

Der Open-Access-Publikationsserver der ZBW – Leibniz-Informationzentrum Wirtschaft
The Open Access Publication Server of the ZBW – Leibniz Information Centre for Economics

Chaudhry, Mumtaz Anwar; Aman, Sughra

Working Paper

Aid effectiveness in education sector of Pakistan

HWWI Research paper, No. 2-20

Provided in cooperation with:

Hamburgisches WeltWirtschaftsinstitut (HWWI)

Suggested citation: Chaudhry, Mumtaz Anwar; Aman, Sughra (2010) : Aid effectiveness in education sector of Pakistan, HWWI Research paper, No. 2-20, <http://hdl.handle.net/10419/48204>

Nutzungsbedingungen:

Die ZBW räumt Ihnen als Nutzerin/Nutzer das unentgeltliche, räumlich unbeschränkte und zeitlich auf die Dauer des Schutzrechts beschränkte einfache Recht ein, das ausgewählte Werk im Rahmen der unter

→ <http://www.econstor.eu/dspace/Nutzungsbedingungen> nachzulesenden vollständigen Nutzungsbedingungen zu vervielfältigen, mit denen die Nutzerin/der Nutzer sich durch die erste Nutzung einverstanden erklärt.

Terms of use:

The ZBW grants you, the user, the non-exclusive right to use the selected work free of charge, territorially unrestricted and within the time limit of the term of the property rights according to the terms specified at

→ <http://www.econstor.eu/dspace/Nutzungsbedingungen>
By the first use of the selected work the user agrees and declares to comply with these terms of use.



Hamburg Institute
of International
Economics

Aid Effectiveness in Education Sector of Pakistan

Mumtaz Anwar, Sughra Aman

HWWI Research

Paper 2-20

by the

HWWI Research Programme

World Economy

Corresponding author:

Mumtaz Anwar

Department of Economics | University of the Punjab

Lahore | Pakistan

Tel +92 (0)42 9231167

mumtaz.anwar@pu.edu.pk

HWWI Research Paper

Hamburg Institute of International Economics (HWWI)

Heimhuder Str. 71 | 20148 Hamburg | Germany

Tel +49 (0)40 34 05 76 - 0 | Fax +49 (0)40 34 05 76 - 776

info@hwwi.org | www.hwwi.org

ISSN 1861-504X

Editorial Board:

Thomas Straubhaar (Chair)

Michael Berlemann

© Hamburg Institute of International Economics (HWWI)

October 2010

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means (electronic, mechanical, photocopying, recording or otherwise) without the prior written permission of the publisher.

Aid Effectiveness in Education Sector of Pakistan

Mumtaz Anwar and Sughra Aman¹

I. Introduction

It is accepted believe that the developing countries are dealing with numerous socio-economic challenges including poverty, unemployment, illiteracy, lack of human capital, trade deficit and environmental degradation etc. These problems arise mainly due to the scarcity of natural and economic resources, as in case of developing countries which need sufficient amount of foreign resources to meet some of their development objectives. This inflow of foreign resources may be in the form of foreign direct investment, loans and credit, budgetary support or technical assistance. But these countries are unable to fully utilize these resources due to lack of infrastructural facilities, capital intensive technology, friendly investment policies and trained labor. Therefore, they mostly rely on foreign aid and debt from developed countries and other international financial institutions. Generally, foreign aid is granted to reduce two gaps;² import-export gap and savings-investment gap i.e. deficits in BOP and deficits in savings are major arguments in favor of foreign aid in the developing countries but there are also many other determinants of foreign aid like emergency relief, structural adjustment programs, transformation of economies, political objectives of donors and recipient countries.

The effectiveness of foreign aid is a controversial issue, whether it has been able to counter socio-economic problems of the recipient countries or not? There are many examples of countries where foreign aid has played a significant role in the growth and development of the economy like Republic of Korea, Indonesia, Bolivia, Ghana, Uganda, Tanzania, Mozambique and Vietnam. But there is also a list of several countries which in spite of receiving huge amount of aid, failed to use it for their development like Kenya, Haiti, Papua New Guinea, Somalia, Congo, Philippine.

Foreign aid has also been proved very helpful in bringing revolutionary changes in some sectors throughout the developing world. The Green Revolution in the agriculture sector, reduction and elimination of river blindness, vaccination for childhood diseases in health sector, all have been made possible by efficient and effective utilization of foreign aid in these sectors. However there exist many examples of neglected areas as well where it has not been able to achieve the required results. Education is an example of such sectors which is undergoing through a crises situation in most of developing countries including Pakistan. Inadequate financing, lack of political commitment, deficiency of resource generation capacity, gap between policy formulation and its implication, poor monitoring and evaluation procedures are major reasons for poor performance of this sector in most of these countries.

In spite of these entire flaws, there was a huge increase in the amount of foreign aid to achieve the United Nations Millennium Development Goals (MDGs)³. Because both sectors;

¹ The authors are Assistant Professor and MPhil student at Department of Economics, University of the Punjab, Lahore (Pakistan) respectively. The authors wish to thank Ghulam Shabbir for providing some assistance.

² 'Two-gap model' presented by Chenery and Strout in 1966. According to this model, foreign aid can be used to fill the gaps between savings and investment levels and import and export levels of developing countries which restrict them to achieve their maximum level of production.

³ MDGs consist of 8 goals which are to be achieved by 2015, formulated in Sep, 2000 at UN Millennium Summit, adopted by 189 nations and signed by 147 countries. For further details, visit www.undp.org/mdg

education and health are considered as the foundation stones for development in the MDGs. This high position on MDGs represents the importance of education for human resource development and sustainable socio-economic growth in all societies of the world including Pakistan.

