Official Development Assistance and Economic Growth in Iran

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Abstract

Foreign aid is one of the most important policy tools that rich countries use for helping poor countries to improve population well-being and facilitate economic and institutional development. The concept of foreign aid or official development assistance (ODA) is widely used and accepted as a flow of financial resources from developed countries to developing countries on development grounds. However, the role and effects of foreign aid in the economic growth of developing countries have been and are controversial issues. This paper investigates the relationship between foreign aid and growth in per capita GDP using annual data from the 1980 to 2012 period for a sample of Iran. Three time series techniques (CCR, FMOLS and DOLS) were utilized to estimate the co-integrating equations. The results show that in long-run, effect of foreign aid on economic growth is positive, statistically significant, and sizable. Therefore, aid is more productive than domestic resources and other capital inflows.

Keywords: Foreign Aid, Economic Growth, Co-integration Techniques

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Introduction

The effectiveness of foreign aid has been the subject of extensive investigation, which is hardly surprising given the importance of the topic. More recently, however, the growing realization that a large number of developing countries have had only limited success with their convergence experience has given the issue a new urgency as foreign aid, at least in theory, can facilitate growth and thus convergence. Theoretically, however, as Burnside and Dollar (2000) point out, the effects of foreign aid on growth are easily shown to be ambiguous. In the context of a standard neoclassical growth model, for example, any steady-state effects will not just depend on the amount and type of the aid, but also on how productively it is used by the receiving country and what other distortions, if any, it introduces. Using such a model, Obstfeld (1999) shows that lump-sum foreign aid should have no effect on the economy's steady-state capital stock or output level, but that it will speed up the dynamic adjustment to the steady state for an economy that starts below it. Obstfeld (1999) suggests several ways in which the model can be modified to produce non-zero steady-state output effects, and Dalgaard et al. (2004) pursue one of them to show that in a simple overlapping-generations model, the effect of aid on the steady-state capital stock is theoretically ambiguous. Modeling additional factors such as the labor-leisure choice, terms-of-trade effects, and possible changes in the tax structure, will most likely only deepen the theoretical ambiguities. The question, therefore, has to be resolved empirically and a consensus seems to have been emerging in the last few years. First, a number of studies, such as Boone (1996), found no systematic relationship between foreign aid and growth, investment, or human development indicators in the receiving country, concluding that foreign aid is largely ineffective. More recently, the influential study of Burnside and Dollar (2000), has qualified this conclusion by showing that foreign aid has positive effects but only in economies in which it is combined with good fiscal, monetary, and trade policies. This reasonable finding, so consistent with our theoretical priors, has become the consensus view. Disagreements, however, persist, as in Hansen and Tarp's (2000) exhaustive evaluation of the empirical literature, which concludes that a positive aid-growth link can be shown to exist 'even in countries hampered by an unfavourable policy environment'. Dalgaard et al. (2004) update these results, while Hudson (2004) provides a careful review of the issues considered in the recent literature. The goal of the present paper is to contribute to the empirical side of the question using a time series methodology that analyzes annual data from the 1980 to 2012 period for iran economy. Thus, contrary to the overwhelming majority of the empirical literature, which consists of cross-sectional studies, the time dimension of the data will be fully utilized here. The results show not only that the use of time-series data substantially clarifies the issue, enabling us to arrive at sharper estimates of the growth effects of foreign aid. Section 2 discusses the definition of foreign aid and Literature. Section 3 discusses the sources of the data, defines the variables to be used in the estimation, and the estimation methodology, derives the main empirical results derives the main empirical results, and implements several robustness checks. Section 4 discusses the findings and some policy implications, and concludes.

