Foreign Aid Volatility and Socio-Economic Dimensions of Human Development Index: A Case Study of Pakistan

Fauzia Maqsood
Assistant Professor, Department of Sociology, University of Gujrat, Gujrat.

Sami Ullah
Lecturer, Department of Economics, University of Gujrat, Gujrat.

Abstract:
The main objective of this study is to empirically investigate the impact of foreign aid volatility on human development. Human Development Index was used as dependent variable, whereas, foreign aid, foreign aid volatility and workers’ remittances are taken as independent variables. Various time series econometrics techniques were used for empirical analysis of study variables. The analysis shows that foreign aid helps to promote human development as flow of money can be used to improve indicators of human development. Analysis further suggests that there is no increase in human development index due to foreign aid volatility. Furthermore analysis also suggests that remittances also does not affect human development index positively. The findings of study could be helpful for policy makers to bring consistency in policies related to foreign aid and remittances.

Keywords: Human Development, Foreign Aid, Volatility, Financial Inflows

I. Introduction

Human Development Index, measured on the basis of life expectancy, educational achievement and gross national product, has been an important goal for the countries because it helps in planning, evaluation and monitoring of many policies of the country. This index is used to rank countries as low, medium and high in regard to human development. Developed countries usually have resource to uplift the standard of living of their population, whereas developing countries lack. Therefore developed countries and various international organizations have been providing financial assistance to developing countries for more than a half century to help these countries to improve standards of living of their people.

Foreign aid is one important form of financial assistance that is given to developing countries by developed countries, although its effects are different in different countries. Various studies have attempted to provide an analysis on why aid is not effective in recipient countries. Some authors argue that this is because of recipient countries’ lack of capacity to make appropriate use of foreign aid and have identified various factors to explain the poor performance of aid for instance policy and institutional quality, the nature of government, geographical characteristics, civil conflict and war, degree of economic openness of the economy, degree of vulnerability to external shocks, and fungibility of aid (Collier and Dollar 2002, Collier and Hoeffler 2002, Collier 2006,
Islam 2003, Burnside and Dollar 2000, Collier and Dehn 2001, Guillaumont and Chauvet 2001 and 2002, Pettersson 2004). In this regard it is argued that a very striking feature of aid flows is that they are highly volatile (see Bulir and Hamann, 2006).

On the donor side of the countries, the volatility of aid is dependent on other sources of revenue generated by governments (Bulir and Hamman 2003 and 2006, Chauvet and Guillaumont 2008). Political, economic or geographical interests or motives of donor countries also influence the aid volatility (Alesina and Dollar 2000). Further, the conditions about spending of aid and the proportion or the kind of aid that is actually given to the countries are some of the important factors that affect aid volatility.

However, development economist agree on this point that an important function of aid is to reduce levels of poverty, illiteracy and ill health and minimize the deprivation of poor people in these countries (Clemes 2003).

Various studies have been found investigating association of foreign aid with economic progress. For instance Burnside and Dollar (2000) has supported the fact that foreign aid has a positive effect on economic growth that may reduce poverty levels. Whereas, some believe that foreign aid is negatively associated with economic growth (Baur 1984, Giffen 1970, Weisskoff 1972).

However, based on the literature, it has been argued by researchers that foreign aid is meant to serve various functions in recipient country: foreign aid helps to promote economic growth through development of infrastructure, provide support to productive structure for instance agriculture and industry by bringing new ideas and technologies, it helps to strengthen various sectors such as education, health and environment and is used to support subsistence consumption of food, and protect economy from economic shocks (Javid and Qyyum 2011).

Very little research has focused on effect of foreign aid on human development and one study conducted by Clemes and Gani (2003) supports that aid for education and health has a positive correlation with human development in lower-middle income countries.

Literature on foreign aid and its impact on human development present interesting results. Gomanee et al. (2003) has found that aid contributes to development without adding to economic growth. Some other study also provide similar results that aid is effective for diverse human development indicators such as health, education and fertility and these three dimension of wellbeing also interact with each other (Fielding, et al 2006).