Pakistan like other developing countries has also been receiving foreign aid and debt from developed countries and international agencies since its existence. Earlier, it started to take foreign aid to meet the demands of increased industrialization in the country and then for the completion of five year plans but with the passage of time, Pakistan's dependency on this aid increased and until now Pakistan is receiving huge amount of foreign aid to keep its economy at a safe level. But according to Khan (2008), Pakistan has been a graveyard of development projects financed by many international donors and monetary agencies due to lack of physical infrastructure, financial resources, human capital, technological growth, political commitment, macro economic stability in the country.

As far as education sector is concerned, the government of Pakistan has not been able to structure the basic foundation of education system in last 60 years to meet its future challenges due its less importance in the budget. According to Economic Survey of Pakistan 2006-2007, only 2.4% of GDP is spent on education which is a very small amount as compared to our neighboring countries and other developing countries of the world. A major drawback is that the government utilizes only a small portion of foreign aid in the education sector while more funds should be generated for education sector and less to other sectors. Recently a survey report is being presented in the US Congress,⁴ according to which United States gave around US\$ 11 billions to Pakistan during 2002 to 2008, out of which about US\$ 8 billions were used for military expenditures while only US\$ 100 millions were allocated for education, a major amount of which would have been wasted because of corruption.

In this environment of uncertainties and controversies about aid utilization and its effectiveness in the education sector of Pakistan, this study is an attempt to further investigate the relationship between foreign aid and education sector. Basically, this study analyses that whether the aid given by international donors to Pakistan is contributing in increasing the national educational outcomes or not? The main objective of this study is to examine the effectiveness of sector-specific foreign aid given to education sector and aggregate foreign aid on the national educational outcomes of Pakistan, respectively.

The study is further organized as follows: section II deals with the brief review of foreign aid; its definition and characteristics. The review of existing literature is presented in section III where as section IV specified for the methodology and data sources. Econometric results and discussion are presented in section V and last section VI concludes the study.

II. Foreign Aid: its definition and characteristics

According to Saeed (1995), Foreign aid is the debt given by a country to another country on the concessional rates. The concessional elements might be in the form of rates of interest lower than the prevailing rates, longer period for repayment and grants which do not entail the payment of the principal or interest i.e. a free gift. This definition includes all kinds of resource inflow that are publicly granted and are made either from government to government or from

⁴ Foreign aid given to Pakistan, report 2008 presented in US Congress. For further details, please visit www.uscongress.com/report/pak statistics.

financial institutions to a government⁵. There are two main sources of foreign aid; (a) bilateral aid, mostly given on the basis of economic or political relations between the governments of donor and recipient countries. (b) Multilateral aid, given by the multilateral organizations, institutions or agencies of the developed countries to the recipient country. The World Bank, Asian Development Bank (ADB) and International Monetary Fund (IMF) are some examples of multilateral organizations who give aid to developing countries according to their needs.

There are two main rationales behind the motives of developed countries in giving aid. First the developing countries have a limited debt servicing capacity because of which they can not borrow from their commercial sources for financing their development. Secondly, developing countries also need these foreign resources to fill their savings-investment gaps and import-export gaps. Thus this foreign aid given by developed nations plays an important part in financially supporting the growth and development of the developing countries.

In the recent years, there has been a huge increase in the amount of foreign aid given by the developed countries to developing countries. The developed countries and multilateral organizations started to give huge amount of funds to developing countries in 1960s and till 1975, this amount reached to US\$ 18 billions which increased to US\$ 63 billions in 1990. But in the first half of 1990s, the amount of this aid decreased mainly because of inner socio-economic and political changes in the donor countries.⁶ However this amount started to increase after 1995 and reached to US\$ 80 billions in 2002 and is still growing in amount. According to a survey report conducted by the World Bank, the amount of aid given by DAC countries⁷ will reach to about US\$ 130 billions till 2010.⁸ One major reason for this continuous increase in the amount of foreign aid may be the United Nations Millennium Development Goals (MDGs) program. Education stands second in the list of these MDGs. According to these MDGs, donors are committed to help developing countries in achieving universal primary education till 2015. So they are allocating more resources to the education sector of developing countries.

Basically Pakistan started to take foreign aid in the late 1950s and its volume started to increase with the introduction of every five year plan and until now, Pakistan is receiving huge amount of aid from developed countries and international financial institutions. Earlier, this aid was given on easy terms and conditions in 1960s and 1970s. But with the passage of time, in spite of more dependency on foreign aid, Pakistan is facing difficulties in getting more aid mainly because of two reasons: First, the rate of interest on these loans and credits is increasing day by day and secondly, the repayment period for these loans and credit is also being reduced.

As far as role of Pakistan s' governments is concerned, education policy measures occupy an important place in every five year plans until now. Besides, four other national education policy documents (1970, 1972, 1992 and 1998) have also been issued. Many other measures like The Education Sector Reform Program, Government s' National Plan of Action (NPA), National Education Assessment Systems (NEAS), School Management Communities (SMEs), Social Action Programs (SAPs) have also been introduced by the governments in order to bring transparency and accountability in better utilization of this aid but no government succeeded in

⁵ This includes only economic aid not military aid. For detail see, Saeed (1995).

⁶ World Bank report, 1995

⁷ A group of developed nations who has signed UN MDGs and gives aid to developing countries. Some of them are US, UK, Australia, Belgium, France etc. A list of these countries is available at www.undp.org/dac

⁸ World Bank report 2002

implementing these policy measures completely and successfully. The reasons for failure include non availability of national resources, inconsistency in policy evaluation, lack of monitoring and accountability, failure to achieve and implement set goals and targets etc.

