Interrelationship between Foreign Aid, Fiscal Decentralization and Economic Growth in Pakistan: An Econometric Analysis

Nabila Asghar, Hafeez ur Rehman and Muhammad Nadeem*

Abstract

The present study analyzes the relationship between foreign aid and economic growth taking into account the process of fiscal decentralization in Pakistan. The main objective of the present study is to observe the role of foreign aid in increasing economic growth considering federal structure of Pakistan. The study uses time series data for the period 1980-2014 and employs 3SLS econometric technique for estimating the model. The results of the study indicate that foreign aid and fiscal decentralization have positive impact on economic growth of Pakistan. Furthermore economic growth and fiscal decentralization both exert positive impact on foreign aid. The results of the study show that economic growth has negative relation with fiscal decentralization and foreign aid has positive effect on fiscal decentralization. The study finds bidirectional causality between: economic growth and foreign aid, economic growth and fiscal decentralization and between foreign aid and fiscal decentralization.

Keywords: Foreign aid, Fiscal decentralization, Economic growth

I. Introduction

The existing literature have concluded that foreign resources have played significant role in raising the pace of economic development in developing countries. Most of the developing countries have been facing shortage of resources failing to meet the rising demand of capital over time. In order to overcome this problem these countries have been receiving heavy doses of external resources in the form of loans and grants from developed countries and international financial institutions World Bank, IMF and Asian Development Bank. The developing countries depend on foreign aid due to the desire of achieving rapid pace of economic development in the shortest period of time. Furthermore, for bridging their saving investment gap and export import gap these countries are forced to receive foreign aid from foreign sources. On the other side, developed countries provide loans and foreign assistance to developing countries keeping in view that developing countries cannot borrow from commercial sources due to their limited debt servicing capacity.

_____

*Authors are Assistant Professor of Economics at the University of the Punjab, Lahore-54590; Professor of Economics at the University of Management and Technology, Lahore; and Lecturer in Economics at the University of the Punjab, Lahore - Pakistan.

Oates (1972) stressed that decentralization is one of the important factors which helps the donor countries in transferring resources because the government officials of recipient countries can make correct and appropriate decisions regarding the development projects as decentralization helps in bringing government and people closer. There are two serious problems which may come up in this regard. Firstly, it is very difficult to know about the real needs of the society. Secondly, allocation of the resources under political pressure to meet these requirements is not an easy task.

The resource allocation in developing countries remained controversial due to the political pressure and conditions attached to foreign aid. The need for decentralization, comes up because of the existence of gap between spending needs and availability of revenue. There are three levels of government working in Pakistan and the allocation and distribution between them remained under debate. There exists a well-defined process through which resources are redistributed to provincial government by the federal government through National Finance Commission (NFC).

The introduction of new formula in 2009 for the share of all provinces in the dividable pool has altered significantly. In the 1990 the Punjab's share was 57.87 according to NFC award based on the population, while there was an insignificant decline observed in 2006. There is decline in the share of Punjab recorded from 57.37 percent in 2006 to 51.74 percent in 2009. The share of Sindh has gone up from 23.71 percent in 2006 to 24.55 percent in 2009. The share of KPK has gone up from 13.82 percent in 2006 to 14.62 percent in 2009. The Balochistan's share has increased to 9.09 percent on the basis of the revised formula.

Several studies have analyzed the effect of foreign aid, fiscal decentralization on economic growth but there is no consensus among the researchers regarding the role of decentralization in economic growth.

Easterly (2003) concluded that corrupt institutions having weak policies had adverse impact on foreign aid in achieving its desired objectives. Morrissey (2006) stressed that private investment has appeared to be inversely related to imports and directly related to foreign aid. Aurangzeb (2010) failed to find the evidence related to the impact of foreign aid on economic growth in Pakistan. Javid (2011) concluded that foreign aid may have positive effect on economic growth in Pakistan only in the presence of sound economic policies. The present study is highly important as the results of this study would help the policy makers to formulate and implement better policies consistent with the economic and political conditions prevailing in Pakistan.

The rest of the study is organized as follows. Section-II presents theoretical framework. Model specification and interpretation of results are presented in Section-III. The final section concludes the study.