There are arguments that aid alone is not helpful for human development and usually provides positive results when some other factors are taken together. For instance Kosack (2003) has examined the relationship between aid, democracy and human development index and found a positive link between aid, democracy and Human Development Index but only through its interaction with various measures of democratization. Otherwise, aid alone was typically judged to be negatively associated with HDI values’.
In regard to Pakistan various researchers have focused on the impact of foreign aid on economic growth and have found that foreign aid has negative and insignificant relationship with economic growth (Ishfaq and Eatzaz 2005, Khan and Ahmed 2007). Researches have also argued that this negative relationship between foreign aid and economic growth is due to inappropriate macroeconomic policies (Ishfaq and Eatzaz 2005, Khan and Ahmed 2007).

Several studies in the past have noted that foreign aid has a positive effect on the economic growth of poor countries. Burnside and Dollar (2000), Chenery (1960), Chenery and Strout (1966), Papanek (1972), Balassa (1978), Murthy (1994) and Giles (1994) empirically show that foreign aid has a positive impact on economic growth. On the other hand, other studies by Bauer (1984), Griffen (1970) and Weisskoff (1972) have found that foreign aid has a negative effect on economic growth. Most of these papers use economic growth to measure development, and little research has been done to investigate the effect of aid on human development.

II. Theoretical Framework

The present study is based on the theoretical framework of Dual Gap model. This model explains that the role of foreign aid is to fill the gap of deficit in developing countries that influence the development policies of less developed countries. In regard to this model researchers argue that the concept that economic growth is stimulated by the foreign aid is related with dual gap model now termed as Financial Two Gap Model or Double Deficit Model (Easterly 2003; Isse 2005).

The history of this model is attached with Chenery and Strout (1966) who argued that foreign aid helps in development by providing dual support to domestic savings and foreign exchange. The model suggests that developing countries with constrained resources, insufficient internal savings and foreign exchange (regarded as two growth deficits), lack capacity to meet the challenges of development. Therefore, according to Easterly (2005) the two gap model support the idea that foreign aid helps to promote and increase levels of domestic investment that may lead to domestic savings and eventually resulting in bridging the gap. Therefore the rationale of model is that foreign aid must fill the two gaps i.e. between export-import and the saving-investment.

This model explains that financial assistance to developing countries by developed countries or international financial institutions would help support the economies in recipient countries by complementing resources and developing their capacity to meet the challenges of development both human and physical.

However, it has been noted in many cases that foreign aid sometime does not help to fill the two model gap and economist argue that one of the factor of this failure could be aid volatility or unpredictability. In this context it seems important to mention that aid volatility or unpredictability may lack to fill the two gaps mentioned above. If the donor countries provide aid less than expected it may have negative impact on human development or otherwise.

Mixed results on the effects of foreign aid have made it necessitated to study volatility of aid. It has been argued that volatility of foreign aid may be taken into account while studying impact of foreign aid. Empirical studies support that aid volatility
affects the value of aid and may lead to macro-economic instability in recipient countries (Bulir and Hamann 2003 and 2006, Chavet and Guillaumont 2008, Kharas 2008, Markandya, Ponczek and Yi 2010). It has also been argued that aid volatility may have positive and negative effects. Aid volatility is highly positive when it is meant to overcome some disaster but in the long run it is considered negatively correlated with economic growth (Markandya, Ponczek and Yi 2010). However the recipient countries capacity to absorb the aid is also important in determining the level of growth.

The objective of this study is to find out as to what extent foreign aid helps to promote human development and what is the effect of volatility of aid on human development.

III. Methodology and Data:

The main objective of this study is to empirically investigate the impact of foreign aid volatility on human development in Pakistan for the time span of 1972 to 2012. For this purpose human development index (HDI) of UNDP is used as dependent variable and independent variables are foreign aid (FAID), foreign aid volatility (Volt) and worker’s remittance (REMT).

HDI is composite measure and consists of three dimensions, education, health and standard of living. Data on FAID and REMT is collected from World Development Indicators of World Bank and converted from nominal to real by dividing GDP Deflator with the base year 2005. Real variables are used because of exclusion of inflationary effects from the series. To measure Foreign Aid Volatility the standard tool is Auto Regressive Conditional Heteroscedasticity (ARCH) model introduced by Professor Engle (1982) that explained time varying volatility using ARCH and GARCH Models for which he won the Nobel Prize in 2003 and Generalized Auto Regressive Conditional Heteroscedasticity (GARCH) introduced by Bollerslev (1986).