Although there has been a great help in the form of financial assistance, technical assistance and budget support programs but major educational outcomes have always been low. Although literacy rate has increased from 44% in 1995 to 56% in 2007, besides there has also been an increase in primary enrolment levels from 12.7 million in 1993 to 25.3 millions in 2007 but net enrolment rate has decreased from 70% in 1995 to 65% in 2007. The share of national educational expenditure as percentage of GDP is hovering around 2% of GDP since 1993.⁹

III. Literature Review

The evolution of development aid programs can be traced back to “Harrod-Domar model” presented by Sir Roy F. Harrod (1939) and Evsey Domar (1946). But Rostow (1960) introduces the role of foreign aid in the domestic growth of the economy. Based on the Harrod-Domar Model, Chenery and Strout (1966) present their famous “two-gap model”. Pesmazoglu (1972) examines the aid growth relationship and show that the growth rate of the GDP is positively and significantly related with the foreign capital inflows. Durbarry and Gemmel (1996) examine the impact of foreign aid on growth for a large sample of developing countries. The empirical findings show that greater foreign aid inflows have a beneficial effect on growth of less developed country which is conditional on a stable macro economic policy environment in these countries. Burnside and Dollar (1999) start a new debate when they present their idea that the effectiveness of aid is conditional on the economic and political policies of the recipient countries. The main finding of this study is that the effect of aid on growth is significantly higher in a good policy environment than in an average one. But Easterly, Levine and Roodman (2003) deny the findings of Burnside and Dollar. Rajan and Subramanian (2005) present an entirely new concept that aid is also given to developing countries in response to poor performance. They find that foreign aid works more effectively in better policy environment. They suggest that the aid mechanism must be restructured or rethought to have its better impact on growth. The findings of Biboh (2007) did not show positive impact of aid on growth. It also shows that improvement in governance also has no direct impact on growth. Biboh suggests that the responsibility for better utilization and effectiveness of foreign aid rests on both donors as well as recipient countries. They should re-structure their aid mechanism to bring revolutionary changes in this regard. Girijasankar (2008) empirically examines the effectiveness of foreign aid for economic growth in the six poorest and highly aid dependent African countries and found a negative long run effect of aid on growth for most of these countries.

As concerned to Pakistan, it has been receiving foreign aid to support its development programs since independence and many economists have tried to find out the role of foreign aid in the development of the country. Aslam (1987) examines the effect of foreign capital on investment and savings in Pakistan. The results show that aggregate foreign capital inflows have a negative and significant impact on national savings but did not significantly affect the domestic investment. Mallick (2004) examines GDP growth of Pakistan using various economic and socio-economic indicators after the terrorist attacks of September 11, 2001. He concludes that as being a strong ally in the war against terrorism, United States should help Pakistan by giving it more and more aid for the productive sectors of the economy. Anwar and Michaelowa (2006)

⁹ Various publications of “Pakistan Education Statistics”, issued by Ministry of Education, Pakistan

suggest the political economic interests of US aid to Pakistan. On reviewing the literature on effectiveness of foreign aid with reference to Pakistan, we find that this aid has proved helpful in stimulating growth in the country but on the other hand it has also substituted domestic savings. It has caused a severe debt servicing problem and has resulted in more aid dependency in case of Pakistan.

Michaelowa (2004) analyzes the impact of aid for education on primary enrolment rates in a dynamic panel analysis for about 120 low and lower-middle income countries. She uses various control variables related to the recipient country's national education expenditures, national education system and some measures of governance. Net primary enrolment rates and primary completion rates are used for measuring educational outcomes. The estimation results show a positive but insignificant effect of total aid given to education sector on primary enrolment rate and completion rate. The national education expenditures do not find a positive relationship with both these educational outcomes. Among governance variables, none of the variables related to economic aspect of good governance is found to be positively related with these outcomes while the political governance variable shows positive relationship between good governance and school enrolment and completion rates. On the basis of these results Michaelowa argues that on average in most of these countries, the effect of aid on educational outcomes is very low.

Fielding, McGillivray and Torres (2006) discuss the impact of foreign aid on many human development indicators including education. The results show that aid has a positive impact on all these indicators of development but primary completion rate has a negative and insignificant relationship with aid. Dreher, Nunnenkamp and Thiele (2006) empirically analyze the impact of foreign aid given to education sector for about 100 countries over the period 1970-2005. They also test whether aid is more beneficial to educational outcomes in good policy environment or not. The results show that both the expenditure on education and aid given to the education sector have a statistical positive relationship with enrolment rate while democracy does not have a significant relationship with school enrolment. They also extend their model for checking the robustness of the previous results. The results are again robust to the previous findings in that aid significantly increases primary school completion rates. They argue that the donors should move more resources for improving the system of basic education in the recipient country which will enhance both the quality and quantity of education in these countries.

Wolf (2006) examines the effects of foreign aid on educational outcomes for many developing countries and concluded that foreign aid has a mixed impact on the educational outcomes in majority of the developing countries because of which it will not be able to produce the required results as have been formulated in MDGs. Michaelowa and Weber (2007) investigate the impact of disaggregated educational aid on educational outcomes. Their results show the positive effect of foreign aid on educational outcomes. However, the estimated effects are very low. Furthermore, the results show that national education expenditure in developing countries does not show a significant impact on educational outcomes. It also shows that good governance in economic terms does not show much effect on educational outcomes while political and institutional governance has its significant impact. On the basis of these findings, they suggest that there is a need to build a solid structure of basic education in the developing countries to utilize the foreign aid to its maximum.

Baldacci, Clements and Gupta (2008) examine the relationship between social spending, human capital and growth by using data for 118 developing countries for a time period of 1971–

2000. They find that education spending has a positive and significant impact on school enrolment rate while the variables for governance and inflation also have a significant impact on school enrolment rate. Kwabena and Asiedu (2008) examine the relationship between foreign aid targeted to education sector by using primary school enrolment rate and completion rate as dependent variables. They also compare the effect of aid specifically given to the education sector to that of aggregate aid on outcomes in this sector. They find that aid to education sector has statistically significant positive effect on school enrollment rate in developing countries. They also find that the policy environment is important for the effectiveness of education aid. Finally, it is found that while aid targeted to primary education sector has significant impact on outcomes in these sectors, total aid has no significant impact on outcomes in these sectors.

