based on trace test with the same null hypothesis and H_1 that there are at least $r+1$ co-integrating vectors. In order to apply Johansen co-integration technique, it is necessary that the variables should be stationary at $I(1)$ [Ahlgren, *et al.* (2002)].

V. DATA AND VARIABLE DESCRIPTION

Data has been taken from various different sources for the period of 1973–2008. Ideally, literacy rate and Human Development Index would be the better indicators of wellbeing but due to unavailability of time series data, we used infant mortality and school enrolment as proxy variables. Brief information about the variables and their source is given in the following table.

GDP	Gross Domestic Product, at Constant Prices of 2000-01 in Million PKR.	Handbook of Statistics on Pakistan Economy 2005, updated with Annual Reports of SBP.
FI	Foreign Inflows (FDI+FA+Rem) in Million PKR.	Handbook of Statistics on Pakistan Economy 2005, updated with Annual Reports of SBP and Economic Survey of Pakistan various issues.
FDI	Foreign Direct Investment in Million PKR.	Handbook of Statistics on Pakistan Economy 2005, updated with Annual Reports of SBP and Economic Survey of Pakistan various issues.
FA	Foreign Assistance (Foreign Grants + Foreign Debt) in Million PKR.	Handbook of Statistics on Pakistan Economy 2005, updated with Annual Reports of SBP and Economic Survey of Pakistan various issues.
Rem	Remittances in Million PKR.	Handbook of Statistics on Pakistan Economy 2005, updated with Annual Reports of SBP and Economic Survey of Pakistan various issues.
IM	Infant Mortality, Deaths per 1000 persons.	Handbook of Statistics on Pakistan Economy 2005, updated with Annual Reports of SBP and Economic Survey of Pakistan various issues. Data for some years was filled in using Quadratic Interpolation.
TENR	Total School Enrolment in thousands.	50 Years of Pakistan Economy in Statistics. Pakistan Statistical Year Book 2008, Economic Survey of Pakistan 2008-09.
FENR	Female School Enrolment in thousands.	50 Years of Pakistan Economy in Statistics. Pakistan Statistical Year Book 2008, Economic Survey of Pakistan 2008-09.
POV	Poverty headcount ratio.	Jamal, H. (2006), Economic Survey of Pakistan 2008-09, ratio for 2008 was taken from an article of business recorder and for the year 2007 it was calculated using cubic-spline function.
HEEX	Federal Expenditure on Health in Million PKR.	Annual Budget Statements (Various Issues).
EDEX	Federal Expenditure on Education in Million PKR.	Annual Budget Statements (Various Issues).
ER	Exchange Rate of Pakistan in Term of US Dollars.	Handbook of Statistics on Pakistan Economy 2005, updated with Annual Reports of SBP.

VI. EMPIRICAL RESULTS

Unit Root Test

Table 2 presents the results of units root tests. As discussed before, we used Augmented Dickey Fuller test and Philip-Perron test to do the unit root analysis. The results suggest that most of the variables are not stationary at level therefore we cannot apply traditional OLS techniques for our estimation. The results of ARDL estimation are given in next section.

Table 2

Results of the Unit Root Tests

Variable	Level		1st Difference		Level		1st Difference	
	t-statistic	p-value	t-statistic	p-value	t-statistic	p-value	t-statistic	p-value
lnFI	-2.45	0.35	-7.18	0.00	-2.35	0.40	-8.41	0.00
lnPOV	-1.14	0.91	-11.68	0.00	-0.87	0.95	-3.98	0.02
lnFA	-1.15	0.91	-5.93	0.00	-1.44	0.83	-5.93	0.00
lnREM	-3.17	0.11	-4.07	0.02	-2.20	0.47	-4.11	0.01
lnFDI	-3.42	0.07	-7.65	0.00	-3.41	0.07	-8.07	0.00
lnER	-2.41	0.37	-4.22	0.01	-2.32	0.41	-4.24	0.01
lnY	-4.06	0.02	-5.43	0.00	-4.07	0.02	-5.55	0.00
lnTENR	-1.86	0.65	-4.73	0.00	-2.05	0.55	-4.61	0.00
lnFENR	-1.83	0.67	-5.80	0.00	-1.84	0.67	-5.80	0.00
lnIM	-1.30	0.87	-4.29	0.01	-1.37	0.85	-4.13	0.01
lnEDEX	-4.92	0.00	-3.65	0.04	-4.31	0.01	-3.65	0.04
lnHEEX	-1.77	0.70	-6.64	0.00	-1.67	0.74	-7.61	0.00