II. Theoretical Framework

The theoretical framework of the present study is based on three gap models, i.e. Saving-investment gap, export-import gap and fiscal gap.

Harrod-Domar growth model postulates that there is excess supply of labor in developing economies which reduces the productivity of capital. Foreign assistance helps in enhancing the domestic saving or directly boosts the productivity of capital by increasing economic growth (Domar, 1946).

Chenery and Strout's dual gap model states that foreign assistance increases economic growth by enhancing domestic saving and foreign exchange reserves (Chenery and Strout, 1966). Foreign assistance helps in eliminating the saving-investment gap and the export-import gap. Besides these two gaps Bacha (1990) explains that developing economies lack sufficient revenue generation capacities which causes a third type of gap known as fiscal gap. Foreign assistance may fill this gap and encourages investment which leads to economic growth.

The conceptual framework of present study is presented in the following figure. It explains that foreign aid fills the three gaps which results in improvement in economic growth which in turn leads to more foreign assistance negotiations. It is important to note that rapid economic growth increases the probability of getting foreign aid because international donors consider economic growth of a country in making decisions regarding advancing loan and foreign aid. The figure also explains that fiscal decartelization enhances the efficiency of foreign aid which in turn enhances economic growth which leads to the devolution of power to local level. Furthermore, it also explains that if there is more decentralization then there will be more foreign aid because international donors recommend devolution of power at gross root level.
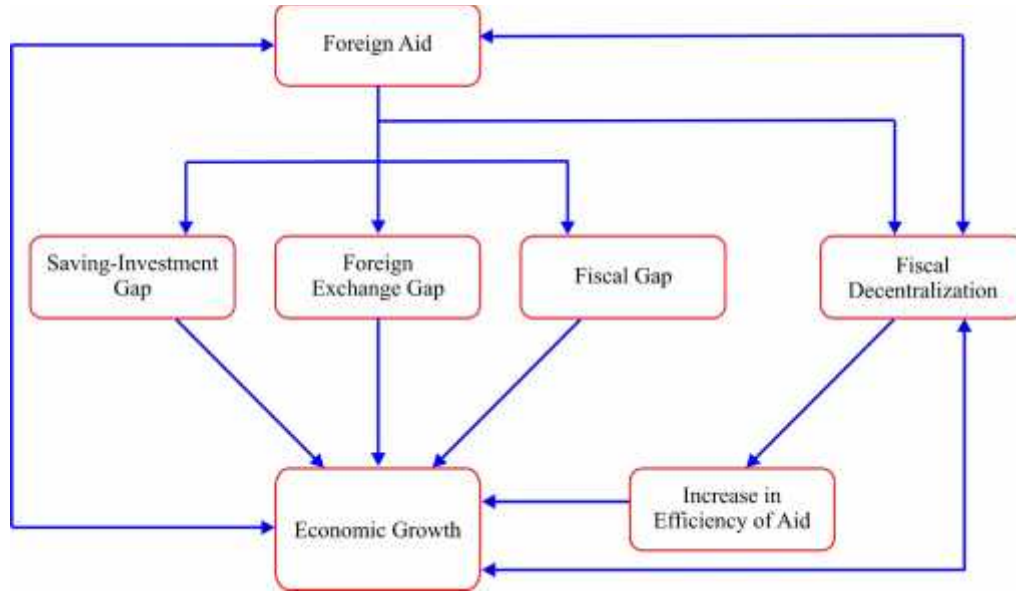
III. Model Specification and Interpretation of Results

The above discussion has revealed the significance of the relationship between decentralization, effectiveness of foreign aid and economic growth. The functional form of the model which is to be estimated is simultaneous.

The econometric form of the model may be written as

$$LGDP_t = \pi_0 + \pi_1 LFAID_t + \pi_2 LFD_t + \pi_3 LCPI_t + \pi_4 LGFKF_t + \pi_5 LHK_t + \mu_{1t} \quad (1)$$

$$LFAID_t = \pi_6 + \pi_7 LGDP_t + \pi_8 LFD_t + \pi_9 LPI_t + \pi_{10} PS_t + \pi_{11} LPOP_t + \mu_{2t} \quad (2)$$

$$LFD_t = \pi_{12} + \pi_{13} LGDP_t + \pi_{14} LFAID_t + \pi_{15} LFDI_t + \pi_{16} LLAW_t + \pi_{17} LCOR_t + \pi_{18} LPRIGHT_t + \mu_{3t}$$

Where
LGDP = log of GDP
LFAID = log of foreign aid in million $
LFD = log of fiscal decentralization
LCPI = log of CPI
LGFKF = log of gross fixed capital formation
LHK = log of human capital
LPI = log of policy index
PS = Political stability (0 for democracy and 1 for dictatorship)
LPOP = log of population density
LFDI = log of foreign direct investment inflow as % of GDP
LLAW = log of rule of law

LCOR = log of corruption
LPRIGHT = log of political rights.