Within this mixed history of the effectiveness of foreign aid on education sector, the objective of this study is two fold: first, to investigate the effectiveness of sector specific foreign aid on education sector of Pakistan. The second objective of the paper involves estimating an alternative model in which foreign aid given to education system of Pakistan is differentiated from total aid disbursements given to Pakistan. The reason behind using the separate model for such analysis is the non-availability of aid data for education sector of Pakistan before 1990. Secondly such analysis will help us to identify the reasons because of which this aid has not been proved very useful for improving the system of education in the country. It will also provide us information about the impact of good governance in terms of good economic and political policy environment, on the educational outcomes of the country.

IV. Methodology and Data Sources

The basic objective of this study is to empirically examine the impact of foreign aid on the education sector of Pakistan. The existing literature indicates that foreign aid has positive but insignificant impact on the educational outcomes in various countries of the world. The most of these studies include panel data analysis for a large group of low and lower middle-income countries. The effectiveness of foreign aid on the education sector of an individual country is not analyzed. For this purpose, we use all the variables suggested in the existing literature related to the education system of a country as a starting point. Following the Filmer and Pritchett (1999); Baldacci, Clements and Gupta (2008); Michaelowa (2004), Michaelowa and Weber (2007); and Dreher, Nunnenkamp and Thiele (2006), we used the following function.

$$\text{Lit} = f(\text{Eduaid}, \text{Nee}, \text{Ptr}, \text{Pop}) \quad (1)$$

Where:

Lit = literacy rate in Pakistan

Eduaid = foreign aid given to education sector of Pakistan

Nee = national educational expenditures as percent of GDP

Ptr = pupil-teacher ratio in education sector

Pop = population aged 0-14 as percent of total population

Following Wolf (2006), we measured the educational outcomes by literacy rate which is dependent variable. Government expenditure devoted to education sector is an important indicator of national commitment towards education and is used to measure national resources allocated to education sector. Pupil-teacher ratio and population aged 0-14 are the most common indicators of the quality of education. Generally a small pupil-teacher ratio improves both the

quantity and quality of education system because crowded classes are a source of disturbance for quality education. In a developing country like Pakistan with limited infrastructure and available resources, a small number of population aged 0-14 will lead to increase both the quantity and quality of education because a greater share of school aged children puts additional pressure on the education system. Secondly, it is also said that in case of Pakistan, large size of its population is an important hurdle in delivering some of the basic services to its people which restricts its economy to grow.

In the form of an equation, this model can be written as

$$lit_t = \beta_0 + \beta_1 eduaid_t + \beta_2 nee_t + \beta_3 ptr_t + \beta_4 pop_t + \epsilon_t \quad (2)$$

Here the indices t is for time periods and in log form, it can be written as:

$$\ln lit_t = \beta_0 + \beta_1 \ln eduaid_t + \beta_2 \ln nee_t + \beta_3 \ln ptr_t + \beta_4 \ln pop_t + \epsilon_t \quad (3)$$

We also analyzed the impact of foreign aid given in the form of disbursements on Pakistan's literacy rate in the following equation.

$$\ln lit_t = \beta_0 + \beta_1 \ln disb_t + \beta_2 \ln nee_t + \beta_3 \ln ptr_t + \beta_4 \ln pop_t + \epsilon_t \quad (4)$$

The existing literature also supports the role of good governance. For this purpose, we included the variable of good governance in our model as suggested by Michaelowa (2007); Kwabena and Asiedu (2008). Following Burnside and Dollar (1999), relevant economic policy variables included are the budget surplus/deficit in percent of GDP and the rate of inflation. Generally a high rate of inflation is harmful for country's growth and so as for its education system. Freedom House Index of political rights and civil liberty is used for measuring political and institutional environment of the country. The weights on Freedom House Index of political rights and civil liberty are rated on a 1 to 7 scale, with one representing the highest degree of freedom and seven the lowest. Instead of forming an index of these variables, we use these variables separately because these weights are not applicable to education sector. By adding these governance indicators in our model, the model is formulated as:

$$Lit = f(\text{disb}, \text{nee}, \text{ptr}, \text{pop}, \text{budg}, \text{inf}, \text{Prcl}) \quad (5)$$

Where:

Disb = foreign aid given in the form of disbursements

Ptr = pupil-teacher ratio in education sector

Pop = population aged 0-14 as percent of total population

Budg = budget surplus or deficit as percent of GDP

Inf = the rate of inflation

Prcl = political rights and civil liberty

In the form of an equation, this model can be written as

$$lit_t = \beta_0 + \beta_1 disb_t + \beta_2 nee_t + \beta_3 ptr_t + \beta_4 pop_t + \beta_5 budgt_t + \beta_6 inf_t + \beta_7 Prcl_t + \epsilon_t \quad (6)$$

Here the indices t is for time periods. The value and significance of the betas is of interest. When all variables are taken in their natural log form, the equation becomes as:

$$\ln \text{lit}_t = \beta_0 + \beta_1 \ln \text{disb}_t + \beta_2 \ln \text{nee}_t + \beta_3 \ln \text{ptr}_t + \beta_4 \ln \text{pop}_t + \beta_5 \ln \text{budgt}_t + \beta_6 \ln \text{inf}_t + \beta_7 \ln \text{Prcl}_t + \epsilon_t \quad (7)$$

The value for literacy rate is taken in percentages and data is taken from United Nation Development Indicators and UNICEF Pakistan statistics. Besides, the publications of ‘Education Statistics of Pakistan’ issued by Ministry of Education, Pakistan are also consulted. Foreign aid given to Pakistan is measured in terms of aid disbursements which include total grants and ODA loans. While foreign aid specifically given to education sector as %age of aggregate foreign aid. The data on these variables is taken from official website of World Bank. Various issues of “The Directory of Donor s’ Assistance for Pakistan Education sector” published by Ministry of education, Pakistan is also consulted for getting the relevant data. For public expenditure on education as %age of GDP, averages are calculated using GDP in constant 2000 US dollars as weight. Pupil-teacher ratio in education sector is taken which is the number of pupil enrolled in school divided by the number of school teachers. Besides population aged 0-14 is taken as percentage of total population. The data on these educational variables is taken from various sources of World Bank. Besides various yearbooks by UNESCO, various publications of ‘Economic survey of Pakistan’ and publications of ‘Education Statistics of Pakistan’ issued by Ministry of Education, Pakistan is also consulted for relevant material.