Estimated Coefficients

The long-run and short-run results of poverty equation are presented in Tables 3 and 4. For the FI variable as a whole, it was found that foreign inflows actually increase the poverty in Pakistan both in long-run and short-run. More specifically, in long-run one percent increase in foreign inflows bring about 0.6 percent increase in poverty while in short-run, 1 percent increase in foreign inflows brings about 0.4 percent increase in poverty. The other variables, education expenditure, total enrolment, exchange rate and per capita GDP found to be contributing to poverty alleviation policies in both long and short-run. The coefficient for health expenditure was however found to be having insignificant impact on poverty. Similar results were found for foreign assistance variable where FA positively affects poverty and rest of the variables significantly and negatively affects poverty except for the health expenditure variable. The reason for this could be the improper utilisation or underlying agenda of the donor country which played its role in restricting the impact of assistance on poverty [Masud, *et al.* (2005)]. We also found that remittances had insignificant impact on poverty reduction reason may be, as discussed by Jongwanish, (2007), the cost associated with migration due to which poor are not usually the beneficiaries if foreign remittances. Similarly for FDI, the coefficient was found to be insignificant suggesting that FDI has no direct relationship with poverty, neither in long-run nor in short-run.

Table 3

Estimated Long-run Coefficients using the ARDL Approach

Dependent Variables	lnFI	lnFA	lnREM	lnFDI	lnEDEX	lnTENR	lnER	lnHEEX	lnY
lnPOV	-0.623 (0.007)	-	-	-	-0.571 (0.00)	-0.583 (0.005)	-0.712 (0.001)	-0.097 (0.443)	-0.882 (0.00)
		0.566 (0.031)	-	-	-0.543 (0.00)	-0.635 (0.02)	-0.874 (0.003)	-0.134 (0.361)	-1.084 (0.00)
			-0.377 (0.195)	-	-0.469 (0.02)	-0.169 (0.907)	-0.377 (0.195)	-0.027 (0.904)	-0.874 (0.009)
				0.099 (0.365)	-0.389 (0.119)	0.009 (0.962)	-0.546 (0.088)	-0.181 (0.549)	-0.914 (0.017)

Table 4

Estimated Short-run Coefficients using the ARDL Approach

Dependent Variables	Δ lnFI	Δ lnFA	Δ lnREM	Δ lnFDI	Δ lnEDEX	Δ lnTENR	Δ lnER	Δ lnHEEX	Δ lnY	Ecm(-1)
ΔlnPOV	0.428 (0.022)	-	-	-	-0.393 (0.004)	-0.401 (0.018)	-0.489 (0.014)	-0.067 (0.454)	-0.606 (0.006)	-0.687 (0.00)
		0.344 (0.051)	-	-	-0.329 (0.01)	-0.385 (0.04)	-0.53 (0.023)	-0.081 (0.379)	-0.657 (0.006)	-0.606 (0.001)
			0.02 (0.674)	-	-0.214 (0.132)	-0.465 (0.053)	-0.172 (0.239)	-0.013 (0.904)	0.399 (0.078)	-0.457 (0.024)
				-0.027 (0.379)	-0.148 (0.238)	-0.497 (0.033)	-0.207 (0.173)	-0.069 (0.545)	0.347 (0.161)	-0.379 (0.027)

In order to capture the forward linkages of poverty on different socio-economic variables like health and education, which are also the determinants of poverty, we estimated few more equations. For instance Tables 5 and 6 represents the results of infant mortality equations. We found that poverty has no relationship with infant mortality in short-run but in long-run, poverty increases infant mortality. We also found that, both in long-run and short-run, health expenditures have no impact on infant mortality, suggesting that the crucial component of public spending is either misallocated or being a victim of poor governance. Hence it not translating itself in improvement of important health sector indicator; infant mortality. The relationship between female enrolment and infant mortality was found to be negative, suggesting that an educated mother can take care of her child better than an uneducated mother.

