

# The Output Effect of Foreign Aid and Foreign Direct Investment in Jordan: ARDL Modeling Analysis

*Ahmad Ibrahim Malawi \**

## ABSTRACT

This study aims to investigate the impact of foreign aid and foreign direct investment on real output in Jordan over the period (1976-2007). An autoregressive distributed lag (ARDL) model has been applied to annual data.

Some diagnostic tests have been utilized such unit root test for stationarity and the cointegration test. The results have shown that both foreign aid and foreign direct investment have a highly significant positive impact on real GDP in the long-run, but the results are inconclusive in the short-run. These results might be reasonable since the effect of investment on economic activity takes its time and appears with lags.

**Keywords:** Jordanian Economy, Foreign Aid, Foreign Direct Investment (FDI), Autoregressive Distributed Lag (ARDL) Model.

## 1. INTRODUCTION

Since the end of World War II, official development aid has been one of the major sources of external finance for developing countries. Foreign financial aids have been provided primarily for the development of infrastructures, alleviation of poverty, emergency relief, and peacekeeping efforts (Bhandari et al, 2007). In recent years, developing countries have been attracting foreign capital at a significant rate. This capital includes both development assistance funds as well as foreign direct investment (FDI). Whether this external capital has been able to stimulate economic growth is essentially an empirical issue.

Jordan has been focusing on getting foreign aids and promoting foreign direct investment for supplementing domestic sources of finance such as savings, thus increasing the amount of investment and capital stock for stimulating economic growth.

External aids for Jordan has fluctuated from JD 66.2 million in 1976 to JD 937.4 million in 2003, and then unfortunately started to decline until they reached JD 343.4 million at the end of the study period (2007). On

the other hand, Jordan has been attracting foreign direct investment (FDI) at a significant rate, where FDI took an increasing trend over the period of study. It started from US\$ 8 million in 1976 and reached US\$ 2622 million in 2007 with an annual average growth rate of (20.54%).

The goal of this study is to examine the impact of the effect of foreign aid and foreign direct investment on real output in Jordan. To achieve this goal and for capturing most of the long-run and short-run effects of the independent variables, the conditional error correction version of the autoregressive distributed lag (ARDL) model has been applied to annual data from 1976 to 2007.

The rest of the paper is organized as follows: Section 3 discusses the literature review and previous studies. Section 4 reviews a number of empirical models from previous studies. Section 5 deals with the methodology and data used in the empirical analysis, while in section 6 the main empirical results are presented. Section 7 offers the summary and some policy implications. Finally, Section 8 gives Concluding Remarks and Avenues for Future Research.

## 2. Literature Review and Previous Studies

Since there are some differences between foreign aid and foreign direct investment and most of the earlier studies focuses on one of them, the author has dedicated two separate parts for these two types of external finance as follows:

---

\*Department of Economics, Faculty of Economics and Administrative Sciences, Yarmouk University, Irbid, Jordan. Received on 12/2/2012 and Accepted for Publication on 1/5/2013.

**First): Foreign Aid**

Even though the effect of foreign aid on economic growth has been controversial, it is found that aid does have a positive impact on economic growth through several mechanisms (i) aid increases investment (ii) aid increases the capacity to import capital goods or technology (iii) aid does not have an adverse impact on investment and savings (iv) aid increases the capital productivity and promotes endogenous technical change (Morrissey, 2001). This is consistent with the economic theory of foreign aid, which asserted that overseas development assistance accelerates economic growth by supplementing domestic capital formation (Chenery and Strout, 1966).

From the empirical point of view, Burnside and Dollar (1997) have found that aid has a positive impact on growth in developing countries with good fiscal, monetary and trade policies but has little impact in countries where such policies are poor.

Gang and Zou (2001) show that foreign aid depresses domestic saving, mostly channels into consumption and has no relationship with investment and growth in developing countries. Akramov (2012), in his analysis of the aid-growth relationship, shows no significant connection between aggregate aid and per capita GDP growth.