In governance indicators, inflation is measured by CPI which is the most relevant tool of measuring inflation of consumer goods. The annual percentage change in the CPI is a measure estimating inflation. The value for budget surplus/deficit is taken as percent of total GDP. The data on these economic variables is taken from United Nation Development Indicators. The data for Freedom House Index for civil liberty and political rights is taken from official website of Freedom House Index.

V. Empirical Results

We estimated the equation (3) to examine the effects of sector specific foreign aid on literacy rate of Pakistan using time series data for the period 1991-2007. First of all, we check the stationarity status of all data series by using Augmented Dickey Fuller (ADF) test. All data series are stationary at level¹⁰. Therefore we apply the OLS for estimation and results are presented in table 1. The results show that the coefficient of foreign aid given to education sector is positive and significant but its value is very small which implies that a very small portion of this aid is utilized effectively and efficiently while most of it is wasted away. It also means that the aid given to education sector of Pakistan is much less than the requirements of the country. The results are in line with the previous literature Wolf (2006) and Kwabena and Asiedu (2008). The coefficient of public expenditures on education is also positive and significant which implies that with 1% increase in government expenditure on education, literacy rate will increase by 0.236% in the country. The results are in conformity with Dreher, Nunnenkamp and Thiele (2006) and Baldacci, Clements and Gupta (2008). This implies that government must increase the funds to increase the literacy rate in the country.

¹⁰ For results, see appendix table 1.

Table: 1 Education and Foreign Aid: A Case of Pakistan

Variables	Coefficients	Standard error	t-statistics	Prob.
Constant	2.034	1.058	1.922	0.078
Eduaid	0.041***	0.015	2.69	0.019
Nee	0.236***	0.055	4.240	0.001
Pop	-0.059	0.237	-0.250	0.806
Ptr	-0.1209	0.116	-1.038	0.319
R-squared	0.830			
Adj. R-squared	0.773			
F-statistics (prob. 0.000143)	14.68			
LM test F-stats: 0.043* (prob. = 0.95)				

Note: *, ** and *** indicates significance at 10%, 5% and 1 % respectively. Results of

The coefficient of population carries the expected negative sign but its impact on literacy rate is insignificant. It shows that with increase in 1% of children in population, literacy rate will decrease by 0.059% and vice versa. One reason may be that an additional pressure is put on educational system because of increase in school going children with the increase in population. Besides low income level of household is another reason because of which many people are unable to provide even the basic education to their children so the enrolment and thus literacy rate of the country decreases. The effect of pupil-teacher ratio on literacy rate is also negative and insignificant which means that with an increase in the number of students under one teacher, the literacy rate will decrease by 0.120%. Although it carries the expected negative sign but its impact is insignificant. High drop out rates from schools is a major reason for lower enrolment. Teacher absenteeism in so called ghost primary schools is another reason for less interest of children in their studies. The value of R-squared is 0.83 which shows that 83% variations in dependent variable are explained by independent variables. The high values of R-squared and adjusted R-squared show that model as a whole is a good fit. The value of F-stats in LM test is highly significant which shows that there is absence of serial correlation in our model.

We also used Variance Inflation Factor test for detecting the multi-collinearity among independent variables. This gives the collinearity statistics for individual variables in terms of VIF (variance inflation factor) and Tolerance values. The value of VIF should lie in between 1 to 10 for the absence of multicollinearity. If its value is less than one or greater than 10 it means that individual variable is showing a multicollinear relationship with any other variable in the model. While the tolerance =1/VIF its value should lie between 0.1 and 1 for absence of multicollinearity behavior of a variable. The values of VIF and tolerance for the variables in our model indicate complete absence of multi-collinearity.¹¹ On the basis of these results we conclude that foreign aid given to education sector of Pakistan increases the national educational outcomes of the country.

We also estimated the equation (4) to examine the effects of total foreign aid disbursements on literacy rate of Pakistan for the period 1971-2007. Johansen Cointegration Test is applied to see the long run relationship. We applied ADF to check the unit root and found that

¹¹ For results, see appendix table 2.

all series are integrated of order 1. After addressing the stationarity issue, we apply the cointegration test. At first we are to determine an appropriate lag length using AIC (Akaike Information Criteria) and SBC (Schwarz Bayesian Criteria). The results of the cointegration test show that there exists one cointegrating relationship among the variables as shown in table 2.

Table:2 Johansen Cointegration Test

No.	Hypothesized no. of cointegrating equations	Trace statistics	Critical values (at 5%)	Max-Eigen statistics	Critical values (at 5%)
1	None*	75.15	69.81	37.65	33.87
2	At most 1	37.49	47.85	17.91	27.58
3	At most 2	19.58	29.79	12.39	21.13
4	At most 3	7.18	15.49	6.38	14.26
5	At most 4	0.80	3.84	0.80	3.84

Note: * denotes rejection of the null hypothesis at the 0.05 level.

The values of Trace statistics and Eigenvalue show the existence of one cointegrating equation. This implies that long run equilibrium relationship exist among the variables. In order to examine the effect of foreign aid on literacy rate in the short run, we estimated the Error Correction Model as follows.

$$\Delta \ln \text{lit} = \beta_0 + \beta_1 \Delta \ln \text{litt-1} + \beta_2 \Delta \ln \text{disbt-1} + \beta_3 \Delta \ln \text{neet-1} + \beta_4 \Delta \ln \text{popt-1} + \beta_5 \Delta \ln \text{ptrt-1} + \lambda \text{EC}(-1) + \epsilon_t$$

The results of ECM are presented in table 3. The error correction term has negative sign and statistically significant. The value of coefficient is -0.17 which shows the speed of adjustment. It indicates that approximately 17% of the disequilibrium is corrected in each period. It suggests a high speed of convergence towards equilibrium if there appears disequilibrium. All other variables in our model show an insignificant relationship with literacy rate in the short run including foreign aid which means that they do not have a considerable impact on literacy rate in the short run.