Table 5

Estimated Long-run Coefficients using the ARDL Approach

Dependent Variables	lnFENR	lnHEEX	lnEDEX	lnPOV	lnY
lnIM	-0.909 (0.019)	-0.688 (0.139)	1.155 (0.000)	1.754 (0.029)	-1.428 (0.024)

Table 6

Estimated Short-run Coefficients using the ARDL Approach

Dependent Variables	$\Delta \ln \text{FENR}$	$\Delta \ln \text{HEEX}$	$\Delta \ln \text{EDEX}$	$\Delta \ln \text{POV}$	$\Delta \ln Y$	$\text{Ecm}(-1)$
$\Delta \ln \text{IM}$	-0.148 (0.153)	-0.112 (0.152)	-0.069 (0.459)	-0.002 (0.99)	-0.233 (0.085)	-0.163 (0.018)

The long and short-run impacts of foreign inflows on public health expenditure are given in Tables 7 and 8 respectively. Results showed that both FI and FA had negative impact on health expenditure in long-run suggesting that with increased magnitude of inflows, priority of the government diverts to other areas. FI however had insignificant impact on health expenditure in the short-run. We have already seen that health expenditures had insignificant impact on infant mortality and poverty which gives us the implication that in addition to the fact that foreign assistance is negatively influencing the health expenditure, the expenditure itself is not correctly allocated. The other two components of the inflows, remittances and FDI, had positive relationship with health expenditure in both long-run and short-run. Poverty showed negative relationship with health expenditure in both time-scales, suggesting that with increase in poverty, the indicators with direct influence on poverty become government's priority expenditures and hence less is left to be allocated to health.

Table 7

Estimated Long-run Coefficients using the ARDL Approach

Dependent Variables	$\ln \text{FI}$	$\ln \text{FA}$	$\ln \text{REM}$	$\ln \text{FDI}$	$\ln \text{POV}$	$\ln \text{ER}$	$\ln Y$
$\ln \text{HEEX}$	-1.224 (0.084)	-	-	-	-1.475 (0.00)	0.71 (0.007)	1.48 (0.029)
	-	-1.021 (0.014)	-	-	-1.367 (0.00)	0.912 (0.00)	1.204 (0.002)
	-	-	0.264 (0.071)	-	-1.227 (0.00)	0.937 (0.002)	0.014 (0.944)
	-	-	-	0.236 (0.039)	-1.095 (0.002)	0.277 (0.413)	0.191 (0.155)

Table 8

Estimated Short-run Coefficients using the ARDL Approach

Dependent Variables	$\Delta \ln \text{FI}$	$\Delta \ln \text{FA}$	$\Delta \ln \text{REM}$	$\Delta \ln \text{FDI}$	$\Delta \ln \text{POV}$	$\Delta \ln \text{ER}$	$\Delta \ln Y$	$\text{Ecm}(-1)$
$\Delta \ln \text{HEEX}$	-0.481 (0.114)	-	-	-	-0.579 (0.008)	0.279 (0.095)	0.581 (0.053)	-0.393 (0.006)
	-	-0.462 (0.027)	-	-	-0.619 (0.003)	0.413 (0.026)	0.544 (0.007)	-0.453 (0.002)
	-	-	0.098 (0.068)	-	-0.454 (0.022)	0.3456 (0.054)	0.005 (0.944)	-0.37 (0.006)
	-	-	-	0.095 (0.054)	-0.444 (0.034)	0.112 (0.478)	0.077 (0.166)	-0.406 (0.005)

We attempted to capture the impact of poverty and inflows on education sector through total enrolment, female enrolment and government expenditure on education. Tables 9 and 10 presents the result of total enrolment equation. Results suggest that poverty has no influence on total enrolment in the long-run however it may negatively affect it in the short run. All inflow variables except for remittances showed positive and significant impact of total enrolment in the long-run while in the short run, only aggregated FI variable had positive and significant relationship with total enrolment.

Table 9

Estimated Long-run Coefficients using the ARDL Approach

Dependent Variables	lnFI	lnFA	lnREM	lnFDI	lnEDEX	lnY	lnPOV
lnTENR	0.595 (0.001)	–	–	–	–0.281 (0.083)	0.55 (0.002)	–0.822 (0.131)
	–	0.449 (0.003)	–	–	–0.165 (0.262)	–0.622 (0.002)	–0.502 (0.306)
	–	–	–0.205 (0.698)	–	0.216 (0.774)	1.694 (0.286)	–1.403 (0.728)
	–	–	–	0.278 (0.00)	–0.226 (0.045)	0.899 (0.000)	–0.26 (0.264)