In general, some empirical studies support the positive impact of foreign aids on investment (see for example: Amanja and Morrissey; Asiedu and Villamil, 2002) since foreign aids are mostly directed to improve infrastructures in developing countries, which may encourage investors for higher investment levels. Other researchers have found the opposite, where foreign aids and investment are inversely related (see for example: Rajan and Subramanian, 2005; Arellano and others, 2007) since aids tend to create dependence on the part of recipients.

It is worthy to mention that aid agencies often place conditions on aids and loans. These conditions typically include macroeconomic stability (low-budget deficits and inflation), noninterference with market pricing, privatization of state-owned enterprises, and openness to international trade (Easterly, 2003).

**Second): Foreign Direct Investment**

On the other hand, the influence of foreign direct investment on economic growth has a lot of economic literature. There are two major channels in which

economic growth can be affected by foreign direct investment. The first channel is direct, in which investment is considered to be an important element of the Gross Domestic Product. The second one is indirect, which is a foreign direct investment-induced spillover effects, such as technological transfer, managerial skills, improvements in human capital, and productivity gains.

(Alkhatib, 2005) states that from the viewpoint of international business theory, inward foreign direct investment increases host industry productivity through two channels. The first is called allocative efficiency. In the crudest form, the allocative efficiency implies that foreign firms enter and force managerial incumbents to improve the resource allocation at both the firm and industry level. Consequently the remaining incumbents must also, in a way or another, improve their own technical efficiency to ensure their continued survival. The second channel through which inward foreign direct investment increases productivity is technology transfer from foreign entrants to incumbent firms. This channel is basically based on the assumption that foreign entrants possess intangible capabilities that might purposefully or incidentally transferred to incumbents. Applying the new capabilities increases the incumbent firm's productivity, which then aggregates up productivity improvement at the industry level.

Makki (2004) states that (FDI) foreign direct investment and trade are important catalysts for economic growth in developing countries. FDI is an important vehicle of technology transfer from developed countries to developing countries. FDI also stimulates domestic investment and facilitates improvements in human capital and institutions in the host countries.

Assenov (2004) analyzes the effect of foreign capital inflows on growth in the transition economies of Central and Eastern Europe and the Former Soviet Union for the period (1992-2001), and he has found that foreign direct investment is positively correlated with economic growth, and this relationship is stronger in open countries with better-educated working force.

Blomstrom and Kokko (1996), in their study, conclude that Multinational Companies (MNCs) may play an important role for productivity and export growth in their host countries, but that the exact nature of the impact of FDI varies between industries and countries, depending on country characteristics and the policy environment. Wacker's study (2011) on 111 developing countries between 1980 and 2008 using panel data

methods, points out that FDI plays a positive role for developing countries' terms of trade. Moran (2011) points out that FDI and the operations of multinational corporations have become central to the world economy at large, where FDI has different impacts in the infrastructure, manufacturing and assembly sectors.

Some other studies found that foreign direct investment (FDI) has no impact on economic growth. Asheghian (2005) results suggest the following conclusions:

- The major determinants of economic growth in Japan are total factor productivity and domestic investment growth.
- There is no causal relationship between FDI growth and economic growth in either direction.

Also, Carkovic and Levine (2005) found that the exogenous component of FDI does not exert a robust, independent influence on growth, where they used cross-sectional data on 72 countries over the period 1960-1995.

### 3. Some Econometric Models from Previous Studies

The empirical literature that relates foreign aid and FDI to output level or economic growth has been hampered by the lack of a clear theoretical model by which foreign and FDI would influence growth.

Bhandari et al, (2007) for examining the effectiveness of foreign aid and FDI on economic growth in East European Countries suggested the following model:

$$\Delta Y = b_0 + b_1 \Delta K + b_2 \Delta L + b_3 \Delta Aid + b_4 \Delta FDI + b_5 \Delta Y_{-1} + b_6 EC_{-1} + v$$

Where, Y measures the output level (real GDP), K measures domestic capital, L measures labor supply, Aid denotes for foreign aid, FDI represents foreign direct investment,  $\Delta$  denotes for the first difference, EC is the error correction term, and v is the error term. Their results have suggested that an increase in the inflow of FDI raises economic growth, but foreign aid seems to be ineffective in those countries.

