

Impact of Project and Programme Aid on Economic Growth: A Cross Country Analysis

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This study examines the impact of foreign aid instruments, namely Project Aid and Programme Aid, on economic growth of 27 aid-receiving countries. The study constructs a system of three equations, i.e. growth, investment and human capital. Using the Generalised Method of Moment estimation technique, the study concludes that while Project Aid has a positive and significant impact on economic growth, Programme Aid has an insignificant impact on economic growth. Additionally, the study finds that economic policies do enhance effectiveness of aid at aggregate level. Therefore, the capacity of aid-recipient countries to effectively use their resources for economic development needs due consideration.

Keywords: Project Aid, Programme Aid, Economic Growth, Conditionality, Procurement Reform, System Equation Method, Generalised Method of Moment (GMM), Principal Component Analysis

1. INTRODUCTION

The role of foreign aid in economic growth of developing countries has been a controversial issue. Since 2000, several high level international forums on ‘Aid Effectiveness’ were held. These forums formulated principles of how to increase the amount of foreign aid more effectively. The central principle was that the greater ownership of the recipient country in the development process, with special regard to aid utilisation, is a prerequisite for the desired developmental effects. The formulation of new aid effectiveness principles resulted in decrease in the share of Project Aid, while a share of Programme Aid has increased since 1980s. The basic rationale of this shift was the recognition of the ineffective nature of the Project Aid and acceptance of Programme Aid as an effective modality [Wilkes (2001); Camara (2004); Van de Walle (2005)].

Traditionally, foreign aid was delivered through Project Aid. In Project Aid, funds are given for well-defined activities and are implemented through a parallel management system with a very limited integration of national ministerial agencies. This instrument challenges local ownership of the

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development process and the generation of local institutional capacity. Contrary to Project Aid, funds through Programme Aid are given to finance overall development strategy and are delivered through recipient government budgets and accounting system.

The opponents of project aid argued that the project approach leads to the emergence of a parallel system which hampers planning, alignment, coordination and predictable budgeting. Project Aid through its fragmented implementation also leads to huge transaction cost. Contrary to Project Aid, the programme based approach leads to improved ownership, planning, coordination and predictable budgeting because of its less fragmented nature. Programme Aid also reduces transaction cost of foreign aid utilisation [Camara (2004)].

Contrary to the popular view of accepting Programme Aid as an effective aid modality, there are some concerns associated with Programme Aid. While Programme Aid is considered as vulnerable to corruption, Project Aid is generally considered to be more transparent. Moreover, greater ownership in utilisation of funds may induce politicians to shift more financial resources to their election constituencies, rather than considering economic needs of the whole country [Camara (2004)]. Therefore, according to Koeberle and Stavreski (2006), Project Aid is preferable in the presence of weak financial management system, weak policy environment and lack of consensus between donors and recipient government on priorities.

Programme Aid is not a new modality. Its history goes back to the Marshall Plan which comprised mainly of Programme Aid. Major part of US aid programme, especially to South Asia comprised of food programme aid. But decline in the food aid led to a reduction in the importance of this sort of aid. IMF lending in all comprises of Programme Aid. The amount of IMF programme lending, increased dramatically as a result of oil crises in 1970s and the debt crises since 1980s. The upsurge in this sort of lending subsided in the early 1980s, but rose again in late 1980s, in the shape of new instrument known as structural adjustment facility (SAF). This instrument was progressively used in crises years; 1995 in Mexico, 1997 in East Asia and 1998 in Russia [White and Dijkstra (2003)]. Structural adjustment facility (SAF) was basically Programme Aid attached with some conditions of policy reforms. Following the IMF initiative, the World Bank formally started lending conditional Programme Aid in the name of structural adjustment loans (SALs) in 1980. This shift from Project Aid to Programme Aid was the result of changing views about the need for Project Aid and changing international environment [Mosley, Harrigan, and Toye (1991)]. Since the 1980s various changes have been recorded in the framework of conditionality associated with Programme Aid. In the 1980s, the conditionality was mainly focused on the requirement to pursue economic reforms while the conditionality in the 1990s was more political in nature and demonstrated a clear commitment to poverty-reduction strategy. In the 2000s, the language of conditionality recorded another change that emphasised effective aid utilisation and greater ownership of foreign aid by recipient country. The fundamental principle under this framework of conditionality was

that the recipient government will prepare national development strategy, focused on poverty reduction and development which the donor may agree to finance. The conditionality was associated with the selectivity, according to which the recipients are judged according to their past performance rather than future promises. With the rise of this new condition of recipient ownership, Programme Aid or budget support became an important aid modality. But the concern remains that giving aid through budget support is risky in countries where the government system is corrupt and inefficient. This concern became the main motivation for donors to engage in the recipient countries procurement systems and hence new conditions of efficient and transparent procurement systems were introduced [McDonald (2008)]. These developments have significant implications for economic growth process in foreign aid recipient countries.

Foreign aid has been questioned for its effectiveness in bringing sustainable economic growth in aid receiving countries. It is argued that billions of dollars spent in the name of economic growth and development in aid receiving countries are not purely used for it. The hidden commercial and political agenda of the donor agencies are the main impediments to effective aid utilisation [Anwar and Michaelowa (2006); Bokhari (2011)]. However, international funds have been increasingly shifted from Project Aid to Programme Aid. This shift raised several questions: What is the rationale behind this shift in aid disbursement strategy? Is Programme Aid more effective than Project Aid in generating economic growth? Does foreign aid work better in a better policy environment?

This study aims to assess the effectiveness of both Project Aid and Programme Aid in accelerating growth in aid recipient countries. The study specifically addresses the question, whether Programme Aid is more effective than Project Aid in generating growth! Further, the political and economic debate on the rationale for shift in the aid delivery instrument will be explored. The study will also give policy recommendations for effective utilisation of aid instruments.

Previous studies addressed the issue of foreign aid with respect to its effectiveness for saving, investment, economic growth and other development variables, such as education, health and poverty [Ali (2008)]. The empirical literature showed that using aggregate foreign aid variable for analysis did not give the desired results [e.g. White (1992); Ouattara and Strobl (2006); Camara (2004)]. Therefore, various other studies were conducted, using disaggregated aid variables [e.g. Ishfaq and Ahmad (2004); Khan and Ahmed (2007); Feeny (2005)]. However, there are various loopholes and weaknesses in these studies. The main weakness of these studies is that, instead of applying system equation method, they have used a single equation method for analysing foreign aid and growth relationship. There are few studies that used system equation method but they have used aggregate aid variable for analysis [e.g. Ali and Isse (2007); Quazi (2000)]. This study addresses the impact of foreign aid on overall economic growth, by using system equation method consisting of three equations for growth, physical capital and human capital. The study uses

disaggregated variables, namely Project Aid and Programme Aid. The study will help the development community know, whether and how new aid disbursement strategy is working in generating economic growth.

2. PROJECT AID VERSUS PROGRAMME AID

Project Aid is a traditional method of delivering aid to developing countries. Under this instrument assistance is provided for a set of activities, having specified time duration and well defined objectives. Project Aid is usually provided for building infrastructure, for example roads, harbors, dams, irrigation projects and telecommunication projects. In addition, funds under project aid can be directed towards large and small scale industrial and agricultural projects, rural development projects, education and health projects, population projects and projects for women etc. Project Aid is utilised through project management units that are set up in parallel with local government system [Szirmai (2004)]. Contrary to the Project Aid, Programme Aid is not linked to a specific activity; rather it is given for general development purposes. The key characteristic of Programme Aid is its direct channeling to recipient countries through their local accounting system [Camara (2004)], which is given for debt relief, import support and budget support [White and Dijkstra (2003)].