For simultaneity, Hausman specification error test has been applied and the results are presented in table.1. The results reveal that null hypothesis of no simultaneity is rejected as the value of probability is less than five percent, which indicates the presence of simultaneity in the model.

Table 1: Simultaneity Test (Wald Test)

Test Statistics	Value	Probability
F-statistic	9.531	0.0001***
Chi square	38.126	0.0000***

*** represent five percent level of significance.

The identification status of each model indicates that all the equations included in the model are over identified. The details are presented below.

In the first equation the number of predetermined variables is K = 3 and number of predetermined variables in the model are K = 10, number of endogenous variables in given equation M = 3, so as per order condition K–k > m–1, 10–3 > 3–1 so first equation is over identified.

In the second equation the number of predetermined variables K = 3 and number of predetermined variables in the model are K = 10, number of endogenous variables in given equation M = 3, so as per order condition K–k > m–1, 10–3 > 3–1 so second equation is also over identified.

In the third equation the number of predetermined variables K = 4 and number of predetermined variables in the model are K = 10, number of endogenous variables in given equation M = 3, so as per order condition K–k > m–1, 10–4 > 3–1 so third equation is also over identified.

It can be concluded that all three equations are over identified. The same results are obtained through rank conditions. In order to conserve time and space the details of the rank condition can be provided to interested reader on demand.

The results of Ramsey reset test are presented in Table 2 and it can be concluded that all equations are correctly specified.

Table 2: Test of Model Specification

Equation	Test Statistics	Value	Probability
1	F-statistic	1.337	0.258
	T-statistic	1.156	0.258
2	F-statistic	0.585	0.564
	T-statistic log ratio	1.525	0.466
3	F-statistic	2.046	0.136
	T-statistic log	7.876	0.048

Breusch Godfery test has been used to detect the problem of auto correlation. The results are presented in the Table 3.

Table 3: Test of Autocorrelation

Equation	Test Statistics	Value	Probability
1	F-statistic	1.626	0.203
	Obs*R-squared	7.304	0.120
2	F-statistic	0.508	0.482
	Obs*R-squared	0.637	0.424
3	F-statistic	1.719	0.176
	Obs*R-squared	9.619	0.086

The results presented in the above table reveal that the null hypothesis of no autocorrelation cannot be rejected at five percent level of significance and it can be concluded that there exists no problem of autocorrelation in any of the three equations. The results of 3SLS are presented in Table 4.

Table 4: Three Stages Least (3SLS) Results

Variables	LGDP	LFAID	LFD
LGDP	–	2.419** (0.030)	−0.464** (0.049)
LFAID	0.227** (0.023)	–	0.686** (0.013)
LFD	0.705*** (0.000)	0.872*** (0.003)	–
LCPI	0.161*** (0.000)		
LGKFK	−0.897*** (0.000)		
LHK	1.293*** (0.000)		
LPI		0.123 (0.312)	
PS		−0.252*** (0.001)	
LPOP		−4.300** (0.029)	
LFDI			−0.072 (0.303)
LAW			0.235* (0.054)
LCOR			−0.353* (0.074)
LPRIGHT			0.593*** (0.000)
CONS	26.425*** (0.000)	−30.140** (0.090)	3.246 (0.420)

***, **, * represent the significance level at 1, 5 and 10 percent respectively.

Interpretation of Results

The first equation has Gross Domestic Product (GDP) as dependent variable where first independent variable is foreign aid (measured by total disbursements in project and non-project aid) which has positive statistically significant sign which means an increase in foreign assistance may lead to enhance GDP growth. Second variable of this equation is fiscal decentralization which has positive sign which is also statistically significant. This indicates that more fiscal decentralization may lead to an increase in economic growth. The third variable inflation has significant and positive effect on economic growth which shows that an increase in inflation helps in increasing GDP. Human capital human capital is positively related to economic growth which is consistent with the endogenous growth theory. Lastly gross fixed capital formation is statistically insignificant indicating no role in enhancing GDP. It may be due to deficiency of trained labor force which can use physical capital efficiently. This indicates that for the significant contribution of gross fixed capital formation there is a need to provide training to the workers.

