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FOREIGN AID VOLATILITY AND ECONOMIC GROWTH: A CASE STUDY OF PAKISTAN

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ABSTRACT

While the debate on the effectiveness of foreign aid remains inconclusive, recent literature has focused on exploring the possible causes that render such an ineffective. Among others, the volatility in aid inflows is cited as one of the reasons for aid ineffectiveness. Historically, Pakistan has been one of the major aid recipient countries, but it still lags behind in terms of economic development. By analysing the period 1972-2015, we explored the role of aid volatility in explaining economic growth in the case of Pakistan. By developing an index for macroeconomic policy environment, we also investigate the role of prevailing macroeconomic conditions in aid effectiveness. We employed the Generalised Method of Moments (GMM) for estimation because of its advantage in handling the endogeneity of foreign aid. After controlling for traditional determinants of economic growth, our results show that both foreign aid and its volatility are negatively related to economic growth in case of Pakistan. However, we have found that a favourable policy environment results in an increase in foreign aid effectiveness.

Key Words: Foreign Aid, Volatility, Macroeconomic Policy Index, Economic Growth, Generalised Method of Moments, Endogeneity.

INTRODUCTION

The early post-Keynesian model of Harrod and Domar (1954) explains economic growth through developing its relationship with capital stock and the rate of savings. A major corollary of the Harrod–Domar model was that increase in domestic capital stock helps boost economic performance. This capital accumulation in turns depends on the stock of national savings available for investment.

Chenery and Strout (1966) extend the work of Harrod and Domar through developing an internal-external gaps model, which is often cited as the theoretical foundation of foreign aid. The internal gap refers to disequilibrium between saving and investment, while the external gap refers to trade deficit. The model highlights the importance of low domestic savings or loanable funds. In case of low investments, the economy will also be short of exportable surplus of goods. The economy, as a result, gets stuck in a vicious circle and can only be brought out of it through the help of foreign aid.

Like other developing countries, Pakistan is no exception to a low saving rate. The saving–investment gap has remained largely negative in the case of Pakistan. On average, this gap has represented 2.4% of GDP from 1980 to 2015. According to the World Bank database, the average gross national savings (as a percentage of GDP) is 31.4% for developing countries and 14.5% in the case of Pakistan. As a result, Pakistan’s economy has been heavily relying on foreign assistance to increase capital stock. For instance, the official development assistance (ODA)⁴ was 41.5% of gross capital formation 1972-2015 for Pakistan, compared with 32% in developing countries.

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⁴ According to the World Bank, “Net official development assistance (ODA), consists of disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies of the members of the Development

THE DYNAMICS OF FOREIGN AID INFLOWS IN PAKISTAN

Pakistan has received different types of ODA. Between 1972 and 2009, Pakistan received US \$61.8 billion, out of which US \$38.7 billion (53%) was project support aid. In times of natural disasters (i.e. floods, earthquakes and drought), Pakistan received US \$6.5 billion (10%) and US \$11.5 billion for balance of payment adjustments.

Foreign aid inflows have been quite volatile in case of Pakistan. Unlike other aid-dependent countries, Pakistan's aid inflows are dependent on geopolitical factors and military considerations. Most of the aid Pakistan received was from a bilateral source, mainly from the US.⁵ The US bilateral aid to Pakistan started in 1951 and aid inflows have been volatile and independent of economic needs of Pakistan. For instance, in the early 1960s, Pakistan received almost US \$400 million per year, but the first hiccup occurred after the India–Pakistan war (a geopolitical factor) in 1965, when the US suspended aid to Pakistan. Aid inflows during the 1960s and 1970s were a result of Pakistan's mutual defence assistance agreement with the US in the pre-Cold War era. Similarly, aid inflows during the 1980s can be contextualised by the outlook of the Afghanistan war.

The US imposed “democracy sanctions” and cut foreign aid transfers to Pakistan as a result of nuclear test confirmation in 1998 and military takeover in 1999. However, after 9/11, Pakistan joined a war coalition against terrorism and received the highest average annual aid of approximately US \$3 billion during 2010–2014. The majority of the funds were under the heading of reimbursement of the cost of military coalition support in the war against terror. During the war on terror (2010–14), the US promised US \$7.5 billion in aid to Pakistan, but only half of this was actually disbursed (EADP, 2015).⁶ These stylised facts show that aid inflows have been volatile in Pakistan due to geographical issues and coalition involvement.