Since the 1980s the development agencies have shifted funds from Project Aid to Programme Aid and the reasons for the shift are summarised below:

Table 1

Comparison of Project and Programme Aid

| Features | Project Aid | Programme Aid | References |
|-------------------------------|--|---|---|
| Nature of the Aid Instruments | Powerless in making environment conducive for economic growth | Powerful in influencing environment conducive for economic growth | Chakravarti (2005) |
| Ownership | Great involvement of donor in project | Great ownership of recipient | Anwar and Michaelowa (2006), Bokhari (2011), Koeberle and Stavreski (2006) |
| Coordination | Coordination gap due to multiple projects | Less fragmentation and more coordination | Van de Walle (2005), Lorentzon (2011) |
| Transaction Cost | Significant transaction cost | Reduced transaction cost | Van de Walle (2005), Koeberle and Stavreski (2006); Acharya, <i>et al.</i> (2003) |
| Predictability | Bypass local system making the funding process unpredictable | Utilised through local budgetary system making the funding process predictable. | Van de Walle (2005) |
| Fungibility | Recipient can adjust their own spending which may offset donor preferences | Approves overall expenditure plan, hence less fungibility | Camara (2004) |
| Institutional Effects | Deprives the recipient of government capacity | Promotes the recipient of government capacity | Wilkes (2001), Camara (2004), Van de Walle (2005) |

Despite the fact that Programme Aid has many advantages over traditional Project Aid, following are concerns associated with programme aid:

Table 2

Risks of Programme Aid

| Risk | Description | Reason of the Risk | References |
|---------------------|---|---|--|
| Fiduciary Risk | Funds may not be used for intended purposes | Weak financial and economic management and official corruption | Camara (2004), Shand (2006), Koeberle and Stavreski (2006) |
| Policy Risk | Funds can be used for prohibited sectors e.g. War, Weapon of mass destruction, drugs etc. | Greater discretionary powers in using funds | Wilkes (2001), Radelet (2006) |
| Developmental Risk | The intervention may have unsatisfactory outcome | Lack of political will or technical ability of the recipient in economic management, implementation of reforms and effective poverty reduction strategy | Wilkes (2001) |
| Conditionality Risk | Conditionality diverts resources and challenges ownership of the recipient | IFI's prescribe same kind of reforms for different countries with different ground realities. | Hussain (2003) |

The motivation for imposing conditionality was to increase effectiveness of aid. But conditionality has been widely regarded as ineffective. The prevailing conditions have taken various forms over time. They have expanded from macroeconomic reforms to good governance; demand for democracy and efficiency; transparency in public financial management and procurement system; reduction of poverty and economic growth [Hayman (2010)]. Although the donors agreed to withdraw aid conditions from the policy documents of recipient government, but in large part, the actual content of that policy is determined by external actors.

The current structure of policy-based lending and economic reforms programmes are counter-productive for developing countries as they favor creditors only. According to Chossudovsky (2003), the purpose of the reforms in the name of policy-based lending is to maintain developing countries into straightjacket, which prevent them from formulating an independent economic

policy. The policy based-lending did not favor the real economy, as no money was directed towards investment under these lending. Further, the economic reforms have diverted resources from domestic economy to imports from rich countries.

The policy-based lending enables the donors to pursue liberalisation of procurement systems in the aid receiving countries. Globally government procurement system constitutes a big business. It is estimated that government annually spend more than US \$2,000 billion on tradable goods and services through public procurement system. The procurement system, a potential trade sector, was excluded from multilateral process. In developed countries public procurement system creates demand for locally produced goods and effectively contributes into growth process. The new procurement reforms focus on efficiency of recipient procurement system but the terms 'efficiency' is conservatively defined in terms of monetary value, i.e. the best quality at the lowest cost. The best quality can only be achieved through open competition. So the procurement reforms encourage more liberal system which increases chances of foreign firms to win the contracts because of economies of scale [McDonald (2008)].

World Bank and OECD prefer benefiting foreign firms from the recipient government procurement system. The public investment programme (PIP), which has been established under technical support of World Bank, allocates all public works project in aid recipient countries to international firms. Local firms are excluded from the tendering process. Only those firms are given separate subcontracts, which can provide local labour having very low cost. The loan money for infrastructure is recycled towards multinational contractors through these settings [Chossudovsky (2003)].

3. LITERATURE REVIEW

After the Second World War, the European reconstruction influenced early economic growth models, which stressed on the role of capital and capital formation for development [Mercieca (2010)]. It was believed that for any country to grow, it needed real resources like industrial plant, machinery and social overhead. But to achieve these prerequisites of growth, the underdeveloped countries were considered to be capital deficient. Hence, for economic growth and development of the underdeveloped countries, it was required to overcome this main constraint. This idea of growth was basically given by John Maynard Keynes in 1930s, arguing that by financing investment, governments could stimulate development and growth [Meier and Stiglitz (2001)]. Based on Keynes' idea of economic growth, a new breed of development economists argued that investment in developing countries could be stimulated by injecting cash from overseas. The logic for this new development theory was that investment in a country depends on saving which is determined by per capita income. Since poor countries have low level of income and saving, they are caught in vicious circle of poverty. It was argued

that foreign aid would dissolve this vicious circle by financing investment, and that donors can stimulate growth in developing countries by financing saving-investment gap of developing countries [Mercieca (2010)]. Another model which reflected gap theory was the Harrod-Domar growth model [Harrod (1948); Domar (1947)]. This model argued that in the developing countries labour is abundantly available but the availability and productivity of capital is the only constraint for the growth of developing countries. Since saving capacity of developing countries is too low to achieve the target growth rate, they require foreign aid to overcome saving constraint for the enhancement of investment to have higher economic growth [Mercieca (2010)]. Chenery and Strout (1966) claimed that developing countries face foreign exchange gap besides saving or resource gap. They highlighted that developing countries have limited capacity to generate enough export earning needed to import capital for investment. The authors claimed that foreign aid can help the developing countries in overcoming this constraint. Bacha (1990) and Taylor (1990) identified a third gap known as fiscal gap. They claimed that some developing countries have very low revenue raising capacity to cover the desired level of investment. If foreign aid is provided directly to the government, it could relax fiscal gap of recipient countries. Hence, it can be concluded that foreign aid can supplement domestic saving, foreign exchange and revenues. By filling these aforementioned gaps foreign aid stimulates investment in recipient country which leads to a higher economic growth.

Based on the gap theories mentioned above, empirical research on the macroeconomic impact of foreign aid has been divided into four generations. The first generation researchers worked on the impact of foreign aid on saving. The second generation used investment as independent variable for analysis. The third generation interpreted aid with growth and the fourth used development variables as yardstick to check the effectiveness of foreign aid [Ali (2008)].

Hansen and Tarp (2000) conducted a survey of the first and the second generation research and concluded that the researchers mostly used cross sectional data. Here, the single equation method to test regression for total sample and sub-samples, based on geographical locations was used. Based on their survey, the results of the three generation regressions are given below:

Table 3

Impact of Foreign Aid on Saving, Investment and Economic Growth

| Impact of Foreign Aid | First Generation (Saving) | Second Generation (Investment) | Third Generation (Growth) |
|-----------------------|------------------------------|-----------------------------------|------------------------------|
| Positive Impact | 2 % | 94 % | 55 % |
| Negative Impact | 61 % | 0 % | 1 % |
| No Impact | 36 % | 6 % | 43 % |

Source: Adapted from Moreira (2005).