So we measured foreign aid volatility by using Auto Regressive Conditional Heteroscedasticity (ARCH) and Generalized Auto Regressive Conditional Heteroscedasticity (GARCH) econometrics techniques. Volatility forecasts are obtained from a variety of mean and variance specifications in ARCH /GARCH models and they are compared to a proxy of actual volatility calculated by using foreign aid. On the basis of Akaike Info Criteria, the best model is GARCH (1,1) and by obtaining GARCH variance series we get volatility series.

The model specification for this study is as under:

$$\text{HDI}_t = \beta_0 + \beta_1 \text{FAID} + \beta_2 \text{VOLT} + \beta_3 \text{REMT} + \mu_t$$

After collection of data, all the variables are taken in logarithm form to compress the values and increase the authenticity of the empirical findings. For empirical investigation, the first step is to apply Augmented Dickey Fuller (ADF) test to verify the presence of unit root in the series which is an extended version of the Dickey Fuller (DF) test because DF is only valid for AR (1) process not for others, so due to this drawback Dickey and Fuller (1979) introduced ADF test which includes lagged terms of the dependent variable in order to remove autocorrelation. After unit root analysis, it was
found that all variables are non-stationary at their levels but found to be stationary at their first differences. Table 1 gives a detail of all variables status.

### Table 1: Unit Root Test

<table>
<thead>
<tr>
<th>Variables</th>
<th>Level Test Statistic</th>
<th>Critical Value</th>
<th>Probability</th>
<th>First Difference Test Statistic</th>
<th>Critical Value</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>L(HDI)</td>
<td>-2.2657</td>
<td>-3.5298</td>
<td>0.4418</td>
<td>-3.0092</td>
<td>-2.9411</td>
<td>0.0430</td>
</tr>
<tr>
<td>L(FAID)</td>
<td>-0.7478</td>
<td>-2.9484</td>
<td>0.8212</td>
<td>-6.3211</td>
<td>-2.9484</td>
<td>0.0001</td>
</tr>
<tr>
<td>L(VOLT)</td>
<td>-0.4714</td>
<td>-2.9604</td>
<td>0.8839</td>
<td>-3.5695</td>
<td>-2.9604</td>
<td>0.0125</td>
</tr>
<tr>
<td>L(REMT)</td>
<td>-2.2449</td>
<td>-3.5875</td>
<td>0.4476</td>
<td>-4.1919</td>
<td>-3.5443</td>
<td>0.0113</td>
</tr>
</tbody>
</table>

Note: All the variables are stationary at their first differences and 5% level of significance is used.

Table 1 shows in detail about results of unit root by applying ADF test at both levels as well as at first difference for all the variables used in this study. As Table 1 shows that all variables are non-stationary at their level, while all variables are stationary at their first differences. When all the variables become stationary at first difference then we move towards cointegration test for long run association among study variables, otherwise ARDL is the most appropriate technique for long run association among variables.

### Table 2: Cointegrating Trace Statistics and Eigen Values

<table>
<thead>
<tr>
<th>Null Alternative</th>
<th>Trace Test</th>
<th>Trace Statistics</th>
<th>Eigen Value</th>
<th>Critical Value</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>r=0 r≥1</td>
<td></td>
<td>49.7254</td>
<td>0.5698</td>
<td>47.8561</td>
<td>0.0330</td>
</tr>
<tr>
<td>r≤1 r≥2</td>
<td></td>
<td>21.8924</td>
<td>0.3129</td>
<td>29.7971</td>
<td>0.3045</td>
</tr>
<tr>
<td>r≤2 r≥3</td>
<td></td>
<td>9.5087</td>
<td>0.2346</td>
<td>15.4947</td>
<td>0.3204</td>
</tr>
<tr>
<td>r≤3 r≥4</td>
<td></td>
<td>0.6866</td>
<td>0.0206</td>
<td>3.8415</td>
<td>0.4073</td>
</tr>
<tr>
<td>r≥4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2 shows findings of trace test for cointegration approach and critical values are given at 5% level of significance. The trace statistics value is greater than critical value which indicates existence of cointegration relationship among study variables at 5% level of significance. Cointegration is confirmed here on the basis of probability value and critical value that is also greater than Trace value at 5% level of significance. The equation given below shows the direction of relationship between independent and dependent variables with level of significance in the long run as:

\[
HDI = -4.1799 + 0.4485 \text{FAID} - 0.3337 \text{VOLT} - 0.1613 \text{REMT} \\
(0.0778) (-0.0384) (-0.0286) \\
[5.7636] [8.6856] [5.6420]
\]