The objective of this study is to empirically investigate the impact of foreign aid and its volatility on economic growth of Pakistan. We have also explored the role of sound macroeconomic policies in explaining aid effectiveness. For this purpose, we have constructed macroeconomic policy index by following Burnside and Dollar (2000). The organisation of this paper is as follows. Section 2 provides a literature review on the aid–growth nexus, as well as on the impacts of volatile aid inflows on economic growth. In Section 3, we discuss the construction of the macroeconomic policy index and the econometric model. This is followed by the last section, which presents our results and discussion along with policy recommendations.

LITERATURE REVIEW

An ample literature is available on foreign aid and growth relationship. This section provides a brief review of available literature on foreign aid, volatility of foreign aid, and their relationship with economic growth.

LITERATURE ON THE AID–GROWTH NEXUS

The literature on foreign aid can broadly be divided into three stands. The first strand maintains that foreign aid has significantly positive impact on economic growth and development. According to Rosenstein-Rodan (1961), foreign aid contributes towards increases investment. Chenerey and Strout (1966) also support positive contribution of aid to GDP growth and present theoretical framework in their “two gap” model. Papanek (1973)

Assistance Committee (DAC), by multilateral institutions, and by non-DAC countries to promote economic development and welfare in countries and territories in the DAC list of ODA recipients.”

⁵ Anwar and Michaelowa (2004) calculated that more than 72 percent ODA to Pakistan comes from bilateral sources, and out of that nearly half the aid was provided by a single donor (i.e., the US).

⁶ Source: Economic Affairs Division Pakistan: Annual Status Report 2015.

also finds positive impact of aid inflows on economic performance in 23 developing countries. Levy (1988) states that foreign aid inflows accelerated investments in African countries. In the case of Pakistan, Chishti and Hasan (1992) find a positive impact of foreign grants on economic performance. Similar conclusions have been drawn by Irving and Abbas (2005), Shabbir et al. (1992) and Khan et al. (1992).

In contrast, some studies deviate from the positive effects of foreign aid and affirm a negative impact of aid inflows on economic growth and development. This strand was initiated by Friedman (1958), who argued that dependency on foreign aid decreases the potential of governments to achieve self-sustainability. Griffen and Enos (1970) empirically establish the negative impact of aid on 27 aid-dependent economies. According to Baure (1979), "Aid is a phenomenon whereby poor people in rich countries are taxed to support the lifestyles of rich people in poor countries." Likewise, Mosley (1980) confirms the negative aid-growth relationship and states that corruption and misallocation of foreign aid inflows hurt economic growth. Similarly, Hadijmichael et al. (1995), Boone (1996) and Alesina and Weder (2002) affirm that aid inflow does not reduce poverty or increase economic growth, but increases dependency and corruption. Rajan and Subramanian (2005) argues that aid inflows are unfavourable for private sector investment. Sabra and Eltalla (2016) conclude that higher aid inflows accelerate imports and do not foster investment to attain economic growth in Arab countries. Recently, Sabra and Sartawi (2015) attribute aid as hindering factor to economic growth in Palestine by crowding out savings.

In the case of Pakistan, Naqvi (1971) concludes that aid inflows erode domestic savings. Aslam (1987) and Kemal (1992) also share this viewpoint. Iqbal (1997) suggests that aid inflows increase public consumption and do not foster economic growth. Khan and Ahmad (1997, 2007) maintain aid is a curse for Pakistan's economy and show that aid inflows boost non-developmental expenditures rather than promoting economic growth.

The third strand of literature highlights the role of the macroeconomic policy environment of the aid recipient country in the analysis of the aid effectiveness framework. Burnside and Dollar (1997, 2000) construct a macroeconomic policy index and state that aid can be effective in the presence of a sound macroeconomic policy environment. The main argument of this strand is that aid effectiveness is conditional on the policy environment. Collier and Dollar (2001, 2002) add that, along with good policies, the geographical location and allocation of aid to specific sectors are favourable factors for attaining positive outcomes of foreign aid.