The empirical research of growth generation contributed more in policy formulation of the donors by late 1990s. Up to that time, the researchers could

not reach consensus on the impact of foreign aid on economic growth. Earlier, empirical research in 1960s and 1970s produced controversies regarding impact of foreign aid. Empirical research at macro level in the late 1990s played a very important role in shaping the donor policies. The World Bank (1998) through the empirical research concluded that aid works productively in a better policy environment. This conclusion has played a very important role in stimulating recent increase in foreign economic assistance which had been stagnated in the early 1990s [Mercieca (2010)]. These findings were further justified by the empirical research of Burnside and Dollar (2000), who concluded that aid works better in countries having good fiscal, trade and monetary policies. Contrarily, a number of studies concluded that aid works in developing countries, irrespective of the differences in quality of policy regimes [e.g. Amavilah (1998); Hansen and Tarp (2000, 2001); Dalgaard and Hansen (2001); Lensink and Morrissey (2000); Lensink and White (2001); Hudson and Mosley (2001); Lloyd, *et al.* (2001); Chauvet and Guillaumont (2002); Gounder (2001, 2002); Mavrotas (2002); Ram (2003); Feeny (2005); Ouattara and Strobl (2004); Heady, *et al.* (2004); Roodman (2003) and Clemens, *et al.* (2004)]. The empirical research also ascertained that as aid is given through different modalities, therefore application of aggregate aid variable does not give meaningful results [Mavrotas (2003); Feeny (2005)].

Ouattara and Strobl (2004) used data of 72 countries for the period from 1973 to 1997 and concluded that Project Aid is more effective than Programme Aid. Similarly, Ishfaq and Ahmad (2004) divided aid into 'Programme Aid, Technical Assistance and Food Aid'. They concluded that technical assistance is more effective in promoting growth in Pakistan. Major deficiency in the study of Ishfaq and Ahmad (2004) is that they have not used Project Aid for analysis. They have used OLS method and data set is up to 2000. By incorporating Project Aid into analysis with suitable econometric technique, the study can be extended up to 2009 using panel data. Similarly, dividing aid into 'Project Aid and Non-Project Aid', Khan and Ahmed (2007) used ARDL model and concluded that Project Aid is more effective than Non-Project Aid in defining growth in Pakistan. Deficiency in this study is that the authors have not used investment in their model and according to Feeny (2005), removing investment from regression of aid and growth will result into serious model misspecification. Moreover, they have used Non-Project Aid which included not only Programme Aid but also Technical Assistance and Food Aid. Feeny (2005) has analysed the times series data from 1965 to 1999 to see the impact of foreign aid on economic growth in Papua New Guinea. Using ECM version of ARDL model he concluded that aggregate aid has no impact on long run economic growth. By dividing aid into Project Aid and Budget Support (i.e. Programme Aid), he concluded that Project Aid is more effective than Budget Support in promoting economic growth in Papua New Guinea.

The main deficiency in the above mentioned studies is that they have used single equation models to assess the impact of aid on economic growth. Aid and growth relationship is complicated. Foreign Aid impacts growth

through different channels. Therefore, single equation modelling is not an appropriate method to explore this relationship [White (1992)]. Few researchers have gone beyond single equation modelling and have used structural equation modelling to explore this relationship. For example, Ali and Isse (2007) used a system of three equations, i.e. growth, trade and aid. They tested data of 150 countries for the period from 1975 to 2000. Using 3SLS method they concluded that aid is a strong determinant of growth. Similarly, Quazi (2000) used a system of two equations, i.e. saving and growth, to explore the impact of aid on economic growth for Bangladesh from 1973 to 1996. Using 2SLS method, he concluded that aid has a positive impact on economic growth in Bangladesh. The above mentioned studies are comprehensive in terms of methodology. However, they have assessed the impact of foreign aid on economic growth using aggregate aid variable only.

Literature shows that foreign aid impacts growth by contributing into physical capital and human capital investment [White (1992)]. In this connection, it is important to mention a few studies that explored the impact of foreign aid on human capital through single equation method. For example, Ali (2008) used data of Pakistan from 1975 to 2006. Applying ARDL bound test, he concluded that the aid has positive impact on human capital in Pakistan. Masud and Yontcheva (2005) explored effectiveness of foreign aid provided by Non-Government Organisation (NGO) and bilateral aid in promoting health and education. They tested data for an unbalanced sample of 51 countries from 1990 to 2001. Using GMM technique, the authors concluded that NGO aid and bilateral aid both have insignificant impact on human capital.

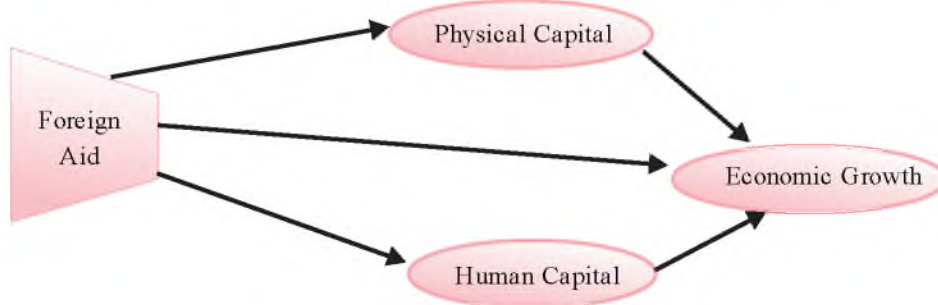
To sum up, there are three main conclusions of the empirical research. First, aid and economic growth relationship is significant in the countries having sound fiscal, monetary and fiscal policies. Second, disaggregate aid variables give more meaningful result than aggregate aid variables. Third, aid contributes in economic growth through different channels. Hence, using single equation method to find relationship between aid and economic growth is not appropriate. We may conclude that system equation method is more suitable to know the nature of aid and growth relationship. However, currently no research is available on aid and economic growth relationship, using disaggregated aid variables by incorporating system equation method.

4. THE CONCEPTUAL FRAMEWORK

Most of the research papers written on aid and growth relationship are based on single equation modelling. However, according to White (1992), single equation method is not a suitable methodology, if any of the regressors form part of a simultaneous system with dependent variable. He further elaborated that finding aid-growth relationship is undoubtedly the case of simultaneous system. He argued that Harrod-Domar model is not a perfect characterisation of the economic growth process. For finding meaningful aid and growth relationship, he suggested that econometric literature on aid and growth relationship should move beyond single equation method. White (1992) claimed that effective

labour force contributes significantly in economic growth. Increase in the effective labour force is explained by improvement in human capital. The author concluded that impact of aid on growth is not as simple as explained in Harrod-Dommar model. Aid affects growth through other channels as well, such as human capital, etc. Therefore, we need to take help from system equation method to explore impact of aid on economic growth. The above discussion also clarifies that foreign aid affects economic growth through formation and accumulation of physical and human capital.