Karras (2006) investigates the relationship between foreign aid and growth in per capita GDP using annual data from the 1960 to 1997 period for a sample of 71 aid-receiving developing economies. He suggested the following model:

$$growth_{i,t} = w_i + v_t + C(L) growth_{i,t-1} + A(L) aid_{i,t} + u_{i,t}$$

Where, growth is the growth rate of real GDP per

capita, aid is one of two measures of foreign aid (foreign aid/population or foreign aid/GDP), w and v are parameters, A(L) and C(L) are  $p^{th}$ - order polynomials in the lag operator L with roots outside the unit circle, u is a spherical error term, and i and t index over countries and time, respectively. The results show that the effect of foreign aid on economic growth is positive, permanent, and statistically significant.

Abdunnasser and Irandoust (2005) have investigated the relationship between foreign aid and economic growth for a panel of developing countries over the period 1974-1996. They utilized the following model:

$$\ln YC_{it} = \alpha_i + \beta_i \ln AID_{it} + \varepsilon_{it}$$

Where  $\ln YC_{it}$  denotes for the real GNP per capita for country i at time t,  $\ln AID_{it}$  is the log of the aid to country i at time t, and  $\varepsilon$  is the stochastic error term. The results have shown that foreign aid has a positive and significant effect on economic activity for each country in the sample.

Ekanayake and Chatrna (unknown year) have investigated the effects of foreign aid on the economic growth using annual data on a group of 85 aid-receiving developing countries for the period 1980-2007. They used the following econometric model in logs, taking logs and differencing:

$$Y = \alpha + \beta L + \gamma K + \phi A$$

where Y is the first difference of the log of gross domestic product in real terms, L is the first difference of the log of labor input, K is the first difference of the log of domestic capital stock, and A is the first difference of the log of the stock of foreign aid. The findings of this study indicate that foreign aid has mixed effects on economic growth in developing countries.

### 4. Methodology and Data

In the benchmark model, the production function that relates the factors of production to the level of output in any economy is assumed to take the following form:

$$Y = f(K, L) \tag{1}$$

Where Y denotes the output level (real GDP), K denotes the amount of capital, and L denotes the amount of labor. Assuming constant technology, any increase in the amount of labor and/or capital will increase the level of output in the economy (Bhandari et al., 2007). After adding foreign aid (AID) and foreign direct investment (FDI), equation (1) can be written as:

$$Y = f(K, L, AID, FDI) \tag{2}$$

I would expect the coefficients of K and L to be positive. Similarly, foreign aid should generally be anticipated to have a positive impact on real output. However, some studies suggest that foreign aid might have a negative impact on the economy. Also, the economic literature that links FDI to economic growth expects FDI to have a positive impact on the level of output.

After modifying the benchmark model and some econometric models used in previous work, this paper employs the autoregressive distributed lag (ARDL) approach of Pesaran and Pesaran (1997) and Pesaran et al. (2001). Since there seems to be some degree of uncertainty concerning the time series properties of the variables in question, the use of ARDL approach is an appropriate technique choice since it doesn't require the assumption the variables are integrated of order 1; i.e. I(1). Pesaran and Pesaran (1997) argue that this approach can be applied to series irrespective of whether they are I(0), I(1), or a mix of the two. In addition, the ARDL approach has better small sample properties in contrast to other techniques. Also, the ARDL approach helps in eliminating the problems resulting from nonstationary time series data (Laurenceson and Chai, 2003) (Aljarrah, 2010). Finally, the ARDL approach helps us in separating the effect of the predictors into long-run and short-run effects.