Literature Review

Role of foreign aid:

The role of foreign aid in the growth process of developing countries has been a topic of intense debate. Foreign aid is an important topic given its implications for poverty reduction in developing countries. Previous empirical studies on foreign aid and economic growth generate mixed results. For example, Papanek (1973), Dowling and Hiemenz (1982), Gupta and Islam (1983), Hansen and Tarp (2000), Burnside and Dollar (2000), Gomanee, *et al.* (2005), Dalgaard *et al.* (2004), and Karras (2006), find evidence for positive impact of foreign aid on growth; Burnside and Dollar (2000) and Brautigam and Knack (2004) find evidence for negative impact of foreign aid and growth, while Mosley (1980), Mosley, *et al.* (1987), Boone (1996), and Jensen and Paldam (2003) find evidence to suggest that aid has no impact on growth. It should be noted that, although Burnside and Dollar (2000) concluded that foreign aid has positive effects, this conclusion applies only to economies in which it is combined with good fiscal, monetary, and trade policies. A recent study by Doucouliagos and Paldam (2009), using the meta-analysis covering 68 papers containing a total of 543 direct estimates, it is found that the effect of aid on growth estimates scatter considerably and add up to a small positive, but insignificant, effect on growth. The zero correlation result has yet to be overcome. The main role of foreign aid in stimulating economic growth is to supplement domestic sources of finance such as savings, thus increasing the amount of investment and capital stock. As Morrissey (2001) points out, there are a number of mechanisms through which aid can contribute to economic growth, including (a) aid increases investment, in physical and human capital; (b) aid increases the capacity to import capital goods or technology; (c) aid does not have indirect effects that reduce investment or savings rates; and aid is associated with technology transfer that increases the productivity of capital and promotes endogenous technical change. According to McGillivray, *et al.* (2006), four main alternative views on the effectiveness of aid have been suggested, namely, (a) aid has decreasing returns, (b) aid effectiveness is influenced by external and climatic conditions, (c) aid effectiveness is influenced by political conditions, and (d) aid effectiveness depends on institutional quality. It is interesting to note that in recent years there has been a significant increase in aid flows to developing countries although other types of flows such as foreign direct investment and other private flows are declining.

The Definition of Foreign Aid

Foreign aid refers to transfer of real resources from governments or public institutions of the richer countries to governments of less developed countries (LDCs) in the third world. The flows of foreign resources can be of many types and it is important to know the different elements. Foreign capital flows are generally divided into two broad streams – official and private. The official capital flows are in turn subdivided into bilateral and multilateral flows. Official bilateral flows consist of capital provided by government of donor to government of recipient countries. Multilateral flows consist of capital flows from multilateral organizations such as the World Bank, the United Nations, the IMF. Both types of the official flow can take the form of grants, loans or grant-like contributions. Grants should be considered as the most desirable type of foreign aid since the represent a net addition to the resources available for development porposes. Some loans are given by the international lending agencies (i.e. World Bank) at interest rate which are lower than those in the capital markets. Where the loans are granted to the LDC's at a concessionary rate for very long periods, say for 40-50 years,

the inflow of foreign resources take the character of foreign aid as foreign private investment in the LDC's are not exactly foreign aid because of they are made on commercial terms. Development Assistance Committee (DAC) defines foreign aid as official development assistance (ODA) and technical aid. The term excludes military assistance. ODA flows must satisfy all three of the following criteria;

- their primary objective must be developmental, thus it excludes military aid and private investment,

- they must be concessional that is the terms and conditions of the financial package must be softer than those available on a commercial basis. DAC defines as Official Development Assistance (ODA) official flows with a grant element of greater than 25% at a 10% discount rate.

- the flows should come from governmental agencies and go to developing country governments. Official Development Finance comprises ODA plus international flows satisfying only the first and third criteria. Flows from voluntary agencies may also counted as aid, but do not satisfy the third criterion.

Data and Methodology

The data for iran are obtained from the Penn World Table (PWT8) and the OECD's Net Geographical Distribution of Financial Flows database and organization for economic corporation and development online database (OECD).

Figure 1 reports the average ODA over 1980–2012. the development assistance iran was thus not established in during period of 1980-2012.This measure of foreign aid grew from around -630(millions $) in 1982 to almost 200(millions $) in 1997, but declined again to 92(millions $) by 1992. Net official development assistance and official aid received in iran (current US$) provided in appendix (1.)