Fig. 1. Path Diagram of Foreign Aid Impact on Economic Growth



Growth Equation

Various factors of production and technology determine output of an economy. Following Loening (2002) and Babatunde, *et al.* (2005), who considered human capital as independent factor of production beside labour and capital; our production function will look as following:

$$Y = f(A, L, K, H) \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (1)$$

Where Y is the percent change in real GDP. K represents physical capital and L is labour, A shows total factor productivity and H represents human capital. As we are going to investigate the impact of foreign aid on growth, we assume that total factor productivity is function of foreign aid besides other factors. Total factor productivity basically provides measure of economic efficiency, in producing maximum quantity of output with given quantity of input. It is basically reflection of economic policies, political situation and institutional changes in addition to technological progress [Hussain (2010)]. Bjurek and Durevall (2000) concluded that foreign aid has strong positive relationship with productivity growth. Similarly, Hansen and Tarp (2000) stated that "aid works through the channels which impact the total factor productivity". Based on the above discussion we can write following functional equation:

$$A = f(\text{Aid, Trade policy, Monetary policy, Fiscal policy, Institutional quality})$$

By substituting these factors into Equation (1) we obtain:

$$Y = f(L, K, H, \text{Foreign aid, Trade openness, Monetary policy, Fiscal policy, Institutional quality}) \quad \dots \quad \dots \quad \dots \quad \dots \quad (2)$$

The percentage change in real GDP is used as output (dependent) variable. As input factors, labour force variable (People between 15 and 64 years of age as percentage of total population) is used for input 'L'. Investment variable (Gross capital formation as percent of GDP) is considered for input 'K'. The input 'A' (foreign aid) is divided into two components, i.e. project aid and programme aid. Policy variables of budget deficit to GDP ratio and inflation rate are used as proxies for fiscal and monetary policy, respectively. For trade policy trade openness variable (Trade as percentage of GDP) is used. Freedom house index is used to represent institutional quality. For human capital 'H', we considered data on educational attainment from Barro and Lee (2010). After substituting all these proxy variables in function (2), we obtained following equation:

$$Y_{it} = a + b_1 \text{Proj. Ati} + b_2 \text{Prog. Ati} + b_3 L_{it} + b_4 I_{it} + b_5 \text{BD}_{it} + b_6 \text{TOI}_{it} + b_7 \text{INF}_{it} + b_8 \text{PFI}_{it} + b_9 H_{it} + U \quad \dots \quad \dots \quad \dots \quad \dots \quad (3)$$

Where we expect

$$b_1 > 0, b_2 > 0, b_3 > 0, b_4 > 0, b_5 < 0, b_6 > 0, b_7 < 0, b_8 > 0, b_9 < 0, b_{10} > 0$$

In the above Equation (3)

Y= Real GDP growth, Proj. A= Project aid, Prog. A= Programme aid, L= Labour force, I= Investment (Gross Capital Formation as percent of GDP), BD = Budget deficit as percent of GDP, TOI= Trade Openness Index, INF= Percent change in consumer price index (CPI), PFI= Political freedom index, H= Human capital (Average years of schooling).

Where t represents time and i represents country in a balanced panel of 150 countries for the period from 1995 to 2009.

We have included three policy variables, namely fiscal policy (budget deficit), monetary policy (inflation) and trade policy (trade openness) variables in the aid and growth equation. These variables have been frequently used in literature after the study of Burnside and Dollar (2000). Inflation and budget deficit are expected to have negative impact on growth, while trade openness is expected to have positive impact on economic growth [Javid and Qayyum (2011)].

For political freedom we have used freedom house index. Isham, *et al.* (1997) concluded that rates of return on projects, financed by the World Bank in various developing countries over the period 1974-93, were higher in nations with greater civil liberties. Scully (1988) used the freedom house index as measure of nations' institutional quality. Unlike other indicators of the governance, the data of freedom house is available for a long period covering more countries. Gros Lambert, *et al.* (2006) have used this index as a proxy for overall institutional quality of the country. Due to the importance of institutions in growth process, the political freedom index is also used in this study as proxy variable for institutional quality.

Physical Capital Equation

As evident from literature, aid affects growth mainly through investment. A major part of the aid goes into investment. Therefore, separate equation for investment is given below:

$$\text{Physical capital (Investment)} = f(\text{Foreign aid, GDP growth, Government consumption expenditure, Domestic credit offered by banks, FDI, Policies, Governance}) \dots \dots \dots \dots \dots \dots \dots (4)$$

Hence, physical capital (investment) equation is given below:

$$I_{it} = a + b_1 \text{Proj. Ati} + b_2 \text{Prog. Ati} + b_3 Y_{it} + b_4 G_{it} + b_5 \text{DC}_{it} + b_6 \text{FDI}_{it} + b_7 \text{INF}_{it} + b_8 \text{BD}_{it} + b_9 \text{TOI}_{it} + b_{10} \text{PFI}_{it} + U \dots \dots \dots (5)$$

Where we expect that

$$b_1 > 0, b_2 > 0, b_3 > 0, b_4 > 0, b_5 > 0, b_6 > 0, b_7 < 0, b_8 > 0, b_9 > 0, b_{10} > 0, b_{11} < 0$$

In Equation (5):

I = Investment as ratio to GDP, Y = GDP growth, G = Government consumption expenditures, DC = Domestic credits offered by banks, FDI = Foreign Direct Investment, INF = Inflation (proxy for monetary policy), BD = Budget deficit as a ratio to GDP (proxy for fiscal policy), TOI = Trade Openness Index, i.e. trade as percentage of GDP (proxy for trade policy), PFI = Political Freedom Index (Measure of institutional quality or governance in country).

The above mentioned determinants of the investment were used by Feeny (2005) and Hecht, *et al.* (2004). The government economic policies, namely the monetary policy (inflation), the fiscal policy (budget deficit) and the trade policy (trade openness index) reflect control of government over macroeconomic environment. Good policy environment provides an incentive for the investors to invest.

Similarly, the government consumption policies may either crowd out or crowd in investment in a country. According to neoclassical investment theory, the growth in real output is an important determinant of investment in a country. This is because the growth in real output indicates changes in the aggregate demand which investors seek to meet [Can and Ozturk (2011)].

According to Keynesian view “state of credit” is an important determinant of the investment. Similarly, many authors linked investment with the size of financial intermediation in national economy [Gurley and Shaw (1955); McKinnon (1973); Shaw (1973); Greenwood and Smith (1997)].

Human Capital Equation

Human capital accumulation through educational attainment has strong link with the economic growth. Thus, following Barro and Lee (2010), the data set for the educational attainment (average years of schooling) is taken as proxy

for human capital. Literature survey shows that educational attainment in a country depends on the following inputs.

$$\text{Educational Attainment} = f(\text{Foreign aid, Public education expenditures, Teacher pupil ratio, Urbanisation, Per capita income, Poverty}) \dots \dots \dots (6)$$

Based on the above determinants, our equation for human capital is given below:

$$H_{ti} = a + b_1 \text{Proj.}Ati + b_2 \text{Prog.}Ati + b_3 EE_{ti} + b_4 \text{Urb}_{ti} + b_5 \text{PCY}_{ti} + b_6 \text{PHC}_{ti} + b_7 \text{PTR}_{ti} + U \dots \dots \dots (7)$$

Where we expect that

$$b_1 > 0, b_2 > 0, b_3 > 0, b_4 > 0, b_5 > 0, b_6 < 0, b_7 < 0$$

In Equation (7):

H = Human capital, EE = Public education expenditures, Urb = Urbanisation, PCY = Per capita GDP, PHC = Poverty head counts, PTR = Pupil teacher ratio.