The ARDL approach can be implemented by doing two steps. First; guarantee the existence of estimation for a long-run equilibrium relationship in levels among the variables, if this equilibrium exists move to the next step (Aljarrah, 2010). Second; estimate the parameters of the long-run equilibrium relationship and the short-run dynamic error correction model as follows:

$$\begin{aligned} \Delta \log(\text{RGDP}_t) = & \alpha + B_1 \log(\text{RGDP}_{t-1}) + B_2 \log(\text{GCF}_{t-1}) + \\ & B_3 \log(\text{POP}_{t-1}) + B_4 \log(\text{AID}_{t-1}) + B_5 \log(\text{FDI}_{t-1}) + \\ & \sum_{i=1}^p \gamma_{1i} \Delta \log(\text{RGDP}_{t-i}) + \sum_{i=1}^k \gamma_{2i} \Delta \log(\text{GCF}_{t-i}) + \\ & \sum_{i=1}^m \gamma_{3i} \Delta \log(\text{POP}_{t-i}) + \sum_{i=1}^n \gamma_{4i} \Delta \log(\text{AID}_{t-i}) + \\ & \sum_{i=1}^r \gamma_{5i} \Delta \log(\text{FDI}_{t-i}) + \text{ECM}_{t-1} \end{aligned} \quad (3)$$

where in equation (2); Y is replaced by real gross

domestic product (RGDP), the gross capital formation (GCF) is used as a proxy variable for K, L is replaced by the population (POP) following some previous studies, ECM represents the error correction part, the AID and FDI variables as mentioned above, and log implies that all the variables are taken in logarithmic form as a kind of monotonic transformation.

The departure from earlier studies of the role of foreign aid and foreign direct investment on real income is in the methodology used to investigate the interaction among the variables.

Regarding the time series data to be used in the empirical section; all of them are obtained from the yearly bulletins of the Central Bank of Jordan (CBJ) and the publications of the Jordanian Department of Statistics (DOS). I have restricted the time span to the 1976-2007 period due to the availability of data.

## 5. Empirical Results

First): The Integration Order of the Variables:

Before examining the existence of long run relationship among variables, we investigate the properties of the variables by applying unit root tests to determine the order of integration of each variable to ensure that all variables are not integrated of order higher than 1 (Aljarrah, 2010). The Phillips-Perron unit root test has been chosen for the purpose of this study for two reasons. First; Shiller and Perron (1985) reported that the Dickey-Fuller unit-root test has very low power in small sample sizes (Abdulnasser and Manuchehr, 2005). And second, Phillips-Perron test is known to be more appropriate if we suspect structural breaks in the data (Mina, 2008), and Jordan has witnessed a structural change in most of its macroeconomic variables in year 1989.

The Phillips-Person unit root test is basically a test of the hypothesis  $\rho=1$  in the equation:-

$$\Delta X_t = \mu + \rho X_{t-1} + \varepsilon_t \quad (4)$$

The equation is estimated by the least squares and then the t-statistic of the  $\rho$  coefficient is corrected for serial correlation in  $\varepsilon_t$ .

The empirical results of the Phillips-Perron are reported in table (1) as follows:

**Table (1)**  
**Phillips-Perron Unit-Root Test Results**

Variable	Calculated Value	1% Critical Value	5% Critical Value	10% Critical Value
RGDP	1.77	- 3.66	- 2.96	- 2.62
Δ(RGDP)	- 3.03	- 3.67	- 2.96	- 2.62
GCF	1.87	- 3.66	- 2.96	- 2.62
Δ(FCF)	- 2.87	- 3.67	- 2.96	- 2.62
POP	0.74	- 3.66	- 2.96	- 2.62
Δ(POP)	- 2.98	- 3.66	- 2.96	- 2.62
Aid	- 1.99	- 3.66	- 2.96	- 2.62
Δ(Aid)	- 5.08	- 3.66	- 2.96	- 2.62
FDI	- 1.09	- 3.66	- 2.96	- 2.62
Δ(FDI)	- 4.96	- 3.67	- 2.96	- 2.62

Notes: Δ(X) : the first difference of the variable X.