Figure 1. Annual Flows of Net Disbursements ODA For Iran
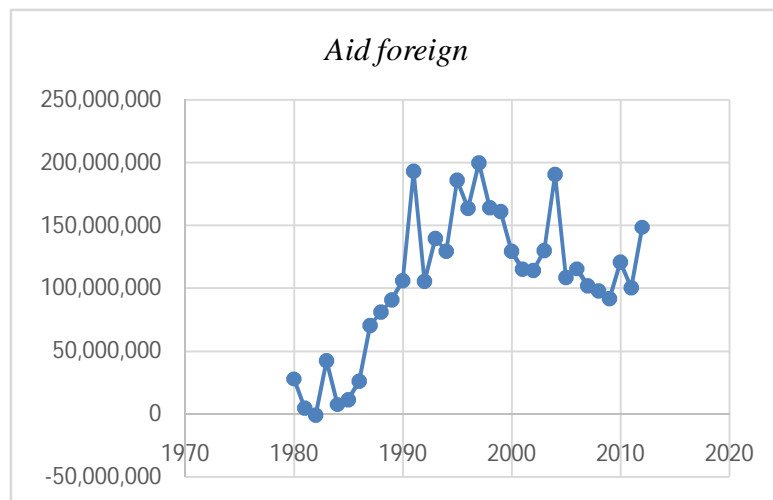
Source: Organization for Economic Corporation and Development (OECD).

Methodology

This section discusses the model specifications to examine the relationships between foreign aid and per capita GDP growth. The models specified are estimated using panel least squares estimation method. The model is derived, in conventional manner, from a production function in which foreign aid is introduced as an input in addition to labor and domestic capital. In the usual notation the production function can be written as follows:

$$Y = F(L, K, A) \qquad (1$$

where Y is gross domestic product (GDP) in real terms, L is labor input, K is domestic capital stock, and A is stock of foreign aid. Assuming (1) to be linear in logs, taking logs and differencing, the following expression describing the determinants of the growth rate of real GDP is obtained:

$$y = \alpha + \beta l + \delta k + \phi a \qquad (2$$

where lower case letters denote the rate of growth of individual variables. Following the precedent set in numerous previous studies, the rate of growth of the capital stock is approximated by the share of investment in GDP. This is necessary due to the formidable problems associated with attempts to measure the capital stock, especially in the context of developing countries. In addition, the rate of change in labor input is also replaced by the growth rate of population. Following Karras (2006) and others, several other variables that are often believed to have a favorable effect on growth are also included. As pointed out by Feeny and McGillivray (2008), a reasonably robust finding of recent studies is that there is an inverted Ushaped relationship between aid and growth. This finding indicates that there are diminishing returns to aid due to recipient countries having absorptive capacity constraints. Absorptive capacity relates to an aid recipient's ability to utilize foreign aid inflows effectively. In order to take into account this relationship, a square term is added to the following model. These changes yield the following growth equation:

$$GGDP_{it} = \beta_0 + \beta_1 \left(\frac{INV}{GDP} \right)_{it} + \beta_2 \left(\frac{AID}{GDP} \right)_{it} + \beta_3 \left(\frac{AID}{GDP} \right)_{it}^2$$
$$+ \beta_4 \ln(GDP_{i0}) + \beta_5 GPOP_{it} + e_{it} \qquad (3$$

where GGDPit is the growth rate of real GDP per capita of country i in year t , INV is the investment of country i in year t , AID is the foreign aid of country i in year t , GDP is the initial level of GDP of country i GPOPit is the growth rate of population of country i in year t. The growth rate of population is a proxy for the growth rate of labor force, and the investment/GDP ratio represents the growth rate of capital stock. The main concern is to test the marginal impact of foreign aid on growth. The expected signs of the coefficients β_1 is positive and that of β_2 either positive or negative, β_3 is negative, and that of $\beta_4 \ and \ \beta_5$ are negative.

3.2 Regression Estimation Techniques:

This study estimated long run elasticities with three methods namely Fully Modified Ordinary Least square (FMOLS) of Phillip and Hansen (1990), Canonical Co-integration Regression (CCR) of Park (1992) and Dynamic Ordinary Least square (DOLS) developed by Stock and Watson (1993). This study adopted these regression techniques as the variables found co-integrated.