The determinants used in the above equation were used by Chaudhry and Aman (2010) and Masud and Yontcheva (2005). The rationale for using urbanisation (urban population as percentage of total) as determinant of educational attainment is that educational services are readily available in cities as compared to villages. University and colleges are also established in urban areas. Millennium Development Goals (MGDs) reports stated that low income and poverty issues were major reasons for high school drop-out ratios in developing countries. This justifies incorporation of per capita income and poverty head counts variables in our model. Masud and Yontcheva (2005) compared 10 countries having highest illiteracy rate with 10 countries having lowest illiteracy rate and concluded that “higher illiteracy rates appear to be associated positively with higher poverty levels and negatively with the level of urbanisation...Bilateral aid, on the other hand, is lower than average in countries with high illiteracy rates and higher in countries with low levels of illiteracy. The government effort (measured by education expenditure per capita) appears to be far lower than average in countries with the highest levels of illiteracy and much higher than average in countries with high levels of illiteracy.”

Data and Sources

Initially, we considered data for 150 aid recipient countries from 1995 to 2009. But due to problems of missing data for certain variables, the number of countries were reduced to 27. The problem of missing values of the data in these countries was solved through interpolation method.

Three different types of data set were available for Project and Programme Aid. First, OECD-CRS Project Aid and Programme Aid commitment data was available from 1974 to 2009. This commitment data was

used by Cordella and Dell'Ariccia (2003). Problem in commitment data was that aid commitment does not reflect the actual amount of aid delivered to aid receiving countries. To overcome this problem, Project Aid and Programme Aid commitment data was converted into disbursement data.¹ This method of converting the commitment data into disbursement data was followed by other researchers, such as Ouattara and Strobl (2004) and Camara (2004). This is what we categorised as second type of data. Initially, it was aimed to use the second type of data for analysis but after calculation of the data, we got very strange foreign aid figures for few countries. In some cases, the calculated disbursement was higher than the commitment figure and in other cases the former was quite lower than the latter figure. Even for some countries, negative aid disbursement figures were received which had no meaning. Third type of data was available in the actual disbursement form in OECD-CRS data base. But the data covered a period from 2002 to 2009. Thus, we used actual aid disbursement data for 2002-2007 from OECD-CRS database. The purpose of reducing the upper bound of sample period from 2009 to 2007 was to eliminate impact of financial crises in 2008 on results.

The data on political freedom was taken from Freedom House, based on two categories, namely the political rights and the civil liberties. The political rights permit people to take part in political process actively through the use of votes, struggle for public office and election of representatives for policy-making. The civil liberties allow civilians in the freedoms of expression and belief, assembly, educational, associational and organisational rights, rule of law and personal self-sufficiency without interference from the state. Every country is placed on a scale of 1 to 7 where 1 represents the highest level of freedom and 7 the lowest level.

The data on human capital was taken from Barro and Lee (2010) online database whereas the data on the remaining variables was retrieved from World Development Indicators.

Estimation Methods

The Equations 3, 5 and 7 clearly show the presence of simultaneity and endogeneity problem in our model. In such cases the usage of ordinary least square method (OLS) gives inconsistent results. Presently, the generalised method of moment (GMM) is considered to be the most efficient method to estimate a model with panel data, containing endogeneity and simultaneity problem [Amin (2012)]. We can see that GDP growth, investment and human capital determine each other simultaneously. It means our model has problem of endogeneity.

Haavelmo (1943), who introduced simultaneous equation method, claimed that if variables are operating in simultaneous framework, they should be estimated

¹ At first stage, the commitment data on Project Aid and Program Aid was added to have total figure. At second stage, percentage share of Project Aid and Programme Aid in total commitment was calculated. At third stage, these percentages were applied to the net ODA disbursement data available in OECD-DAC database minus food aid and technical assistance [Mavrotas (2002)].

through system method and not through single equation method, because the in latter case each equation violates restrictions imposed by other equations. In that case, a single equation method may generate misleading results. Moreover, the efficiency of results depends on developing model, which successfully define and capture stochastic properties of the variables generating simultaneity in the system. A model with limited information, i.e. by estimating separate equation one by one, does not capture simultaneous information of other equation in the system [Amin (2012)].

GMM is more efficient for simultaneous equations system with large number of cross-section (N) and short time period (T). Hence, we opted for “GMM time series HAC” for estimation in E-Views 5. This estimation technique has additional advantage of producing hetroskedasticity and auto-correlation consistent standard errors. GMM addresses heterogeneity problem arising from unobserved country specific problems, enables dynamic estimation of relationship and resolves endogeneity problem [Amin (2012)].

Although GMM produces efficient and consistent results in the presence of hetroskedasticity, but the efficiency of GMM depends on the instrumentation of endogenous variables in the system. A valid instrument has two features: Firstly, it is strictly correlated with endogenous variables. Secondly, it is orthogonal to error term. It is hard to find strictly exogenous instruments which are outside the model. Hence, an internal instrumentation of exogenous variables was followed. Following Amin (2012), lagged values of endogenous variables and level values of strictly exogenous variables were used as an instrument.

Using data of 27 countries² from 2002 to 2007, Equations 3, 5 and 7 were tested in the first stage, using GMM (HAC). Majority of the results were insignificant. The point of concern was that some core variables were insignificant having opposite signs.³ The second stage was to reduce the number of control variables. For this purpose, separate equation for growth, investment and human capital were tested using OLS method. All the insignificant and less relevant variables were removed. After removing the insignificant variables, the system of growth, investment and human capital was tested using GMM, as mentioned in the following equations:

Growth Equation:

$$Y_{ti} = a + b_1PJD_{ti} + b_2PGD_{ti} + b_3I_{ti} + b_4HCB_{ti} \quad \dots \quad \dots \quad \dots \quad (8)$$

Where we expect that $B_1 > 0$, $b_2 > 0$, $b_3 > 0$, $b_4 > 0$.

In the above Equation (8) PJD = Project Aid Disbursement, PGD = Programme Aid Disbursement, I= Investment and HCB = Human Capital [Barro and Lee (2010)].

Investment Equation:

$$I_{ti} = a + b_5PJD_{ti} + b_6PGD_{ti} + b_7Y_{ti} + b_8G_{ti} + b_8DC \quad \dots \quad \dots \quad \dots \quad (9)$$

Where we expect that $B_5 > 0$, $b_6 > 0$, $b_7 > 0$, $b_8 > 0$.

²See list of countries in Appendix 1.

³See results given in Appendix 2.

In Equation (9) G = Government consumption expenditures, DC = Domestic Credit Offered by Banks.

Human Capital Equation:

$$HCB_{ti} = a + b_9PJD_{ti} + b_{10}PGD_{ti} + b_{11}EE_{ti} + b_{12}PHC_{ti} + b_{13}PTP_{ti} \dots \quad (10)$$

Where we expect that $b_9 > 0$, $b_{10} > 0$, $b_{11} > 0$, $b_{12} < 0$, $b_{13} < 0$.

In Equation (10) EE = Education Expenditure, PHC = Poverty Head Counts, PTP = Pupil Teacher Ratio.