Table: 3 Error Correction Model

$\Delta \ln \text{lit}$	EC (-1)	C	D[lit (-1)]	D[disb (-1)]	D[nee (-1)]	D[pop (-1)]	D[ptr (-1)]
Coefficients	-0.17*	0.008	0.177	0.001	0.002	3.46	-0.34
S.E	0.07	0.01	0.17	0.05	0.11	2.15	0.25
t-stats	-2.50	1.43	1.056	0.022	0.023	1.61	-1.38

We estimated the equation (7) to examine the impact of good governance on literacy rate for the period 1971 to 2007. For analyzing the impact of governance in economic policies, we take budget surplus/deficit in percent of GDP and the rate of inflation. While Freedom House Index of political rights and civil liberty is used for measuring political and institutional environment of

the country. All variables are stationary at first difference so we used Johansen Cointegration Test for long run equilibrium relationship. The results of the cointegration test show that all our variables move together in the long run and there are 2 cointegrating relationship among them as shown in the table 4.

Table: 4 Johansen Cointegration Test (Trace Statistics)

No.	Hypothesized no. of cointegrating equations	Max-Eigen statistics	Critical values (at 5%)	Trace statistics	Critical values (at 5%)
1	None*	55.091	52.3626	188.087	159.529
2	At most 1*	48.419	46.231	132.996	125.615
3	At most 2	34.115	40.077	84.576	95.753
4	At most 3	23.966	33.876	50.461	69.818
5	At most 4	15.778	27.584	26.494	47.856
6	At most 5	8.431	21.131	10.761	29.797
7	At most 6	2.110	14.264	2.285	15.494
8	At most 7	0.1751	3.841	0.175	3.841

Note: * denotes rejection of the null hypothesis at the 0.05 level.

The results support the findings of Michaelowa (2004), Michaelowa and Weber (2006), Wolf (2006) and Baldacci, Clements and Gupta (2008). In order to examine the effects of foreign aid and other economic and governance indicators on literacy rate in the short run, we estimate Error Correction model. The error term EC (-2) consists of the residuals from the long run relationship. The following error correction model is formulated to determine the short run relationship in our model

$$\Delta \ln \text{lit} = \beta_0 + \beta_1 \Delta \ln \text{litt-2} + \beta_2 \Delta \ln \text{disbt-2} + \beta_3 \Delta \ln \text{neet-2} + \beta_4 \Delta \ln \text{popt-2} + \beta_5 \Delta \ln \text{prt-2} + \beta_6 \Delta \ln \text{budgt-2} + \beta_7 \Delta \ln \text{inf-2} + \beta_8 \Delta \ln \text{fhit-2} + \lambda \text{EC} (-2) + \epsilon_t \quad (8)$$

All variables are in their first differenced form. The results of the error correction model are given in the table 5. The error correction coefficient is -0.249 with t-statistics = -3.477 which shows that it is highly significant and has the theoretically correct signs. It indicates that approximately 24% of the disequilibrium is corrected in each period. It suggests a high speed of convergence towards equilibrium if there appears disequilibrium. The coefficient of foreign aid disbursements shows a significant positive relationship with literacy rate but its coefficient is very small which means its impact is almost negligible or a small amount of total foreign aid is used in education sector in the short run. The effects of all other explanatory variables including economic and political variables are insignificant.

Table: 5 Results for Error Correction Model

Δln lit	EC (-2)	D[lit (-2)]	D[disb (-2)]	D[nee (-2)]	D[pop (-2)]	D[ptr (-2)]	D[bdgt (-2)]	D[inf (-2)]	D[fh(- 2)]
Coef.	-0.249	0.127	0.092***	0.064	-0.444	0.374	-0.0619	-0.0408	0.009
S.E	0.071	0.153	0.045	0.105	1.355	0.238	0.065	0.025	0.057
t-stats	-3.477	0.833	2.042	0.616	-0.327	1.569	-0.947	-1.620	0.168

VI. Conclusions and Policy Implications

The basic objective of this study is to examine the effectiveness of foreign aid on national educational outcomes of Pakistan. The basic work on the empirical examination of the effects of foreign aid started in 1960s, with the common perception that aid is helpful in the growth and development of developing countries. However some economists argue that foreign aid is not always beneficial for developing countries but it may cause more aid dependency, corruption and bad economic management in recipient countries. Most of the empirical research on aid-growth relationship performed earlier, finds a positive relationship between them while according to some this positive relationship is conditional on good fiscal, monetary and trade policies of the recipient countries. Moreover, some studies find that there is no relationship between them or even a negative one.

Within this mixed history of hopes and doubts, this study empirically analyzes the effectiveness of sector specific foreign aid given to education sector of Pakistan on national educational outcomes over the period 1991-2007. Besides, another model is formed where the effects of total foreign aid on national educational outcomes of Pakistan is analyzed for the period 1971 to 2007. The empirical results indicate that a very small portion of foreign aid given to education sector is utilized effectively and efficiently while most of it is wasted away. It also means that the aid given to education sector of Pakistan is much less than the requirements of the country. The impact of public expenditures on education is also positive and 1% increase in government expenditure on education will increase the literacy rate by 0.236% in the country. Although public expenditures on education has increased over the last few years, its real value has fallen due to inflation, fluctuation in the value of country s' currency and increasing enrollment rates.

The population and pupil-teacher ratio are not affecting the literacy rate significantly. One reason may be that an additional pressure is put on educational system because of increase in school going children with the increase in population. Besides, low income level of household is another reason because of which many people are unable to provide even the basic education to their children so the enrolment and thus literacy rate of the country decreases. The high drop out rates from schools is a major reason for lower enrolment. Teacher absenteeism in so called ghost primary schools is another reason for less interest of children in their studies.