The second equation of the model has foreign aid as dependent variable. The first independent variable is economic growth which has positive and

significant effect on foreign aid because foreign donor agencies keep in mind the economic growth rate while making decisions regarding the provision of foreign assistance. Fiscal decentralization also has positive and significant impact on foreign aid. This indicates that an increase in fiscal decentralization may be helpful in raising foreign aid because donor countries and international institutions prefer to advance loans and foreign aid to those countries in which democratic process is strong and the level of fiscal decentralization is high.

For political stability a dummy variable has been used which assumes the value 1 for dictatorship and 0 for democratic regimes. The coefficient of this variable appeared to be negative which means that if there is dictatorship then there will be less availability of foreign aid because generally international donors prefer to support democratic governments and avoid lending to dictatorship. The coefficient of population is negative and statistically significant which means an increase in population leads to decrease in foreign aid because donor agencies may consider high population a hurdle in the way of economic development and while making decision of foreign aid may put condition of population control. As a result countries with high population may not be able to fulfill this condition and fail to receive green signal from international donor institutions. Policy index has positive sign but it is statistically insignificant which means that this is not important factor in attracting foreign aid flows.

The third equation has fiscal decentralization as dependent variable. GDP is the first independent variable of this equation which has negative sign which is statistically significant. Foreign aid has positive and significant impact on fiscal decentralization. This indicates more foreign aid leads to more fiscal decentralization which may be due to the reason that donor agencies prefer to advance loans to more democratic governments and democratic governments have more decentralized system. Foreign direct investment has negative impact on fiscal decentralization, which means more FDI inflows may lead to reduction in fiscal decentralization. It may be due to the reason that most of the FDI contracts are dealt by central government and more FDI leads to centralized financial system. Law and order has positive impact on fiscal decentralization. It means an improvement in law and order leads to an increase in fiscal decentralization. Political rights have positive association with fiscal decentralization which means that if there are more political rights available to the people they will ask for decentralization of financial matters at local level which may enhance fiscal decentralization.

IV. Conclusion

The devolution of powers may influence the availability, use and effectiveness of foreign aid. The literature fails to throw light on the effectiveness of foreign aid particularly subject to federal structure of government in developing countries like Pakistan. The role of structure of government in the process of aid allocation is highly important because donors consider it important in making decisions related to foreign assistance.

The present study tries to analyze the foreign aid effectiveness for raising economic growth particularly in federal structure of Pakistan by utilizing time series data from 1980 to 2014 and applied three stage least square (3SLS) for estimation purposes. The results of the study indicate that foreign aid and fiscal decentralization have positive effect on economic growth of Pakistan. Economic growth and fiscal decentralization both have positive relation with foreign aid. Whereas economic growth has negative relation with fiscal decentralization and foreign aid has positive impact on fiscal decentralization. Furthermore the study points out that there is bidirectional causality between: economic growth and foreign aid, economic growth and fiscal decentralization, foreign aid and fiscal decentralization. Keeping in view the above result it is suggested that there should be more fiscal decentralization in Pakistan for reaping the full benefits of the foreign aid through increasing the efficiency of foreign aid and raising the pace of economic development in Pakistan.

References

Agrawal, P. (2001). The relation between savings and growth: cointegration and causality evidence from Asia. *Applied Economics*, *33*(4), 499-513.

Aurangzeb, Z. A. (2010, January). Foreign Aid and Economic Growth in Developing Countries: Revisiting the evidence by using a threshold regression approach.

Bank, W. (1995). *World Development Report.* New York: Oxford University Press.

Bank, W. (2002). *World Development Report.* New York: Oxford University Press.

Bardhan, P., & Mookherjee, D. (2006). Decentralisation and Accountability in Infrastructure Delivery in Developing Countries. *The Economic Journal*, *116*(508), 101-127.