Note: Standard errors are in parenthesis and t-statistics are in brackets.
Cointegration equation shows that foreign aid is positively and significantly contributing to human development and due to 1% increase in foreign aid there is an increase of 0.44% in human development. The plausible explanation could be that the main objective of donor agencies might be wellbeing of the marginalized communities by providing them opportunities of health and education. For this purpose, the main focus of foreign aid in Pakistan is on welfare projects in education along with employment generation.

Above equation shows that foreign aid volatility is negatively and significantly impact on human development. Coefficient shows that due to 1% change in foreign aid volatility there is 0.3337% decrease in the human development in specific case for Pakistan. The reason could be that more fluctuation in foreign aid creates uncertainty among investors and they may not take risk of investing in human development projects. Workers’ remittances are another source of foreign inflow and Pakistan has been receiving huge amount of remittances from different regions of the world. Currently foreign aid is US$ 13 billion which is ever highest in the history of Pakistan. Surprisingly, our empirical results show that remittances are negatively and significantly contributing to human development. The main reason behind this is that major portion of remittances might be spent on consuming items for instance luxurious homes, imported goods and unproductive projects.

<table>
<thead>
<tr>
<th>Table 3: Error Correction Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Error Correction:</td>
</tr>
<tr>
<td>CointEq1</td>
</tr>
<tr>
<td>s.e</td>
</tr>
<tr>
<td>t-value</td>
</tr>
</tbody>
</table>

Table 3 shows the findings of error correction model and this model shows speed of adjustment. The value of error correction term is negative which indicates that there in convergence in this model and overall model is stable and significant.

<table>
<thead>
<tr>
<th>Table 4: Granger Causality Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Null Hypothesis:</td>
</tr>
<tr>
<td>LFAID does not Granger Cause LHDI</td>
</tr>
<tr>
<td>LHDI does not Granger Cause LFAID</td>
</tr>
<tr>
<td>LVOLT does not Granger Cause LHDI</td>
</tr>
<tr>
<td>LHDI does not Granger Cause LVOLT</td>
</tr>
<tr>
<td>LREM does not Granger Cause LHDI</td>
</tr>
<tr>
<td>LHDI does not Granger Cause LREM</td>
</tr>
<tr>
<td>LVOLT does not Granger Cause LFAID</td>
</tr>
<tr>
<td>LFAID does not Granger Cause LVOLT</td>
</tr>
<tr>
<td>LREM does not Granger Cause LFAID</td>
</tr>
<tr>
<td>LFAID does not Granger Cause LREM</td>
</tr>
<tr>
<td>LREM does not Granger Cause LVOLT</td>
</tr>
<tr>
<td>LVOLT does not Granger Cause LREM</td>
</tr>
</tbody>
</table>
Table 3 shows results of granger causality test of all variables used in this study. HDI causes to foreign aid which explains that donors are concerned with socio-economic profile of recipient country. Aid volatility cause to HDI and this result also confirmed from our cointegration equation but its impact is negative and significant. Aid volatility leads to inconsistency in policies and uncertainty in investors to invest in social projects financed by donors. It is also shown that remittances cause HDI but its contribution is not positive but its negative and significant.

IV. Discussions and Conclusion

The present research has focused on impact of foreign aid volatility on human development. Generally it is assumed that foreign aid helps to promote human development as flow of money can be used to improve indicators of human development. Various studies have also documented this association (Fielding, et al 2006). However it was observed that when it comes to foreign aid volatility the association between these two variables is not to be supported by the empirical evidence. Logic of this rather surprising result is that when aid fluctuates, many policies for human development cannot be continued and ultimately severely affecting human development.

Another important variable that has been tested in regard to human development is remittances. The positive association between these two factors has also not been established by the analysis of present study. Plausible explanation could be that remittances might be used in the consumption of non-productive items that may limit human development. This scenario suggests that there must be some studies to examine the use of remittances.

References