Firstly, study employed FMOLS; this technique allows a semi parametric correction for auto correlation in co-integrating vectors and resolve endogeneity issue. To avoid the issue caused by long run correlation between stochastic regressors and co-integrating equations, it used covariance matrices of residuals. Secondly, study employed Canonical Co-integrating Regression (CCR) technique that permits asymptotic Chi2 testing. This technique used transformed data that involves simple adjustments of integrated processes using stationary components in co-integrating models. Thirdly, this study employed Dynamic Ordinary Least Square (DOLS) technique that adds lags and leads of first differenced regressors to specifications. The estimation results of equation (8) are reported in Table 1.

The capital growth variable is positive and significant, labor growth variable is statistically significant only during the period 1980-2012. It is clear that the foreign aim is highly positively correlated with economic growth .this variable has a positive sign in four out of four cases in FMOLS technique. coefficient is 0.0173 and prob is (0.0011), meaning that the coefficient is statistically significant at all conventional levels, This is expected positive sign from the theory. One unit increase in the foreign aim leads to a 0.017% increases in economic growth. therefor aid is more productive than domestic resources and other capital inflows. the square term is also found to be statistically significant at the 1% level of significance in all four cases. The coefficient of the initial GDP variable has the expected negative sign and is statistically significant but in model (4) this variable is negative. in DOLS technique and model (4), coefficient foreign aim is negative and significant, where 1% increases in this variable leads to a 0.032% decrease in economic growth. Most previous studies have found a positive relation between this variable and growth. the rest of variables are statistically significant. The speed of adjustment (λ) implies negative feedback mechanism and is statistically significant at 1% level. The Engle and Granger (1987) t-test supports the existence of cointegration among the variables at 1% level. Moreover, the diagnostic tests indicate no issues with respect to serial correlation, normality and heteroscedasticity.

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Table 1 Effects of Foreign Aid on Growth in Iran (Dependent variable: Real GDP

Method	Models	Intercept	$\left(\dfrac{AID}{GDP}\right)$	$\left(\dfrac{AID}{GDP}\right)^2$	$\left(\dfrac{INV}{GDP}\right)$	Ln GDP	GPOP
FMOLS	1	0.326** (0.001)	0.1271* (0.0131)	-0.0006*** (0.0011)			
	2	0.329** (0.001)	0.0503* (0.0102)	-0.0004** (0.0121)	0.228*** (0.001)		
	3	0.213** (0.001)	0.0580** (0.0021)	-0.0004** (0.0121)	0.265** (0.020)	0.043*** (0.002)	
	4	0.370*** (0.000)	0.0173** (0.0011)	-0.0002*** (0.0011)	0.281 (0.312)	-0.045** (0.001)	0.126*** (0.001)
DOLS	1	0.268** (0.001)	0.0944** (0.0011)	-0.0002* (0.0121)			
	2	0.215** (0.001)	-0.0054* (0.0172)	-0.0001** (0.0021)	0.381*** (0.003)		
	3	0.284** (0.001)	0.0342 (0.1041)	-0.0031* (0.0184)	0.305*** (0.002)	-0.121* (0.043)	
	4	0.271*** (0.000)	-0.0327 (0.1021)	-0.0048* (0.0173)	0.318*** (0.001)	0.167* (0.038)	0.137*** (0.001)
CCR	1	0.329** (0.001)	0.0175* (0.0111)	-0.0062** (0.0291)			
	2	0.371** (0.002)	-0.0222** (0.0061)	-0.0003*** (0.0022)	0.442*** (0.001)		
	3	0.380** (0.002)	-0.0443* (0.0812)	-0.0001*** (0.0056)	0.448** (0.001)	0.221* (0.011)	
	4	0.471*** (0.000)	0.0112** (0.0033)	-0.0021*** (0.0083)	0.562** (0.001)	-0.215 (0.143)	0.261*** (0.001)
λ		-0.8212					
EGresidual test		-1.6234					
LM(1) test (pvalue)		4.5034					
LM(2) test (pvalue)		3.5528					
LM(3) test (pvalue)		2.6302					
BPG test (p-value)		1.6538					

Note: FMOLS= fully modified ordinary least squares; CCR = canonical cointegrating regression; DOLS = dynamic ordinary least squares; GETS = general to specific; and EG = Engle-Granger t-test for cointegration. λ ,factor loading in the ECM. BPG =Breusch-Pagan-Godfrey heteroskedasticiy test; JB = Jarque-Bera normality test; LM = Bresuch-Godfrey serial correlation LM test. FMOLS uses Newey-West automatic bandwidth selection in computing the long-run variance matrix. In the DOLS leads and lags are selected using the AIC criteria. The standard errors (not reported) for the DOLS estimation are calculated

Source: authors' calculation

Finally, the estimated results in CCR technique presented, which variables behave very much the same way as the previous models, and several estimated coefficients are statistically significant. The estimated equation reveals that the investment coefficient is very significant and higher in absolute terms than any other coefficients.