Javid and Qayyum (2011) follow Burnside and Dollar (1997) in constructing a macroeconomic policy index for Pakistan, concluding that aid fosters economic growth in the presence of a low budget deficit, positive trade balance and low inflation. Although it appears convincing that aid will be more effective in the presence of favourable policies, Durbarry et al. (1998) empirically find aid to be effective irrespective of the policy environment. Similarly, Hansen and Trap (1999) analyse 131 countries and conclude that aid is effective even in countries with a bad policy environment.

EMPIRICAL LITERATURE ON FOREIGN AID VOLATILITY AND ECONOMIC GROWTH

There are several reasons why volatility in aid inflows negatively affects economic growth. First, volatile inflows can result in delay or even suspension in the execution of planned developmental projects. Second, if aid has a humanitarian objective, then volatile aid can force the recipient government to utilise its own resources that had been planned for other purposes. At the same time, it reduces the confidence of the recipient government and the private sector on the donor agency's future commitment. Volatility in aid inflows can also induce leakages in already received aid flows.

Lensink and Morrissey (2000) attribute volatility in aid inflows as a root cause for ineffectiveness in economic growth. Bulir and Hamann (2003) point out that volatility causes project suspension. Similarly, Hudson and Mosely (2008) state that volatility in aid inflows increases uncertainty and prolong ongoing aid-dependent projects. Neanidis and Varvarigos (2009) and Markandya et al. (2010) support unfavourable outcomes of volatile aid inflows. The volatility in aid inflows not just hampers the economic growth of the recipient country, but also has implications for other sectors of the economy. By studying 73 aid-dependent countries, Arellano et al. (2009) find that volatility of aid cause disruptions in exports-related manufacturing products. They conclude that an abrupt increase in aid inflows results in increasing public expenditures, while their sharp fall force recipient governments to cut their developmental spending.

MODEL, METHODOLOGY AND DATA

This chapter presents model specifications and econometric methodology. The foundation of aid-growth model is based on the landmark study of Chenery and Strout (1966), who present a two-gap model. In the case of low domestic savings, we have incorporated foreign aid as an external financial resource to fill the savings–investment gap in Pakistan. Our model is based on the production function, where the real GDP (Y) is dependent on inputs and other explanatory variables:

$$Y = f(L, K, TO, ODA, FDI, Pol, \epsilon) \text{ ----- Eq (3.1)}$$

where GDP is dependent on the labour force (L), gross fixed capital formation (K) and trade openness (TO). Moreover, foreign inflows are split into two sets to fill the savings–investment gap, foreign aid (ODA) and foreign direct investment (FDI). Economic policies (Pol) play pivotal role is economic growth so we have added macroeconomic policies in our model. Lastly, the ϵ is a normally distributed random error term.

CONSTRUCTION OF THE INDEX

The theoretical foundation for the formulation of the policy index is based on Fischer (1993), and the methodological structure is based on work by Burnside and Dollar (2000). The objective of the index is to explore the impact of the existing policy environment on aid's contribution to economic growth. We have extended the macroeconomic policy index for Pakistan, previously constructed by Javid and Qayyum (2011). Like Burnside and Dollar (2000), Javid and Qayyum (2011) constructed the index by using three variables: inflation rate, budget balance and trade openness. We have extended this index by adding money supply to the GDP ratio to represent financial development.

The relationship between macroeconomic policies and economic growth is well established in the literature. A generous literature is available on the well-framed theoretical relationship of inflation, twin deficit and money supply with economic growth (see, Fisher, 1993; Parkin, 1986; Dollar, 1992). As an extension to Burnside and Dollar's (2000) macroeconomic policy index, we have added money supply to the GDP ratio as an indicator for financial development. We have employed the principal component method to construct the index. The first component of the principal component method explains the maximum variations of the data, while the second and third components explain the remaining variations. We derive the weights of included variables through the first principal component, as it represents the highest correlation. Finally, we get the weights through normalising the values of vector 1. The policy index used in our analysis is based on the following equation:

$$\begin{aligned} PolicyIndex = & -\beta_1 (Inflation) + \beta_2 \left(\frac{budgetbalance}{GDP} \right) + \beta_3 (TradeOpenness) \\ & + \beta_4 \left(\frac{moneysupply}{GDP} \right) \end{aligned}$$

where $\beta_1, \beta_2, \beta_3$ and β_4 are the weights of first component and the estimated weights are 1.097, 0.726, 1.066 and 0.437 respectively.