We also examined the effects of total foreign aid disbursements on literacy rate of Pakistan using Johansen Cointegration test for long run equilibrium relationship. The results show a positive and significant impact of foreign aid on educational outcomes in the long run. National educational expenditures show a negative but significant relationship with literacy rate in the long run. The share of children within the total population shows a negative and highly

significant impact on literacy rate. The pupil-teacher ratio has a positive and highly significant impact on literacy rate of the country. The reason for this positive relationship may be that at the given level of resources, under the conditions of under supply, enrolment can be increased by accepting more children in each class.

In order to examine the effects of foreign aid on literacy rate in the short run, we estimate Error Correction model. All variables in our model show an insignificant relationship with literacy rate in the short run including foreign aid which means that they do not have a considerable impact on literacy rate in the short run. Secondly, in addition to these variables, three other variables are introduced to examine the impact of good governance on the national educational outcomes in Pakistan. The estimated coefficients of disbursements, national educational expenditures, population aged 0-14 and pupil-teacher ratio have the same signs and significance level as seen previously in the model where the impact of foreign aid with various educational variables was measured. As far as the variables of economic and political governance are concerned, economic variables of budget surplus/deficit and rate of inflation show insignificant impact on literacy rate. The political aspect of good governance is measured by Freedom House Index which shows a highly significant negative relationship with literacy rate. It shows that with every one point increase towards oppression reduces the literacy rate. Thus we see that in the long run our results show a more significant impact of political governance than economic governance on literacy rate of Pakistan.

There are certain policy recommendations based on study's empirical findings to increase the efficiency and affectivity of foreign aid in the education sector of Pakistan. The responsibility for better utilization and effectiveness of foreign aid in the education sector rests on both donors as well as recipient countries. As far as the donor s' policies are concerned, they should allow the recipient governments to design and formulate their own policies and projects. They should direct more resources for the provision of primary education in the recipient countries. More funds should be provided for improving learning environment in recipient countries which may involve infrastructure building, improving quality of schools and their management, supply of learning materials, reduction of school fees and other charges etc. Besides they should also formulate a system of accountability and transparency to reduce any chances of fungibility of aid in other sectors of the recipient countries.

References

- Anwar, M., and Michaelow, K., (2006): "The Political Economy of US Aid to Pakistan." *Review of Development Economics*, 10(2): pp.195-209
- Aslam, N., (1987): "The Impact of Foreign Capital Inflow on Savings and Investment: The Case of Pakistan". *Pakistan Development Review*: Islamabad: Pakistan Institute of Development Economics. 26 (4): pp. 787-789.
- Baldacci, E., Clements, B., Gupta, S. and Cui, Q., (2008): "Aid, Social Spending, Human Capital and Growth in Developing Countries" *World Development* 36(8), pp. 1317–1341.
- Biboh, N. Henrietta, (2007): "Foreign Aid, Government Quality and Economic Growth in Developing Countries".
- Burnside, C., and Dollar, D., (1999): "Aid, Policies, and Growth." *American Economic Review* 90 (4): pp.847-868.
- Burnside, C., and Dollar, D., (2000): "Aid, Policies, and Growth: Revisiting the Evidence." Policy Research Working Paper 3251: World Bank, Washington D.C.
- Chenery, H.B. and Strout, A. M., (1966): "Foreign Assistance and Economic Development". *American Economic Review*, New York: American Economic Association 56 (4): pp.179-773.
- Durbarry, R., Gemmell, N., and Greenaway, D., (1998): "New Evidence on the Impact of Foreign Aid on Economic Growth". Research paper 98/8: Centre for Research in Economic Development and International Trade, University of Nottingham.
- Dickey, D. A. and Fuller, W. A., (1979): "Distribution of the Estimators for Autoregressive Time Series with Unit Root." *Journal for the American Statistical Association* 74: pp. 427-431
- Dreher, A. Nunnenkamp, P. and Thiele, R., (2006): "Does Aid for Education Educate Children? Evidence from Panel Data." *World Bank Economic Review*, 22(2)., pp. 291-314.
- Easterly, W., Levine, R. and Roodman, D., (2003): "New Data, New Doubts: A Comment on Burnside and Dollar s' aid, Policies and Growth," NBER Working Paper No. 9846.
- Economic Survey of Pakistan, Various Issues.
- Filmer, D., and Pritchett, L., (1999): "The Effect of Household Wealth on Educational Attainment: Evidence from 35 Countries." *Population and Development Review* 25(1): pp.85-120.
- Freedom House (2004): Freedom in the World, Annual Report. www.freedomhouse.org.
- Johansen, S. and Juselius, K., (1990): "Maximum Likelihood Estimation and Inference on Co-Integration with Application to the Demand for Money." *Oxford Bulletin for Economics and Statistics* 52(2): pp.169-209.
- Khan, H. Mahmood, (2008): "Comparative Study of Global Role of Foreign Aid in the Development and Associates Strategies for Pakistan." <http://www.opfblog.com/3255/comparative-study-of-global-role-of-foreign-aid-in-the-development-and-associates-strategies-for-pakistan/> accessed on October 17, 2010.