The empirical results show that none of the variables is stationary at the level, and each has a unit root or stochastic trend or random-walk element. First-differencing makes each of the variables stationary, i.e. each of them is integrated of order 1, i.e. I(1) at most at 10% significance level since the calculated values of the first differences (in absolute values) are greater than the critical values (in absolute values) at 1% and/or 5% and/or 10% significance levels.

Second): The Cointegration Analysis:

To choose the econometric model that fits the data, it is crucial to test if the group of the above time series are cointegrated or not. A group of non-stationary time series

is said to cointegrated if there is a linear combination of them that is stationary; that is, the combination does not have a stochastic trend. The linear combination is called the cointegrating equation. Its normal interpretation is as a long-run equilibrium relationship.

We can test hypotheses about cointegration within a framework established by Søren Johansen (Johansen, 1991, and Econometric Eviews, 1995). The Johansen cointegration test can determine the cointegrating rank; i.e. the number of cointegrating equations.

The implementation of the Johansen Cointegration test has shown the following results that are reported in table (2).

**Table (2)**  
**Johansen Cointegration Test Results With Intercept (No Trend)**

Eigenvalue	Likelihood Ratio	5% Critical Value	1% Critical Value	Hypothesized No. of Cointegrating Equations
0.9163	102.5363	68.5200	76.0700	None**
0.6343	47.9530	47.2100	54.4600	At most 1*
0.5164	25.8253	29.6800	35.6500	At most 2
0.3454	9.8405	15.4100	20.0400	At most 3
0.0232	0.5169	3.7600	6.6500	At most 4

\*(\*\*) denotes rejection of the hypothesis a at 5%(1%) significance level.

L.R. test indicates 2 cointegrating equations at 5% significance level.

Table (2) shows the rejection of the null hypothesis of no cointegration at 5% significance level, and the likelihood ratio test indicates the existence of one cointegrating equation at 5% level of significance. Also, the cointegrating rank is 2.

The first cointegrating equation from the Johansen

Cointegration test is found to be:

$$\log(\text{RGDP})=4.876 +0.093 \log (\text{GCF})+1.863 \log(\text{POP})+0.084 \log(\text{AID})+0.075 \log(\text{FDI}) \quad (5)$$

(0.046) (0.177) (0.049) (0.013)

where the standard errors are reported in brackets.

The cointegrating equation produces the equilibrium relationship among the variables and shows that each of the variables GCF, POP, AID, and FDI has a significant positive impact on RGDP.

According to Engle and Granger (1987) if the variables under consideration satisfy two conditions: 1) these variables have the same order of integration (higher than zero), and 2) are cointegrated, then we can utilize an error correction model on the variables. Cointegration enables variables in the system to be used in an error correction model (Huang, 1994). Since both conditions do hold and to capture most of the long-run and short-run effects of the independent variables, the conditional error correction version of the ARDL model in equation (3) above has been utilized.

Third): The Conditional Error Correction Version of the ARDL model:

The long-run coefficients estimates from the ARDL

specification along with the short-run dynamics are presented in table (3).

As table (3) shows, the coefficients in the long-run are all significant, indicating that an increase in RGDP, GCF, POP, AID, and FDI one-period lag leads to an increase in RGDP. The findings show that, in the long-run, GCF is the most effective variable on RGDP, then the one-period lag of the RGDP itself. On the other hand, POP is found to be the lowest powerful in explaining RGDP since the latter's elasticity with respect to the POP variable is found to be only (0.24) but it is significant at the margin (almost 10%). The elasticity of RGDP with respect to AID (2.11%) is found to be less than with respect to FDI (4.02%). It seems that FDI has a higher power than AID in explaining the RGDP variable. These findings are consistent with the results of Karras (2006), where he found that the effect of foreign aid on economic growth is positive, permanent, and statistically significant.

