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The Role of FDI Inflow on the Post - Communist Albania's Economic Growth

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In this study we assess the role of FDI inflow on the post-communist Albania's economic growth. The country has experienced a satisfactory growth rate during the transition period to market economy that followed the collapse of communism in the early 1990s. The opening of the country to the foreign world has been accompanied by a significant inflow of FDI that are found to have played a growth promoting role. The analysis is performed using annual data series from 1992 to 2012 obtained from the WDI. The ARDL bounds testing results indicate a significant long-term relationship between the country's economic growth and the inflow of FDI. More specifically, a 10% increase in the FDI inflow is accompanied by a 1.41% increase of its economic growth rate. This finding implies that the country's policymakers should try to create a favourable climate for FDI inflow to accelerate its economic growth.

Keywords: *FDI; Albania; economic growth; ARDL.*

Introduction

As the globalization and free trade increase the FDI are becoming increasingly important for the developing host countries. The benefits of FDI inflow for these countries are substantial. In particular, they can play a key growth promoting role as this external source of funds is often accompanied with technology transfer and human capital development. Most developing countries cannot afford to invest substantially in R&D

activities because they have neither the funds nor the skills required to do so. Economic theory says that FDI inflows usually provide these countries with more advanced technologies which are being used in the developed countries. It predicts a positive role of FDI inflow on the host country's economic growth but the abundant empirical evidence remains mixed. Results seem to be influenced largely by the particular country or group of countries considered as the amounts and types of FDI inflow differ among countries.

Even empirical studies for the same country that use data covering approximately the same time period, report contradictory results. [1] for instance fails to find evidence in favor of a direct growth promoting effect of FDI inflow on Macedonia's economic growth while [2] in a more disaggregated study find a positive role of FDI inflow on the country's economic growth.

Existing empirical studies on the role of FDI inflow on Albania's economic growth are scarce and their results are debatable.

Understanding the nature of this relation for Albania is important considering the limited growth policy options available to its policymakers.

The remainder of this study is organized as follows. Section 2 presents a brief summary of the existing empirical literature that assesses the role of FDI inflow on the host country's economic growth. In this section we focus on studies for countries that share similar characteristics to Albania (mainly ex-communist countries of the Central or Southern East Europe). Section 3 presents the econometric model and the data used in this study. Section 4 summarizes the econometric methodology that we employ. Section 5 presents the estimated results and the final section concludes.

Empirical evidence on the FDI inflow - growth relation

Empirical evidence on the FDI inflow - growth relation:

- ✓ tries to identify the growth determinants, for a sample of 10 Emerging Europe and 5 West Balkan economies (Albania included) during the period 1997-2007. The results of the dynamic panel data estimations of the growth models suggest that FDI inflow is a crucial growth promoter in these countries.

- ✓ Employing a fixed effects panel data approach on a larger panel consisting of 25 transition CSEE economies from 1990 to 2005 also finds a positive impact of FDI inflow on their economic growth.
- ✓ Instead studies this relation individually for 8 countries in the CEE region. The author employs the Johansen cointegration test and the Granger causality test on each of the countries using quarterly data for the period 1993-2010. The evidence provided is mixed.
- ✓ Using a similar econometric methodology and more recent data assess this relation individually for 10 new EU countries and also find mixed results. The more recent ARDL bounds testing approach is used instead of the Johansen cointegration test to check the existence of a long-term relationship between these variables.
- ✓ Find a strong long-run relationship between real economic growth and FDI inflows in Turkey using Johansen cointegration test on annual data from 1970 to 2006.
- ✓ The findings of [8] lend further support to the growth enhancing role of FDI inflow in Turkey. The authors use a VAR model on annual data from 1980 to 2004. Estimation results suggest a bi-directional causality between the inflow of FDI and economic growth in this country.
- ✓ uses a multiple regression model to assess the impact of FDI on Albania's economic growth using annual data from 1990 to 2012. 2 other potential determinants of the country's GDP growth are included in the growth equation which is estimated by OLS. Results suggest a positive relation between the inflow of FDI and the country's GDP per capita growth. However, they are debatable as the time series properties of the variables are not checked prior to estimation and this could have serious adverse effects on their reliability.

Our study uses a more rigorous econometric methodology to assess this relation.