We have followed Bulir and Hamann (2003) and Hudson and Mosley (2008) for estimation of foreign aid volatility, and used a Hodrick–Prescott (HP) filter.

ECONOMETRIC METHODOLOGY

Hansen (1982) developed the Generalised Method of Moments (GMM) model, which is actually a generalised approach to the method of moments presented by Karl Pearson (1894). Due to its several advantages, GMM has been widely used for estimations in economics and finance. The major advantage of GMM is that it does not require complete knowledge of the underlying data generating process. In contrast to Maximum Likelihood Estimation (MLE), GMM estimation requires specified moments derived from an underlying model.

GMM is particularly useful in estimating the impact of growth volatility in economic growth because of the potential endogeneity of aid. There are various sources of endogeneity in the relationship between aid and economic growth. It is argued that foreign aid is endogenous to growth since donors allocate aid purposively and are likely to react to recipient countries' growth performance. The methodology of GMM comes in handy in this case because it addresses the concerns of the endogeneity problem (Hansen and Tarp, 2000). To address this concern of aid endogeneity, most studies aimed at the aid–growth relationship have used GMM estimation methodology.⁷

GMM offers an estimation approach when the numbers of restricted moments in the data generating process are higher than the number of parameters required to be estimated. In contrast to the approach of satisfying one moment condition and violating the other, GMM strategy chooses an estimator that balances each population moment condition against the others, seeking residuals that trade-off violations of one moment restriction against violations of the other moment restrictions.

VARIABLES AND EQUATIONS

To conduct a time series analysis, we have employed data from 1972 to 2015. Mainly we have taken data from World Bank's World Development Indicators, but we have also used economic survey of Pakistan for data of fiscal sector variables.

We have estimated four equations. Equation (1) tests the impact of foreign aid inflows on economic growth of Pakistan. Equation (2) checks the impact of foreign aid inflows on growth in presence of existing policy environment. We have used foreign aid and policy index interactive terms in equation (3); this equation represents the combined effect of existing macroeconomic policies and aid inflows. Here, we are basically mimicking the work of Burnside and Dollar (1997), as they used this aid-policy interactive term in their analysis.

$$\log(\text{GDP}) = a_0 + a_1 \log(\text{Aid}) + a_2 \log(\text{LF}) + a_3 \log(\text{GFCF}) + a_4 \log(\text{TO}) + a_5 (\text{FDI}) + \mu \quad \text{--Eq(3.2)}$$

$$\log(\text{GDP}) = a_0 + a_1 \log(\text{Aid}) + a_2 \log(\text{LF}) + a_3 \log(\text{GFCF}) + a_4 \log(\text{TO}) + \alpha_5 (\text{FDI}) + \alpha_6 \log(\text{Pol}) + \mu \quad \text{--Eq(3.3)}$$

$$\log(\text{GDP}) = a_0 + a_1 \log(\text{Aid}) + a_2 \log(\text{LF}) + a_3 \log(\text{GFCF}) + a_4 \log(\text{TO}) + a_5 (\text{FDI}) + \alpha_6 (\text{AID} * \text{POL}) + \mu \quad \text{--Eq(3.4)}$$

Here, GDP represents gross domestic product per capita, and Aid denotes official developmental assistance as a percentage of GDP. LF symbolises labour force, gross fixed capital formation is GFCF, foreign direct investment is FDI and TO represents trade openness.⁸

⁷For example Dalgaard et al (2004), Rajan and Subramanian (2005) and Reddy (2009) used GMM methodology to tackle endogeneity issue in aid-growth nexus. This problem was also identified by Clemens *et al* (2004), Easterly (2003), Easterly *et al* (2004), Hansen and Tarp (2002), and Tavares (2003).

⁸Data on all variables has been taken on constant prices.

Another important objective of this study is to explore the impact of volatility in foreign aid inflows on economic growth of Pakistan. To capture the impact, we have constructed equation 3.4 based on equation 3.2 (in which we have replaced foreign aid with its volatility (Aid_V) as an explanatory variable):

$$\log(\text{GDP}) = a_0 + a_1(Aid_V) + a_2 \log(LF) + a_3 \log(GFCF) + a_4 \log(TO) + a_5 (FDI) + \mu \text{---Eq (4)}$$

All the variables are taken in natural log form, except FDI and foreign aid volatility.