**Table (3)**  
**ARDL Estimates of Real Gross Domestic Product (RGDP) Over the Period (1976-2007)**

	Coefficient	t-statistics	P-Value
First): The Long-Run Relationship:			
$\log(\text{RGDP}_{t-1})$	4.51	8.56	0.000
$\log(\text{GCF}_{t-1})$	6.71	9.14	0.000
$\log(\text{POP}_{t-1})$	0.24	1.49	0.099
$\log(\text{AID}_{t-1})$	2.11	7.38	0.000
$\log(\text{FDI}_{t-1})$	4.02	2.37	0.025
Second): The Short-Run Dynamic:			
$\Delta \log(\text{RGDP}_{t-1})$	0.03	1.97	0.051
$\Delta \log(\text{RGDP}_{t-2})$	0.02	2.15	0.033
$\Delta \log(\text{GCF}_{t-1})$	-2.14	-8.18	0.000
$\Delta \log(\text{GCF}_{t-2})$	1.22	1.42	0.130
$\Delta \log(\text{GCF}_{t-3})$	0.97	5.23	0.001
$\Delta \log(\text{POP}_{t-1})$	1.61	2.53	0.021
$\Delta \log(\text{AID}_{t-1})$	3.12	1.16	0.201
$\Delta \log(\text{AID}_{t-2})$	0.27	1.92	0.057
$\Delta \log(\text{FDI}_{t-1})$	-3.01	-1.19	0.195
$\Delta \log(\text{FDI}_{t-2})$	4.17	2.05	0.032
$\text{ECM}_{t-1}$	-0.67	2.12	0.031
Diagnostic Tests: $R^2 = 0.61$ D-W Stat. = 1.69 F-Stat. = 24.12			

The short-run dynamics of the RGDP in table (3) are not exactly in line with the long-run ones. The short-run impact of GCF for one period lag is found to be negative

on RGDP and it is highly significant. Also the short-run impact of FDI for one period lag is found to be negative on RGDP, but it is not significant. The short-run impact

of GCF for two period lag is insignificant. The coefficient of the error correction (ECM(-1)) term shows that the system corrects its last period disequilibrium (the speed of adjustment to restore equilibrium in the dynamic model) by 67% a year and it is highly statistically significant.  $R^2$  is not high enough since differencing may result in a loss of information about the long-run relationship among variables (Pindyck and Rubinfeld, 1991). The Jarque-Bera (JB) test for normality of residuals was performed; the JB value of (0.8625) with probability (0.62) indicates that we can't reject the normality assumption of the residuals. The ARCH LM test for autocorrelation in the error variance has been conducted and showed that the error variance is serially uncorrelated; i.e. the residuals don't contain significant ARCH effects. The results of the above tests suggest that the ARDL model fits the data and the estimation method of the coefficients is robust.

#### 6. Summary and Policy Implications

This paper has investigated the effectiveness of foreign aid and foreign direct investment in the Jordanian economy. The ARDL model has been utilized in this study includes five variables: real gross domestic product (RGDP), the gross capital formation (GCF) as a proxy variable for capital, the size of population (POP) as a proxy variable for labor, foreign aid (AID), and foreign direct investment (FDI). The estimated model has used annual time series data from 1976 to 2007. Before choosing the econometric model, some diagnostic tests such as unit root and cointegration tests have been utilized.

The hypotheses that foreign aid and foreign direct investment can promote real income were explored. The

empirical findings of the econometric model show that both foreign aid and foreign direct investment have a highly significant positive impact on real gross domestic product in the long-run, but the same results are inconclusive in the short-run. These results might be reasonable since the effect of investment on economic activity takes its time and appears with lags.

A policy implication that might be derived from this study is that the inflows of foreign funds; in particular foreign aid and foreign direct investment, can have a favorable effect on real gross domestic product through supplementing domestic sources of finance such as savings, thus increasing the amount of investment and capital stock in the economy. So, developing countries may create an environment at the domestic level for the purpose of attracting foreign direct investment and getting external financial aids.