Model and data

The basic econometric model that we employ is written as:

$$lngdp_t = \alpha + \beta lnfdi_t + \varepsilon_t \qquad (1)$$

where $lngdp_t$ is the natural logarithm of real GDP in constant 2005 USD, $lnfdi_t$ is the natural logarithm of the foreign direct investment net inflows in constant 2005 USD, t denotes time, α is a constant term and ε is the error term. The data are annual and are obtained from the World Development Indicators (2013). The net inflow of FDI is converted in real terms using the implicit GDP deflator with 2005 as the base year. The variables are transformed by the "natural" logarithm because this transformation facilitates result interpretation. More specifically, the first differences of the transformed variables can be interpreted as the growth rate of the respective variables before transformation.

Prior to estimation we check the nature of the 2 time series variables under consideration.

Estimation method

We use 4 traditional unit root tests that include ADF, PP, KPSS and DF-GLS. The test equations are chosen based on the visual inspection of the graphs of each variable and their results are presented in the table below.

Table 1: Unit root test results for the variables of the saving-relation equation

Variable	Level				First difference			
	ADF	PP	KPSS	Result	ADF	PP	KPSS	Result
$lnGDP_t$	1.043586	-2.494874	0.194509**	nonstationary	-4.7295*	-5.331963*	0.39986	stationary
$InFDI_t$	-3.218826	-2.287735	0.149557**	nonstationary	-4.576809*	-4.617067*	0.475**	inconclusive

Table 2: Results of the DF-GLS unit root test for the variables of the saving-relation equation

Variable	Level		First difference	
	DF-GLS	Result	DF-GLS	Result
$lnGDP_t$	-2.942159	nonstationary	-4.801215*	stationary
$InFDI_t$	-2.602114	nonstationary	-4.110635*	stationary

* and ** indicate rejection of the null hypothesis (Ho) for the DF-GLS test at 1% and 5% level of significance respectively.

Notes: Lag lengths are selected automatically by the software EViews 7.1 using SIC. The critical values in this unit root test refer to the Mac Kinnon (1996) critical values.

Most of the evidence indicates that both lnGDPt and InFDIt are I(1). Next, we check for cointegration between these two variables. The results of unit root tests have very important implications for the choice of the econometric method. The presence of variables with different orders of integration (but none with order of integration higher than 2), the short span of the time series variables under consideration and its ability to deal with potential omitted variable bias [11] strongly suggest that ARDL (autoregressive distributed lag) is the most appropriate cointegration technique to be employed.

Country-specific empirical studies that employ the ARDL method on small samples of time series data consisting of 20 or less observations are not uncommon (e.g. [12, 13]).

ARDL bounds test approach to cointegration is developed by [14]. The ARDL model is a dynamic specification which includes lagged values of the dependent and explanatory variables as well as contemporaneous values of explanatory variables to estimate both long and short run relations among several variables of interest.

According to [15], who summarize [14], the ARDL model can be expressed as a VAR model of order p:

$$z_t = c_0 + \alpha t + \sum_{i=1}^{p} \eta_i \, z_{t-i} + \varepsilon_t \qquad (2)$$

where

zt is a column vector of variables yt and xt. yt is the dependent variable while xt is a column vector of k explanatory variables.

co represents a (k + 1)-component column vector of intercepts,

α represents a (k + 1) component column vector of trend coefficients,

ηi represents a (k + 1) * (k + 1) matrix of VAR parameters for lag i,

εt is a (k + 1)-component column vector of white noise error terms,

t represents time while p is the optimal lag length.

It can be written as a VEC (Vector Error Correction) model in the following form:

$$\Delta z_t = c_0 + \alpha t + \lambda z_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \, \Delta y_{t-i} + \sum_{i=0}^{p-1} \Phi_i \, \Delta x_{t-i} + \varepsilon_t \quad (3)$$

where Δ is the first difference operator,

λ is a (k + 1) * (k + 1) long-run multiplier matrix, and

Γi and Φi are a (k +1) column vector and a (k + 1) * k matrix of short-run coefficients respectively.