Table 10

Estimated Short-run Coefficients using the ARDL Approach

Dependent Variables	Δ lnFI	Δ lnFA	Δ lnREM	Δ lnFDI	Δ lnEDEX	Δ lnY	Δ lnPOV	Ecm (–1)
ΔlnTENR	0.134 (0.077)	–	–	–	0.058 (0.508)	0.125 (0.025)	–0.186 (0.014)	–0.226 (0.079)
	–	0.092 (0.149)	–	–	–0.034 (0.252)	0.127 (0.044)	–0.103 (0.0123)	–0.205 (0.128)
	–	–	0.0102 (0.769)	–	0.108 (0.838)	0.085 (0.267)	–0.07 (0.45)	–0.05 (0.563)
	–	–	–	0.017 (0.45)	–0.068 (0.054)	–0.271 (0.002)	–0.314 (0.017)	–0.302 (0.005)

Similarly, the impact of poverty and inflows was analysed on female school enrolment. The results (Tables 11 and 12) suggest that both FI and FA have positive and significant relationship with total enrolment while poverty had negative relationship with female enrolment in both long and short-run. The impact of remittances and FDI on female school enrolment was also found to be positive and significant. We also found positive relationship between government expenditure and female enrolment.

Table 11

Estimated Long Run Coefficients Using the ARDL Approach

Dependent Variables	lnFI	lnFA	lnREM	lnFDI	lnPOV	lnY	lnER	lnEDEX
lnFENR	0.987 (0.03)	–	–	–	–1.004 (0.011)	0.12 (0.03)	–0.123 (0.00)	0.981 (0.002)
	–	0.891 (0.07)	–	–	–0.451 (0.002)	0.871 (0.00)	–0.101 (0.031)	0.876 (0.001)
	–	–	1.064 (0.021)	–	–2.032 (0.021)	1.203 (0.006)	–0.004 (0.022)	1.271 (0.034)
	–	–	–	1.02 (0.02)	–0.243 (0.03)	0.923 (0.031)	–2.03 (0.032)	0.35 (0.031)

Table 12

Estimated Short-run Coefficients using the ARDL Approach

Dependent Variables	$\Delta \ln FI$	$\Delta \ln FA$	$\Delta \ln REM$	$\Delta \ln FDI$	$\Delta \ln POV$	$\Delta \ln Y$	$\Delta \ln ER$	$\Delta \ln EDEX$	Ecm (-1)
$\Delta \ln FENR$	0.211 (0.00)	-	-	-	-0.432 (0.005)	0.72 (0.004)	-0.94 (0.031)	0.022 (0.016)	-0.333 (0.014)
	-	0.103 (0.05)	-	-	-0.219 (0.001)	0.21 (0.014)	-0.439 (0.001)	0.41 (0.001)	-0.323 (0.026)
	-	-	0.329 (0.03)	-	-0.482 (0.018)	0.56 (0.02)	-0.591 (0.591)	0.34 (0.00)	0.012 (0.007)
	-	-	-	0.045 (0.05)	-0.018 (0.06)	0.09 (0.01)	-0.21 (0.045)	0.69 (0.935)	-0.016 (0.003)

For the equation of education expenditure, we found that FI and FA had negative relationship with education expenditure in the long-run but in short-run the impact of aggregated FI variable had insignificant impact on education expenditure (Tables 13 and 14). Remittances had positive while FDI had insignificant impact on education expenditure both in long-run and short-run. Poverty negatively influenced education expenditure in long-run but in short-run the impact was relatively insignificant.

Table 13

Estimated Long-run Coefficients using the ARDL Approach

Dependent Variables	$\ln FI$	$\ln FA$	$\ln REM$	$\ln FDI$	$\ln Y$	$\ln POV$	$\ln ER$
$\ln EDEX$	-1.052 (0.035)	-	-	-	2.609 (0.001)	-1.305 (0.005)	-0.77 (0.066)
	-	-0.879 (0.007)	-	-	2.184 (0.00)	-1.196 (0.002)	-0.396 (0.155)
	-	-	0.649 (0.013)	-	-0.401 (0.525)	-1.053 (0.028)	1.017 (0.103)
	-	-	-	0.219 (0.353)	0.628 (0.214)	-0.756 (0.393)	-0.427 (0.45)