5. ESTIMATIONS AND RESULTS

Nexus of Foreign Aid and Economic Growth

The system of economic growth, the investment and human capital equations, given as Equations 8, 9 and 10 in the previous section, was estimated using data of 27 countries (see Appendix 2) for the period 2002 to 2007. Using GMM (HAC) estimation method following results were obtained:

Table 4

Estimation Results for Nexus of Aid and Growth

| Growth Equation | | | |
|---|--------------|-----------|---------|
| Variable | Coefficients | T- value | P-value |
| Constant | 1.363782 | 1.094081 | 0.2745 |
| Project Aid | 0.002955 | 2.338387 | 0.0198 |
| Programme Aid | 0.001658 | 1.441241 | 0.1502 |
| Investment | 0.108388 | 2.473021 | 0.0138 |
| Human Capital | 0.092233 | 0.912122 | 0.3622 |
| List of Instruments: GDP Growth (-1), Investment (-1), Human Capital (-1) Project Aid, Programme Aid | | | |
| Investment Equation | | | |
| Constant | -19.16181 | -1.681636 | 0.0933 |
| Project Aid | -0.013059 | -1.473313 | 0.1413 |
| Programme Aid | -0.009380 | -1.342810 | 0.1800 |
| GDP Growth | 7.449391 | 4.522604 | 0.0000 |
| Government Expenditure | 0.485401 | 2.177678 | 0.0299 |
| Domestic Credit Offered by Banks | 0.026706 | 0.582100 | 0.5608 |
| List of Instruments: Investment (-1), GDP Growth (-1), Project Aid, Programme Aid, Government Consumption Expenditure, Domestic Credit Offered by Banks | | | |
| Human Capital Equation | | | |
| Constant | 9.108654 | 15.74144 | 0.0000 |
| Project Aid | -0.000103 | -0.098800 | 0.9213 |
| Programme Aid | 0.002004 | 2.440468 | 0.0150 |
| Education Expenditures | 0.288742 | 4.802003 | 0.0000 |
| Poverty Head Counts | -0.057696 | -5.475817 | 0.0000 |
| Pupil Teacher Ratio | -0.070938 | -3.083754 | 0.0022 |
| List of Instruments: Human Capital (-1), Project Aid, Programme Aid, Education Expenditure, Poverty Head Counts, Pupil Teacher Ratio | | | |

The above table reveals that Project Aid has significant positive impact on economic growth at 5 percent significance level. One percent increase in Project Aid causes 0.002 percent increase in economic growth. This result matches the findings of other researchers [Ouattara and Strobl (2004); Ishfaq and Ahmad (2004); Khan and Ahmed (2007); Feeny (2005)], who found that Project Aid has significant impact on the economic growth. Programme Aid, however, has insignificant impact on the economic growth. This result matches Ouattara and Strobl (2004), Ishfaq and Ahmad (2004), who concluded that project aid is more effective in generating economic growth as compared to programme aid. It was also found that Project Aid has insignificant impact on investment and human capital. Our results are also supported by Hansen and Tarp (2000) survey findings, mentioned in Table 3 under section two. These results partially match with the findings of Boone (1994); Durbarry, *et al.* (1998); and Mosley, *et al.* (1987), who found that overall aid has insignificant impact on the economic growth. The results are supported by the discussion in section two, wherein we found substantial empirical evidence to support the fact that Project Aid is superior to Programme Aid in generating economic growth.

The investment equation section in the table reveals that both project and programme Aid has insignificant impact on investment. This result matches the literature survey results, conducted by Hansen and Tarp (2000) that 6 percent of literature found no relation between foreign aid and investment.

According to the results in Table 4, Programme Aid has positive and significant impact on human capital and at 5 percent significance level, one-percent increase in Programme Aid increases human capital by 0.002 percent. Although no study is available about impact of aid on human capital, using disaggregate variables but our finding is partially supported by the finding of Chaudhry and Aman (2010). They analysed the impact of aggregate foreign aid on human capital and found that foreign aid has significant positive impact on human capital. This finding is supported by the fact that World Bank in 2001 started poverty reduction support credit (PRSCs) as one of the main components of International Development Association (IDA), to support low-income countries. PRSCs come under programmatic approach to policy based lending, wherein a major part of the lending was allocated to education and health sector [Factora (2006)]. Moreover, the author also claimed that health and education are the most suitable sector for Programme Aid.

Results show that Project Aid has significant impact on economic growth, but insignificant impact on investment and human capital. Similarly, Programme Aid has insignificant impact on economic growth and investment but positive impact on human capital. The reason for positive impact of project aid on growth could be the fact that project aid works on economic growth through other channels, like total factor productivity, not included in our system of equations. Reason for positive impact of programme aid on human capital could be the fact that this modality is best suited to social sector development.

All economic variables have correct signs and are statistically significant except the human capital. Table 4 reveals that human capital has insignificant

impact on growth and this finding, however, contradicts the endogenous growth theory. Several possible explanations have been given in this regard. Krueger and Lindhal (2001) argued that measurement error is possible explanation for negative and insignificant result. Some researchers [e.g. Fuente and Domenech (2002); Cohen and Soto (2007)] argued that poor data may be responsible for the conflicting results. Some other researchers [e.g. Bassanini and Scarpetta (2001); Freire-Seren (2002)] claimed that poor estimation methodology might be responsible for poor results. Despite the fact that we used advanced data for human capital and proper estimation technique, our results still contradict the theoretical foundation. Perhaps, the conclusion of Haque and Hussain (2013) supports our findings, by concluding that improvement in human capital may increase non-productive efficiencies, namely 'bureaucratic stealing'. The net effect of human capital depends on the behavior of human resource in the country. Moreover, the net impact of improvement in human capital may be negative or insignificant, if the nonproductive behaviour dominates the productive behaviour.

Investment has significant and positive impact on GDP growth at 5 percent level of significance and one percent increase in investment leads to 0.11 percent increase in GDP growth. This result is supported by theory, i.e. Harrod-Domar model, and empirical findings [e.g. Ucan and Ozturk (2011)]. According to our results, the GDP growth appears to have positive and significant impact on investment and one percent increase in GDP boosts investment by 7.4 percent. This finding is compatible with neoclassical investment theory which claims that growth in real output is an important determinant of investment. This is because the growth in real output indicates changes in aggregate demand which investors seek to meet. The finding is also supported by empirical evidences [e.g. Ucan and Ozturk (2011)]. Our results show that government consumption expenditure has positive and significant impact on investment. One percent increase in the government consumption expenditure increases investment by 0.48 percent. The finding is supported by Ucan and Ozturk (2011), who claimed that government consumption policies may either crowd out or crowd in investment. The results show that domestic credit has insignificant impact on investment. This result contradicts with Keynesian view that 'state of credit' in a country is important factor in determining investment in a country. Although the results are consistent with empirical research findings of Hailu (2015), who found that domestic credit has insignificant and negative impact on investment.

The education expenditure has a positive and surely significant impact on human capital accumulation. One percent increase in education expenditure enhances human capital by 0.28 percent. This is compatible with the fact that the government education expenditure is the main input for provision of education infrastructure and services. The finding is also supported by empirical evidences [e.g. Chaudhry and Aman (2010)]. Poverty head counts have negatively significant impact on human capital accumulation. The results show that one percent increase in poverty head counts decreases human capital by 0.06 percent. This is compatible

with evidences from developing countries that poverty is the main reason for high dropout ratio from schools [Dieltiens and Meny-Gibert (2008)]. Pupil teacher ratio has negative and significant impact on human capital. One percent increase in pupil teacher ratio causes decline in human capital by 0.07 percent. This result is supported by the fact that small pupil teacher ratio improves the education system both by quality and quantity [Chaudhry and Aman (2010)].

Nexus of Foreign Aid, Economic Policies and Economic Growth

The purpose of this section is to test the conclusion of World Bank (1998) and Burnside and Dollar (2000), who claimed that aid works better in countries having better policies.