#### 7. Concluding Remarks and Avenues for Future Research

The bulk of the empirical studies has so far produced inconclusive and elusive results concerning the potential impact of foreign aid and foreign direct investment on economic growth. The critical issue for reaching to mixed results for these studies is that the results may differ for different time periods or/and different countries or regions or/and different models used.

In my mind, there exist some interesting subjects or some avenues for future research. First; it is possible to conduct a time-series cross-section study at level of the aid-receiving Arab countries since dealing with larger sample size might give more accurate results. Second; it is possible to think of estimation different models or/and different time periods.

#### REFERENCES

- Abdulnasser, Hatemi J, and Manuchehr Irandoust .2005. Foreign Aid and Economic Growth: New Evidence from Panel Cointegration, *Journal of Economic Development*, 30(1):71-80.
- Akramov, Kamiljon. 2012. Foreign Aid Allocation, Governance, and Economic Growth. International Food Policy Research Institute. Washington, DC, USA.
- Aljarrah, Mohammed A. 2010. Budget Deficits and the Behavior of the Real Exchange Rate: The Case of Saudi Riyal. *Journal of King Saud University (Administrative Sciences)* King Saud University. Riyadh, Kingdom of Saudi Arabia, 1(21).
- Alkhatib, Said M. 2005. The Inefficiency of Fiscal Policy in Attracting Foreign Direct Investment in Selected Arab Countries. *Dirasat (Administrative Sciences)*. University of Jordan. Jordan, 32(2).
- Amanja, Daniel and Oliver Morrissey. Year is unknown. Foreign Aid, Investment, and Economic Growth in Kenya:

- A Time Series Approach. Center for Research in Economic Development and International Trade. University of Nottingham. Credit Research Paper No. 06/05, Internet.
- Asiedu, Elizabeth and Anne P. Villamil. 2002. Imperfect Enforcement, Foreign Investment, and Foreign Aid. *Macroeconomic Dynamic*, 6: 476-495.
- Assenov, Ilian. 2004. Foreign Investment and Growth in Transition Countries. Internet; <http://www.finance.org.tw/2004conference/paper/Foreign%20Investment%20and%20Growth%20in%20Transition%20countries.pdf>
- Asheghian, Parvis. 2005. The Impact of Foreign Direct Investment on Japan's Economic Growth. Internet; [http://services.bepress.com/cgi/viewcontent.cgi?article=1026&context=itfa/International Trade and Finance Association: International Trade and Finance Association 15<sup>th</sup> International Conference.](http://services.bepress.com/cgi/viewcontent.cgi?article=1026&context=itfa/International%20Trade%20and%20Finance%20Association%2015th%20International%20Conference)
- Bhandari, Rabindra, Dharmendra Dhakal, Gyan Pradhan, and Kamal Upadhyaya. 2007. Foreign Aid, FDI and Economic Growth in East European Countries, *Economics Bulletin*, 6(13): 1-9.
- Blomstrom, Magnus and Ari Kokko. 1996. The Impact of Foreign Investment on Host Countries: *A Review of the Empirical Evidence*, Internet; <http://www.worldbank.org/html/dec/publications/Workpapers/WPS1700Series/wsp1745.pdf>.
- Burnside, Craig and Dollar, David. 1997. Aid, Policies and Growth. *The American Economic Review*, 90(4): 847-868.
- Carkovic, Maria and Ross Levine. 2005. Does Foreign Direct Investment Accelerate Economic Growth?. May, Internet; [http://www.worldbank.org/research/conferences/financial\\_organization/fdi.pdf](http://www.worldbank.org/research/conferences/financial_organization/fdi.pdf)
- Chenery, Hollis and Strout, Alan. 1966. Foreign Assistance and Economic Development. *The American Economic Review*, 56: 679-733.
- Easterly, William .2003. Can Foreign Aid Buy Growth, *Journal of Economic Perspectives*, 17(3): 23-48.
- Ekanayake, E. M. and Chatrna, Dasha. Year is unknown. The Effect of Foreign Aid on Economic Growth in Developing Countries, *Journal of International Business and Cultural Studies*.
- Engle, Robert F. and Granger, C. W. J. 1987. Cointegration and error correction: representation, estimation, and testing. *Econometrica*, 55(2): 251-276.
- Eviews User Guide. 1995. Econometric Views for Windows and the Macintosh", version 2.0, Quantitative Micro Software (QMS). Irvine. California. USA, P271.
- Gong, Liutang and Zou, Heng-fu. 2001. Foreign Aid Reduces Labor Supply and Capital Accumulation. *Review of Development Economics*, 51(1): 105-118.
- Haug, Guobo. 1994. Money demand in China in the reform period: an error correction model. *Applied Economics*, 26: 713-719.
- Johansen, Søren. 1991. Estimation and Hypothesis Testing of Cointegration Vectors in Gaussian Vector Autoregressive Models. *Econometrica*, 59: 1551-1580.
- Karras, Georgios. 2006. Foreign Aid and Long-Run Economic Growth: Empirical Evidence for a Panel of Developing Countries, *Journal of International Development*, 18: 15-28.
- Makki, Shiva S. 2004. Impact of Foreign Direct Investment and Trade on Economic Growth: Evidence from Developing Countries, *American Journal of Agricultural Economics*.
- Mina Balamoune-Lutz. 2008. Financial Development and Income in North Africa. *Int Adv Econ Res (International Atlantic Economic Society)*.
- Moran, Theodore H. 2011. Foreign Direct Investment and Development: Launching a Second Generation of Policy Research, Avoiding the Mistakes of the First, Reevaluating Policies for Developed and Developing Countries, Peterson Institute for International Economics. Washington, DC, USA.
- Morrissey, Oliver. 2001. Does Aid Increase Growth? Progress in Development Studies, 1(1): 37-50.
- Pesaran, M. and Pesaran, B. 1997. Working with Microfit 4.0: Interactive Econometric Analysis, Oxford University Press, Oxford.
- Pesaran, H., Shin, Y., and Smith, R. 2001. Bounds Testing Approaches to the Analysis of Level Relationship, *Journal of Applied Econometrics*, 16: 289-326.
- Pindyck, Robert S. and Rubinfeld, Daniel L. 1991. *Econometric Models and Economic Forecasts*, third edition, McGraw-Hill, Inc.
- Shiller, R., and P. Perron. 1985. Testing the Random Walk Hypothesis: Power Versus Frequency of Observations. *Economics Letters* 18: 1-8.
- Wacker, Konstantin M. 2011. The Impact of Foreign Direct Investment on Developing Countries' Terms of Trade. United Nations University (UNU-WIDER). *World Institute for Development Economic Research*, Working Paper No. 2011/06.

## الأثر الانتاجي للمساعدات الخارجية والاستثمار الأجنبي المباشر في الأردن

أحمد ابراهيم ملاوي\*

### ملخص

تهدف هذه الدراسة بشكل أساسي إلى استقصاء أثر كل من المساعدات الخارجية والاستثمار الأجنبي المباشر على الانتاج في الأردن خلال الفترة (1976-2007). ولتحقيق هذا الهدف تم استخدام نموذج (ARDL) على بيانات سنوية، وأجريت بعض الاختبارات التشخيصية اللازمة كاختبار جذر الوحدة لسكون السلاسل الزمنية واختبار التكامل المشترك على بيانات الدراسة.

بيّنت نتائج الدراسة أن لكل من المساعدات الخارجية والاستثمار الأجنبي المباشر أثراً إيجابياً ومقبولاً احصائياً على الناتج المحلي الاجمالي الأردني في الفترة الطويلة، بينما لم تكن النتائج حاسمة في الفترة القصيرة.

**الكلمات الدالة:** الاقتصاد الأردني، المساعدات الخارجية، الاستثمار الأجنبي المباشر.

\* قسم الاقتصاد، كلية الاقتصاد والعلوم الإدارية، جامعة اليرموك، إربد، الأردن. تاريخ استلام البحث 2012/2/12، وتاريخ قبوله 2013/5/1.