EMPIRICAL RESULTS AND DISCUSSION

Our results show that foreign aid inflows negatively impact economic growth in Pakistan. The estimation results, as presented in Table 4.1 (Eq3.2), show that a 1% increase in aid to GDP ratio leads to a 0.10% decline in GDP per capita. This result is in line with the majority of existing studies in the case of Pakistan (see, Chisti and Hasan, 1992; Iqbal, 1997; Khan and Ahmad, 2007). As cited in the literature, most of the aid inflows in Pakistan come from a bilateral source (i.e., the US) based on the strategic needs of the donor country rather than depending on the economic needs of Pakistan.

The results of equation 3.2 also present the impact of other control variables on economic growth. Gross fixed capital formation and labour force have a significantly positive impact on GDP per capita. However, FDI has a positive but insignificant impact on economic growth in Pakistan. There are several studies that also questioned role of FDI in developing countries (see, Adewumi, 2006).

Empirical results of equation 1 show that a 1% increase in trade openness boosts GDP per capita by 0.32 percent. Our results are in line with Iqbal and Zahid (1998) and Shirazi et al. (2004); they all find trade liberalisation fosters economic growth of Pakistan. The results of Eq3.3 show that a sound policy environment has a significantly positive impact on economic growth. The coefficient of the policy–growth relationship shows that a 1% increase in policy index leads to a 0.01% increase in economic growth. In equation (3.4), we have investigated whether aid is conditional to the macroeconomic policy environment. We have thus used the macroeconomic policy index and foreign aid interactive term. Aid*policy interactive term has a strong intuitive aspect that outcomes from foreign aid utilisation become positive when a country has a sound macroeconomic policy environment. Our results are in agreement with the findings of Burnside and Dollar (1997, 2000) and Javid and Qayyum (2011). We find that aid is effective, conditional on sound macroeconomic policies in Pakistan. Lastly, we have estimated equation (3.5); this equation has captured the impact of volatile aid inflows on Pakistan's economy.

The findings of this study suggest some policy implication. First, large fluctuations in aid are not desirable, as volatility is found to negatively relate with GDP growth in the case of Pakistan. Second, considering Pakistan receives a major part of the aid inflows from a single country, there is a need to diversify its donor base. There is also a need to insulate aid inflows due to the strategic and political consideration of donor countries. In this regard, a long-term commitment should be obtained and ensured before the start of any aid programme. Lastly, as shown by our results, aid effectiveness can be enhanced through improvements in the macroeconomic policy environment.

Table 4.1: Estimated Regression Coefficients with <i>Dependent Variable</i> as GDP per capita				
Variables	Estimated Coefficients			
	Eq(3.2)	Eq(3.3)	Eq(3.4)	Eq(3.5)
Foreign Aid Inflows (as % of GDP)	-0.1086 (-5.832)*	-0.0780 (-4.548)*	-0.0870 (-8.317)*	0.0452 (3.806)*
Gross Fixed Capital (as % of GDP)	0.1409 (3.594)*	0.0619 (1.572)	0.0469 (1.97)***	0.1059 (2.402)*
Labour Force	0.7540 (72.825)*	0.7438 (66.322)*	0.7366 (82.494)*	0.9079 (32.162)*
Trade Openness	0.3264 (3.471)*	0.3470 (4.353)*	0.4330 (10.099)*	0.5084 (9.824)*
FDI	0.0101 (1.459)	0.0064 (1.249)	0.0085 (1.557)	
Macroeconomic Policy Index		0.0188 (2.410)**		
Foreign aid Inflows Volatility				-0.00178 (-4.063)*
Aid*Policy Interactive term			0.0200 (2.777)*	
Constant	3.2375 (9.257)*	3.139 (10.066)*	2.8190 (13.591)*	1.3809 (7.426)*
Diagnostic Tests				
R2	0.9723	0.9795	0.9783	0.9613
Adjusted R2	0.9686	0.9761	0.9748	0.9550
Durbin Watson	1.8300	1.7900	1.8847	1.7560
J-Statistics	0.1452	0.1467	0.1649	0.1082
Note: All the values of t-Statistics are given in parenthesis. *, ** and *** represents statistical significance at 1 %, 5 % and 10% level, respectively.				

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