In order to study the policy nexus of foreign aid and economic growth, a policy index of Burnside and Dollars (2000) variables, namely inflation, budget deficit and trade openness, using principal component analysis (PCA) was constructed. We found weights for the variables separately for each country through PCA in Eviews-7. The first vector of components was used as weights, as they represent high degree of correlation. Weights were first normalised and then, following Javid and Qayyum (2011), the index was created using following equation:

$$\text{Policy Index} = a_1 * \text{Trade openness} - a_2 * \text{Inflation} - a_3 * \text{Budget deficit} \quad \dots \quad (11)$$

To assess the nexus between the foreign aid, economic policies and economic growth, in first stage, interaction term (aid*policy) besides the policy index was added into Equation 8, wherein aid was sum of Project Aid and Programme Aid and policy was the policy index created through Equation 11.⁴ The estimation results showed that the interaction term (aid*policy) is significant. It means that effectiveness of aid depends on the quality of policy regime. This result contradicts with the results of Outtara and Strobl (2004), Heady, *et al.* (2004), Roodman (2003) and Clemens, *et al.* (2004). However, the result matches with discussion in earlier section of paper that aid works better in better policy regimes. The result also matches with empirical finding of World Bank (1998) and Burnside and Dollar (2000).

In the second stage, we added two interaction terms, i.e. Project Aid*policy and Programme Aid*policy, besides policy index into Equation 8 and ascertained that both the interaction terms were insignificant.⁵ It suggested that economic policies have no role into enhancing effectiveness at segregated level. These results are consistent with the findings of Outtara and Strobl (2004), who found that interaction terms of both project and programme aid with policy index were insignificant.

We found that the nexus of policies and economic growth is established at aggregate level. This result matches with the well-understood phenomenon that sound economic policy is a reflection of good economic management, which most probably enhances effectiveness of foreign aid for economic growth.

⁴See results in Appendix 3.

⁵See results in Appendix 4.

6. CONCLUSIONS AND RECOMMENDATIONS

During the previous decade, the OECD organised several high level international forums on foreign aid effectiveness. In these forums, a series of agreements were reached. The central agreement was to deliver foreign aid in a way that increases local ownership of aid utilisation. In this regard the traditional aid instrument, namely Project Aid, was criticised for its fragmented implementation and huge transaction cost. Thus, in principle, delivery of foreign aid through Programme Aid, wherein funds are transferred through local systems, was supported and agreed in high level forums. In response to these agreements, share of Programme Aid increased during the past decade. This paradigm shift in aid delivery instruments triggered debate and research on foreign aid modalities, i.e. Project and Programme Aid.

In Programme Aid it is difficult to track down the end use of the fund being utilised. Thus, at recipient end, Programme Aid is associated with fiduciary risk with the components of weak country public financial management and procurement system as well as official corruption. To avoid the risk associated with Programme Aid, the instrument has been attached with strict conditions. Apparently, these conditions were imposed to avoid the slippage of funds. The conditions have expanded from macroeconomic reforms to good governance, demand for democracy and efficiency and transparency in public financial management and procurement system. Since 2000, donors started awarding recipient countries with economic assistance on the basis of past performance rather than future promises. It has been argued that economic reforms programmes are counter-productive for developing countries and they are designed to serve the commercial interest of donors.

The new procurement reforms associated with Programme Aid in the name of efficiency has been criticised by many analysts. Efficiency in the context of cost and price as well as in quality through open competition supports more liberal procurement system. This increases chances for big foreign firms and multinational concerns to win contracts due to economies of scale. The involvement of donors in procurement system has undermined the ability of a recipient country to link its procurement system with its own development priorities.

Several empirical studies have been conducted to evaluate the impact of Project and Programme Aid on economic growth. Some of them concluded that Project Aid has positive impact and Programme Aid has negative impact on the economic growth. The major weakness of these studies is that they have applied single equation method to see the impact of aid variables on economic growth. As foreign aid contributes into economic growth through different channels, therefore a method of system equations is more appropriate to estimate the impact of foreign aid on economic growth.

To fill the gap in literature, this study used three equations system, i.e. growth, investment and human capital, to see the impact of Project and Programme Aid on GDP growth. The system by incorporating data of 27 countries for the period from 2002 to 2007 was estimated. With application of

Generalised Method of Moment, we found that Project Aid has significant impact on economic growth but insignificant impact on investment and human capital. Programme Aid has insignificant impact on economic growth, insignificantly negative impact on investment and significantly positive impact on human capital. All the other macroeconomic variables were correctly signed and statistically significant. Only human capital has insignificant impact on economic growth which contradicts theory, but supports empirical evidence from developing countries. It was also found that in these countries economic policies play a role in enhancing effectiveness at aggregate level but at segregated level the nexus of foreign aid and policies is insignificant for both types of aid instruments.

A discussion on these findings concluded that Project Aid is still a dominant modality of aid and is contributing more to economic growth as compared to programme aid. The reason for less effectiveness of programme aid could be linked to the fact that programme aid works better in a sound institutional set up, strong political will and transparent governing system. The risk associated with programme aid in the shape of fiduciary risk, corruption, lack of political will and weak economic and financial management system are harsh realities across all developing countries, which may be playing role in hampering its effectiveness in generating economic growth in aid receiving countries. Programme aid is associated with tough conditionality's, which challenges ownership and hampers the process of capital formation. The stated reasons may be responsible for little contribution of programme aid in promoting economic growth and investment in aid receiving countries.

Programme Aid of the World Bank aimed at poverty reduction has mainly supported education and health sectors which were considered to be the most suitable sectors for programme financing. Our empirical finding supports the evidence that Programme Aid has positive and significant impact on human capital. Good economic policies reflect good economic management which should enhance effectiveness of foreign aid for economic growth. This is reflected in our empirical findings which show that complementarity between foreign aid and sound economic policies for enhancing economic growth exists at macro level.

It can be concluded that Project Aid is still superior to Programme Aid in generating economic growth, but in the context of social development, programme aid is more effective due to the nature of this modality. The reason for overall non effective role of programme aid is that this modality is associated with tough conditionalities, which leave little space for the recipient countries to pursue their development objectives according to their own priorities. For better aid effectiveness, the recipient government should have the necessary space to pursue its own development objectives. The current monopoly of the donor agencies in prescribing policies and economic ideas, combined with weak bargaining position of developing countries, are the main hurdles in the development of sustainable and mutually beneficial relationship. Unless serious attempts are made on both

sides to come out of the incentive structures available for both donor and recipient, the objective of effective aid utilisation cannot be achieved. Utilisation of aid through collective planning can bring the desirable outcome of development in the recipient countries.

Lastly, it is believed that a true development outcome can surely be realised, if foreign aid is not used as a tool for business promotion of donor countries, but for the improvement of infrastructure and living standards of the people in the aid recipient countries.

Appendix 1

List of Countries

| No. | Country | No. | Country |
|-----|--------------------|-----|------------|
| 1 | Brazil | 18 | Mauritania |
| 2 | Costa Rica | 19 | Mexico |
| 3 | Croatia | 20 | Moldova |
| 4 | Egypt, Arab Rep. | 21 | Morocco |
| 5 | El Salvador | 22 | Mozambique |
| 6 | Gambia, The | 23 | Namibia |
| 7 | Ghana | 24 | Nepal |
| 8 | Guatemala | 25 | Nicaragua |
| 9 | Indonesia | 26 | Niger |
| 10 | Iran, Islamic Rep. | 27 | Pakistan |
| 11 | Kazakhstan | | |
| 12 | Kenya | | |
| 13 | Kyrgyz Republic | | |
| 14 | Lao PDR | | |
| 15 | Lesotho | | |
| 16 | Malaysia | | |
| 17 | Mali | | |