Bauer, P. (1972). Dissent on Development: Studies and Debated in Development Economics. Cambridge: Harvard University Press.

Brueckner, J. K. (2000). Fiscal decentralization in developing countries: The effects of local corruption and tax evasion. *Annals of Economics and Finance*, *1*(1), 1-18.

Burnside, C., & Dollar, D. (2000). Aid, policies, and growth. *American economic review*, 847-868.

Burnside, C., & Dollar, D. (2004). Aid, Policies and Growth: Revisiting the Evidence. World Bank. *Policy Research Working Paper*, *3251*.

Chakravarty, S., & Mitra, A. (2009). Is industry still the engine of growth? An econometric study of the organized sector employment in India. *Journal of Policy Modeling*, *31*(1), 22-35.

Chang, C. C., Fernandez-Arias, E., & Serven, L. (1998). Measuring aid flows: a new approach. *World Bank Policy Research Working Paper*, (2050).

Chenery, H. B., & Strout, A. M. (1966). Foreign assistance and economic development. *The American Economic Review*, 679-733.

Devkota, K. L. (2011). Effect Of Fiscal Decentralization On Economic Growth In Districts Of Nepal: An Econometric Analysis.

Dickey, D. a. (1979). Distribution of the Estimators for Autoregressive Time Series With a Unit Root. *Journal of the American Statistical Association*, 427-431.

Domar, E. D. (1946). Capital expansion, rate of growth, and employment. Econometrica, Journal of the Econometric Society, 137-147.

Dritsakis, N., Varelas, E., & Adamopoulos, A. (2006). The main determinants of economic growth: An empirical investigation with Granger causality analysis for Greece. *European Research Studies Journal*, *9*(3-4), 47-58.

Easterly, W. (2003). Can foreign aid buy growth?. *Journal of Economic Perspectives*, 23-48.

Easterly, W., Levine, R., & Roodman, D. (2003). New data, new doubts: A Comment on Burnside and Dollar's. *NBER Working Paper*, (w9846).

Friedman, M. (1958). Foreign Economic Aid: Means and Objectives. *Yale Law Review*, 47, pp. 24{38.

Fuller, W. (1976). *Introduction to Statistical Time Series.* New York: John Wiley.

Group, W. B. (2014). *Net official (current US$)* . Retrieved from The World Bank

Jaffery, N. B., & Sadaqat, M. (2006). NFC awards: commentary and agenda. *Pakistan Economic and Social Review*, 209-234.

Javid, M., & Qayyum, A. (2011). Foreign Aid and Growth Nexus in Pakistan: The Role of Macroeconomic Policies. *Working Papers & Research Reports*, *2011*.

Jin, H., Qian, Y., & Weingast, B. R. (2005). Regional decentralization and fiscal incentives: Federalism, Chinese style. *Journal of public economics*, *89*(9), 1719-1742.

Lin, J. Y., & Liu, Z. (2000). Fiscal decentralization and economic growth in China. *Economic development and cultural change*, *49*(1), 1-21.

Litvack, J. I., Ahmad, J., & Bird, R. M. (1998). *Rethinking decentralization in developing countries*. World Bank Publications.

Loayza, N., & Shankar, R. (2000). Private saving in India. *The World Bank Economic Review*, *14*(3), 571-594.

Maddison, A. (1992). A long-run perspective on saving. *The Scandinavian Journal of Economics*, 181-196.

Martinez-Vazquez, J., & Timofeev, A. (2009). *Decentralization measures revisited*. Georgia state university. Andrew Young school of policy studies.

Morrissey, O., M'Amanja, D., & Lloyd, T. (2006). Aid and growth in Kenya: A time series approach. *Frontiers of Economics and Globalization*, *1*, 313-332.

Mosley, P., Hudson, J., & Horrell, S. (1987). Aid, the public sector and the market in less developed countries. *The Economic Journal*, 616-641.

Oates, W. (2003). Assignment of responsibilities and fiscal federalism. *Blindenbacher and Koller (eds)*, 39-50.

Oates, W. E. (2008). On the theory and practice of fiscal decentralization. *Institutional foundations of public finance: Economic and legal perspectives*, 165-203.