There is no unified framework for understanding the impact of foreign aid on economic growth. The effect of aid on the recipient country and the mechanisms driving it depend on the type of aid and the outcomes of interest. consider aggregate outcomes such as growth. In principle, foreign aid can lead to positive or negative economic outcomes. On the one hand, aid can relieve credit constraints faced by the government and allow it to invest in the development of public infrastructure and human capital, which can in turn increase growth. On the other hand, large inflows of foreign aid can have unintended consequences such as triggering the Dutch Disease, where the increase in aid increases the exchange rate, which increases the price of exports and thus reduces the competitiveness of the manufacturing sector. The effect of aid on conflict also depends on the mode in which it is given. For example, a program which subsidizes wages may reduce conflict by increasing the opportunity cost of fighting. In contrast, aid which reduces wages could, by the same mechanism, increase conflict. An example is food aid, which could reduce farm-gate prices faced by domestic farmers donor countries to support politicians and policies that will bring about positive institutional development. On the other hand, donor countries may not have the best interests of recipient countries at heart. Moreover, even with the best intentions, foreign aid may reduce political accountability because large inflows of aids could relax the need of the government to appease its tax base. The mechanism operates similar to that of a natural resource curse or for any large positive shock to government revenues. Recently, these concerns have been raised in several prominent books about development and aid.

Conclusions

Foreign aid is one of the most important policy tools for transferring resources from rich countries to poor countries. Several trillions of dollars have been given in the past 64 years, but the empirical evidence on its benefits have been very mixed, resulting in a heated academic and policy debate. This paper has sought to make a contribution to the empirical debate over the ability of foreign aid to iran and evaluate the macroeconomic impact of foreign aid on the economic growth of iran in period of 1980-2012 to stimulate faster growth. three time series techniques (CCR, FMOLS and DOLS) were utilised to estimate the cointegrating equations. The empirical findings show that the effect of foreign aid on economic growth in general is positive, statistically significant, and not negligible in size. this variable has a positive sign in four out of four cases in FMOLS technique. One unit increase in the foreign aim leads to a 0.017% increases in economic growth. Therefor aid is more productive than domestic resources and other capital inflows. In each of techniques, almost the rest of variables are statistically significant in level of 1%. In (DOLS and CCR) techniques foreign aid variable has a negative sign in two out of four cases, indicating that foreign aid appears to have an adverse effect on economic growth in iran. In addition, this coefficient is statistically significant in any of the four cases. in all estimated models, the residual tests (EG) confirm the existence of a long run relationship and ECM is satisfactory. Thus, the

findings of this study are, for the most part, consistent with findings of previous studies on the effects of foreign aid on economic growth.

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Appendix 1.Net Official Development Assistance and Official Aid Received In Iran
(Current US$)

year	Aid foreign	year	Aid foreign
1980	28,160,000	**1998**	164,330,000
1981	4,840,000	**1999**	161,260,000
1982	-630,000	**2000**	129,870,000
1983	42,720,000	**2001**	115,530,000
1984	7,800,000	**2002**	114,520,000
1985	11,430,000	**2003**	130,330,000
1986	26,310,000	**2004**	190,750,000
1987	70,880,000	**2005**	108,980,000
1988	81,330,000	**2006**	115,830,000
1989	91,290,000	**2007**	102,360,000
1990	106,450,000	**2008**	98,390,000
1991	193,400,000	**2009**	92,130,000
1992	105,700,000	**2010**	121,190,000
1993	140,080,000	**2011**	100,950,000
1994	129,640,000	**2012**	148,890,000
1995	186,540,000		
1996	164,100,000		
1997	200,130,000		

Source: Organization for Economic Corporation and Development (OECD).