Table 14

Estimated Short-run Coefficients using the ARDL Approach

Dependent Variables	$\Delta \ln FI$	$\Delta \ln FA$	$\Delta \ln REM$	$\Delta \ln FDI$	$\Delta \ln Y$	$\Delta \ln POV$	$\Delta \ln ER$	Ecm (-1)
$\Delta \ln EDEX$	0.328 (0.377)	-	-	-	0.640 (0.014)	-0.32 (0.114)	-1.126 (0.012)	-0.246 (0.008)
	-	-0.259 (0.015)	-	-	0.642 (0.005)	-0.352 (0.076)	-0.576 (0.08)	-0.294 (0.001)
	-	-	0.162 (0.009)	-	0.809 (0.031)	-0.263 (0.177)	0.265 (0.456)	-0.249 (0.005)
	-	-	-	0.043 (0.328)	0.122 (0.355)	0.147 (0.512)	-0.696 (0.064)	-0.195 (0.037)

VII. CONCLUSION

In this study we tried to find out the direct and indirect impacts of foreign inflows and poverty in economy. Foreign Inflows generally supplement resources of the recipient countries to promote economic growth and eliminate poverty. We attempted to test this

argument in this study and found that foreign inflows, specifically foreign assistance, have actually increased poverty in Pakistan both in long-run and short-run through direct and indirect channels. We used infant mortality rate and enrolment rates as a proxy to capture welfare impacts. We found that poverty increases infant mortality in Pakistan. Earlier in this study, the relationship of foreign assistance is already shown to be positive with poverty, hence an increase in foreign assistance would not only increase poverty but also infant mortality therefore we need concrete policy measures that can make sure of the positive feedback of foreign assistance on infant mortality in Pakistan. We also found that all the foreign inflow variables in disaggregated forms had positive impact on both female and total enrolment in Pakistan suggesting beneficial impact of foreign inflows in education.

Another interesting finding of this paper was the insignificant impact of government health expenditure on poverty and infant mortality. The impact could be because of improper allocation of resources or inability of these finances to reach the critical geographic areas. As far as the policy recommendations are concerned, in light of this analysis we can see that there is a need of proper allocation of resources in the country. The inflows are somewhat continuous and increasing with time but their results are not as significant as they should be. Proper allocation of resources would not only reduce poverty but also improve other indicators such as infant mortality and female school enrolment.

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Comments

The author has made a good attempt to determine the impact of foreign inflows on poverty in Pakistan through the channel of health, education and other indicators related to human development. This is a good paper with an excellent review of literature as the author has tried to establish a coherent story.

The author has also examined the composition of inflows in Pakistan and suggests the highest share of foreign debt in the total inflow variable at 76.5 percent followed by remittances at 12.5 percent, FDI at 9.96 percent and grants at 1.02 percent. I think there appears to be some confusion as according to my knowledge inflows of foreign loans plus grant were US\$2.5 billion in FY05 while inflows of FDI and workers remittances were US\$1.5 billion and US\$ 4.1 billion. Probably, the author has included stock of foreign debt rather than flows in this variable which seems to be incorrect. A *stock* variable is measured at one specific time which may have been accumulated in the past while a *flow* variable is measured over an interval of time. Thus, it is important to revise it as it can alter the conclusion.

While the results are not consistent with the perception and other studies, I have doubt on poverty variable in terms of consistency of poverty estimates over time as author has used poverty variable which was computed till 2001 using Malik (1988) poverty line. This is not consistent with the official poverty estimates based on official poverty line announced by Planning Commission in 2002 and onward.

The authors' results that exchange rate found to be contributing to poverty alleviation policies in both long and short-run are surprising. But exchange rate depreciation leads to increase in inflation and there is no doubt that inflation increases poverty. I agree on insignificant coefficient for health expenditure which has no impact on poverty. It is worrying that the country spends too little on health and even this meager government spending at 0.5 percent of GDP seems to be poorly targeted which is not beneficial for the poor. However, this result may have been due to only taking federal expenditure on health and education and ignoring the provincial expenditure. Health and education areas are provincial subject and thus author should include provincial expenditure.

In addition, I would like to comment that running expenditure merely on nominal expenditure does not capture the policy shift or emphasis. Therefore, the right approach to capture the weight of the policy is to take expenditure as percent of GDP over time and then run regression. Furthermore, the author should explain that why remittances have not shown positive and significant impact of total enrolment in the long-run while it has an impact in the short run. Finally, some of the references are missing which I am pointing out.

Talat Anwar

Canadian International Development Agency (CIDA),
Programme Support Unit, Islamabad.