- Kwabena, G. B. and Asiedu, E., (2008): "Aid and Human Capital Formation: Some Evidence." Paper presented at the African Development Bank/ UN Economic Commission for Africa. Conference on Globalization, Institutions and Economic Development in Africa: November 2008.
- Mallick, H., (2004): "US Foreign Aid and Economic Growth: A Post 9/11 Study of Pakistan as a Key Ally in the War against Terrorism." Published in the proceedings to the Pennsylvania Economic Association Conference.
- Michaelowa, K., (2004): "Aid Effectiveness Reconsidered – Panel Data Evidence for the Education Sector." HWWA Discussion Paper 264.
- Michaelowa, K., and A. Weber (2007): "Aid Effectiveness in Primary, Secondary and Tertiary Education." Background paper prepared for the Education for all Global Monitoring Report 2008.
- Pakistan Education Statistics: Ministry of Education, Pakistan. www.moe.org.pk
- Pesmazoglu, J., (1972): "Growth, Investment and Savings Rate: Some Long and Medium Term association by Groups of Countries." Bulletin of the Institute of Economics and Statistics.
- Pritchett, L., (2001): "Where Has All the Education Gone?" *World Bank Economic Review* 15(3): pp.367-391.
- Rajan, R., and Subramanian, A., (2005): "Aid and Growth: What Does the Evidence Really Show?" IMF Working Paper WP/05/127: International Monetary Fund, Washington D.C.
- Saeed, K. A., (1995): "*Economy of Pakistan.*" S.A. Salam Publications 22-Link McLeod Road Lahore.
- UNESCO yearbooks, Various Issues. www.unesco.org/education
- United Nation Development Indicators (2005): www.undi.com
- Wolf, S., (2006): "Aid and Public Expenditure in Africa: Does Aid Increase the Efficiency of Public Service Delivery?" Paper presented at the WIDER Conference on Aid: Principles, Policies and Performance, 16-17 June 2006.

Appendix

Table: 1. Augmented Dickey Fuller Unit Root Test

Variables	Lag length	τ - statistics	McKinnon C.V (at 10%)
lit	3	-3.44	-3.32
eduaid	2	-4.32	-3.32
nee	3	-4.01	-3.32
pop	1	-4.21	-3.32
ptr	4	-3.73	-3.32

**Table: 5.2. MULTICOLLINEARITY DIAGNOSTIC TEST:
Variance Inflation Factor (for the variables)**

Variables	Standardized coefficients (betas)	t-statistics	Sig.	VIF	Tolerance
Constant	2.034	1.922	0.078
Eduaid	0.041***	2.69	0.019	6.778	0.147
Nee	0.236***	4.240	0.001	1.666	0.600
Pop	-0.059	-0.250	0.806	7.186	0.139
ptr	-0.1209	-1.038	0.319	1.139	0.878

A: Dependent Variable: Lit

HWWI Research Papers

by the HWWI Research Programme „World Economy“

19. [Monetary Policy and Real Estate Prices: A Disaggregated Analysis for Switzerland](#)
Michael Berlemann, Julia Freese; Hamburg, October 2010
18. [Female wage profiles: An Additive Mixed Model approach to employment breaks due to childcare](#)
Torben Kuhlenkasper, Göran Kauermann; Hamburg, October 2010
17. [Foreign Direct Investment and Exchange Rate Regimes](#)
Matthias Busse, Carsten Hefeker, Signe Nelgen; Hamburg, April 2010
16. [They don't get me I'm part of the union: Trade unions in the German parliament](#)
Michael Berlemann, Klaus W. Zimmermann; Hamburg, February 2010
15. [The Characteristics and Determinants of FDI in Ghana](#)
Fabian Barthel, Matthias Busse, Robert Osei; Hamburg, December 2008
14. [Liquidity Constraints and Linkages with Multinationals](#)
Mariana Spatareanu, Beata S. Javorcik; Hamburg, November 2008
13. [Zur Internationalisierung des Dienstleistungssektors](#)
Georg Koopmann, Thomas Straubhaar; Hamburg, Mai 2008
12. [Taxation, Corruption and the Exchange Rate Regime](#)
Carsten Hefeker; Hamburg, März 2008
11. [Determinants of Corruption in Developing Countries](#)
Mumtaz Anwar, Ghulam Shabbir; Hamburg, November 2007
10. [Teacher Shortages, Teacher Contracts and their Impact on Education in Africa](#)
Jean Bourdon, Markus Frölich, Katharina Michaelowa; Hamburg, May 2007
9. [Technology trade in economic development](#)
Matthias Busse, José Luis Groizard; Hamburg, March 2007
8. [Consequences of Economic Partnership Agreements between East and Southern African countries and the EU for inter- and intra-regional integration](#)
Axel Borrmann, Matthias Busse, Manuel de la Rocha; Hamburg, January 2007
7. [Does Africa really benefit from trade?](#)
Matthias Busse, José Luis Groizard; Hamburg, January 2007
6. [Learning by doing in market reform: lessons from a regional bond fund](#)
Guonan Ma, Eli M. Remolona; Hamburg, October 2006
5. [Institutional and Structural Problems of China's Foreign Exchange Market and the RMB's Role in East Asia](#)
Zhang Jikang, Liang Yuanyuan; Hamburg, October 2006
4. [The ASEAN Economic Community and the European Experience](#)
Michael G. Plummer, Reid W. Click; Hamburg, September 2006
3. [The institutional challenge of the ACP/EU Economic Partnership Agreements](#)
Axel Borrmann, Matthias Busse; Hamburg, July 2006
2. [Steuern und Steuerpolitik in Entwicklungsländern: Die Eigenverantwortlichkeit der Regierungen](#)
Karl-Wolfgang Menck, Leif Mutén; Hamburg, April 2006
1. [Capital Markets and Exchange Rate Stabilization in East Asia – Diversifying Risk Based on Currency Baskets](#)
Gunther Schnabl; Hamburg, March 2006

The **Hamburg Institute of International Economics (HWWI)** is an independent economic research institute, based on a non-profit public-private partnership, which was founded in 2005. The University of Hamburg and the Hamburg Chamber of Commerce are shareholders in the Institute .

The HWWI's main goals are to:

- Promote economic sciences in research and teaching;
- Conduct high-quality economic research;
- Transfer and disseminate economic knowledge to policy makers, stakeholders and the general public.

The HWWI carries out interdisciplinary research activities in the context of the following research programmes: Economic Trends, Hamburg and Regional Development, World Economy and Migration Research Group.

Hamburg Institute of International Economics (HWWI)

Heimhuder Str. 71 | 20148 Hamburg | Germany

Tel +49 (0)40 34 05 76 - 0 | Fax +49 (0)40 34 05 76 - 776

info@hwwi.org | www.hwwi.org