Appendix 2

Estimation Results of Equations 3, 5 and 7

| Variable | Coefficients | T value | P value |
|--|--------------|-----------|---------|
| Growth Equation | | | |
| Constant | -0.893523 | -0.299276 | 0.7648 |
| Project Aid | 0.000966 | 1.511996 | 0.1310 |
| Programme Aid | 0.000934 | 0.729208 | 0.4662 |
| Investment | -0.167482 | -3.213846 | 0.0014 |
| Human Capital | -0.515271 | -2.481933 | 0.0133 |
| Labour | 0.174993 | 2.361264 | 0.0185 |
| Institutional Quality | -0.600618 | -1.969733 | 0.0493 |
| Trade Openness | 0.020842 | 3.014685 | 0.0027 |
| Inflation | 0.166187 | 3.411033 | 0.0007 |
| Budget Deficit | 0.087889 | | |
| List of Instruments: GDP Growth(-1), Investment (-1), Human Capital (-1) Project Aid, Programme Aid, Labour, Institutional Quality, Trade Openness, Inflation | | | |
| Investment Equation | | | |
| Constant | 49.41231 | 2.570394 | 0.0104 |
| Project Aid | 0.014036 | 2.549838 | 0.0110 |
| Programme Aid | 0.002653 | 0.358065 | 0.7204 |
| Government Consumption | | | |
| Expenditure | -0.643782 | -1.403227 | 0.1611 |
| FDI | 0.878323 | 2.495309 | 0.0128 |
| Domestic Credit | -0.032245 | -0.426333 | 0.6700 |
| GDP Growth | -6.908002 | -2.507185 | 0.0124 |
| Inflation | 0.965794 | 3.248268 | 0.0012 |
| Trade Openness | 0.112273 | 1.791511 | 0.0737 |
| Budget Deficit | 0.829636 | 2.490389 | 0.0130 |
| Institutional Quality | -2.859065 | -1.130053 | 0.2589 |
| List of Instruments: Investment (-1), GDP Growth (-1), Project Aid, Programme Aid, Government Consumption Expenditure, FDI, Domestic Credit, Inflation, Trade Openness, Institutional Quality | | | |
| Human Capital Equation | | | |
| Constant | 8.174302 | 2.240060 | 0.0254 |
| Project Aid | 0.000112 | 0.067811 | 0.9460 |
| Programme Aid | 0.000697 | 0.372317 | 0.7098 |
| Education Expenditures | 0.346330 | 2.062378 | 0.0396 |
| Poverty Head Counts | -0.059746 | -1.348099 | 0.1781 |
| Urbanisation | -0.018347 | -0.433814 | 0.6646 |
| Pupil Teacher Ratio Primary | -0.077231 | -1.123415 | 0.2617 |
| Pupil Teacher Secondary | 0.070546 | 0.968607 | 0.3331 |
| Per Capita Income | 9.95E-05 | 0.312401 | 0.7548 |
| List of Instruments: Human Capital (-1), Project Aid, Programme Aid, Education Expenditure, Poverty Head Counts, Pupil Teacher Ratio Primary, Pupil Teacher Ratio Secondary, Per Capita Income, Urbanisation | | | |

Appendix 3

Estimation Results for Nexus of Aid, Policies and Growth

| Variable | Coefficients | T value | P value |
|--|--------------|-----------|---------|
| Growth Equation (Dependent Variable: GDP Growth) | | | |
| Constant | 1.505424 | 1.189044 | 0.2350 |
| Project Aid | -0.001366 | -0.635504 | 0.5254 |
| Programme Aid | -3.21E-06 | -0.002453 | 0.9980 |
| Investment | 0.110541 | 2.631179 | 0.0088 |
| Human Capital | 0.095823 | 0.862886 | 0.3886 |
| Policy Index | -0.009683 | -0.461266 | 0.6448 |
| Aid*Policy | 0.000183 | 1.919606 | 0.0555 |
| List of Instruments: GDP Growth(-1), Investment (-1), Human Capital (-1) Project Aid, Programme Aid, Policy Index, Aid*Policy | | | |
| Investment Equation (Dependent Variable :Investment) | | | |
| Constant | -16.94765 | -1.476682 | 0.1404 |
| Project Aid | -0.011788 | -1.369952 | 0.1714 |
| Programme Aid | -0.008855 | -1.284432 | 0.1996 |
| GDP Growth | 6.841512 | 4.103360 | 0.0000 |
| Government Consumption Expenditures | 0.498278 | 2.260032 | 0.0243 |
| Domestic Credit Offered by Banks | 0.032932 | 0.693561 | 0.4883 |
| List of Instruments: Investment (-1), GDP Growth (-1), Project Aid, Programme Aid, Government Consumption Expenditure | | | |
| Human Capital Equation (Dependent Variable: Human Capital) | | | |
| Constant | 9.210659 | 16.37553 | 0 |
| Project Aid | -0.00015 | -0.14264 | 0.8866 |
| Programme Aid | 0.001995 | 2.431992 | 0.0154 |
| Education expenditures | 0.275823 | 4.832627 | 0.0000 |
| Poverty Head Counts | -0.05802 | -5.50599 | 0.0000 |
| Pupil Teacher Ratio | -0.07115 | -3.09519 | 0.0021 |
| List of Instruments: Human Capital (-1), Project Aid, Programme Aid, Education Expenditure, Poverty Head Counts, Pupil Teacher Ratio | | | |

Appendix 4

Estimation Results for Nexus of Disaggregate Aid, Economic Policies and Growth

| Variable | Coefficient | T value | P value |
|---|-------------|-----------|---------|
| Growth Equation (Dependent Variable: GDP Growth) | | | |
| Constant | 1.384486 | 1.106840 | 0.2689 |
| Project Aid | 0.000416 | 0.136115 | 0.8918 |
| Programme Aid | -0.001820 | -0.662103 | 0.5082 |
| Investment | 0.111405 | 2.668779 | 0.0079 |
| Human Capital | 0.102794 | 0.909300 | 0.3637 |
| Policy Index | -0.006498 | -0.314808 | 0.7530 |
| Project Aid*Policy | 8.29E-05 | 0.543124 | 0.5873 |
| Programme Aid*Policy | 0.000310 | 1.597259 | 0.1109 |
| List of Instruments: GDP Growth(-1), Investment (-1), Human Capital (-1) Project Aid, Programme Aid, policy Index, Project Aid*Policy, Programme Aid*Policy | | | |
| Investment Equation (Dependent Variable: Investment) | | | |
| Constant | -17.03564 | -1.480942 | 0.1393 |
| Project Aid | -0.011841 | -1.376048 | 0.1695 |
| Programme Aid | -0.008877 | -1.287986 | 0.1984 |
| GDP growth | 6.864473 | 4.102815 | 0.0000 |
| Government Consumption Expenditures | 0.497883 | 2.261010 | 0.0242 |
| Domestic Credit Offered by Banks | 0.032768 | 0.690522 | 0.4902 |
| List of Instruments: Investment (-1), GDP Growth (-1), Project Aid, Programme Aid, Government Consumption Expenditure | | | |
| Human Capital Equation (Dependent Variable: Human Capital) | | | |
| Constant | 9.206867 | 16.39151 | 0.0000 |
| Project Aid | -0.000148 | -0.141157 | 0.8878 |
| Programme Aid | 0.001996 | 2.432839 | 0.0154 |
| Education Expenditures | 0.276362 | 4.835676 | 0.0000 |
| Poverty Head Counts | -0.058010 | -5.505066 | 0.0000 |
| Pupil Teacher Ratio | -0.071145 | -3.095277 | 0.0021 |
| List of Instruments: Human Capital (-1), Project Aid, Programme Aid, Education Expenditure, Poverty Head Counts, Pupil Teacher Ratio | | | |

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