The long-run multiplier matrix can be partitioned as

$$\lambda = \begin{bmatrix} \lambda_{yy} & \lambda_{yx} \\ \lambda_{xy} & \lambda_{xx} \end{bmatrix}$$

Our basic econometric model can be expressed in the ARDL form following the assumptions made by [14] for case v (unrestricted intercepts and unrestricted trends). The restriction λxy = 0 should be imposed so that at most a unique long-run relationship between yt and the regressors be examined. It is shown as the following UECM (unrestricted error correction model):

$$\Delta lngdp_t = \beta_0 + \beta_1 t + \beta_2 lngdp_{t-1} + \beta_3 lnfdi_{t-1} + \beta_4 DUM + \sum_{i=1}^{p} a_i \Delta \mathrm{lngdp}_{t-i} + \sum_{i=0}^{q} b_i \Delta \mathrm{lnfdi}_{t-i} + \varepsilon_t \quad (4)$$

DUM represents a crisis dummy to account for the negative impact of the 1992, 1997 crises on the country's GDP. It takes the value 1 for these two years and 0 otherwise. This equation can also be viewed as an ARDL model of order (p, q). The inclusion of the "one-zero" dummy variable in the model above doesn't cause any trouble as the fraction of observations where the dummy is nonzero is 2/21 = 9.5% [14]. [15] also use one such dummy variable in the ARDL model employed to account for the impact of the East Asian financial crisis on growth in Malaysia.

Results

The estimated coefficients of the most appropriate specification are presented below.

Dependent Variable: DLNGDP
Method: Least Squares
Date: 02/26/14 Time: 18:41
Sample (adjusted): 1995 2012
Included observations: 18 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.326163	0.642839	5.174181	0.0003

LNGDP(-1)	-0.162523	0.038408	-4.231438	0.0014
LNFDI(-1)	0.022884	0.012729	1.797839	0.0997
DUM	-0.161247	0.018402	-8.762312	0.0000
DLNGDP(-1)	-0.199199	0.075706	-2.631233	0.0234
DLNGDP(-2)	-0.239832	0.093861	-2.555185	0.0267
DLNFDI	0.036909	0.013292	2.776718	0.0180

R-squared	0.953581	Mean dependent var	0.052542
Adjusted R-squared	0.928261	S.D. dependent var	0.050135
S.E. of regression	0.013428	Akaike info criterion	-5.497603
Sum squared resid	0.001984	Schwarz criterion	-5.151347
Log likelihood	56.47843	Hannan-Quinn criter.	-5.449859
F-statistic	37.66177	Durbin-Watson stat	1.457965
Prob(F-statistic)	0.000001		

Figure 1: EViews 7.1 Estimation Results

A summary of the results of the model diagnostic tests performed in EViews 7.1 is presented below.

Table 3: Model Diagnostic Checking Results

AR(1) = 0.848990 [0.3568]
JB = 0.635439 [0.727807]
ARCH(1) = 0.483921 [0.4867]
RESET(2) = 1.165894 [0.3546]

AR, JB, ARCH and RESET stand for the Breusch - Godfrey serial correlation test, the Jarque - Bera normality test, the ARCH test and the Ramsey's RESET test respectively. The numbers in brackets represent the number of lags = 1 and number of fitted terms = 2 included in the Breusch - Godfrey serial correlation test, ARCH test and RESET test respectively. The probabilities of the calculated test statistics are shown in square brackets. The results above indicate that the estimated model does not seem to have any serious diagnostic problems such as serial correlation, ARCH effects, non-normality of the residuals and misspecification. (Similar conclusions are derived even when the number of fitted terms included in the RESET is 1).

In addition, the plots of both CUSUM and CUSUM of Squares Tests that are used to check parameter stability suggest that the model is stable during the sample period. They are provided below.

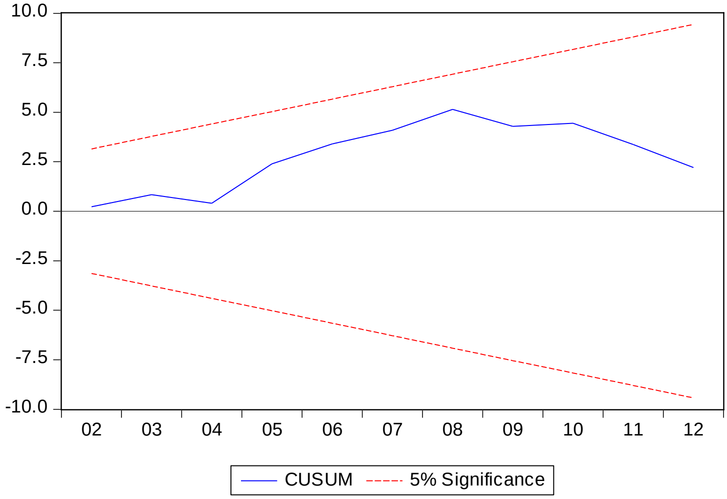

Figure 2: CUSUM Test

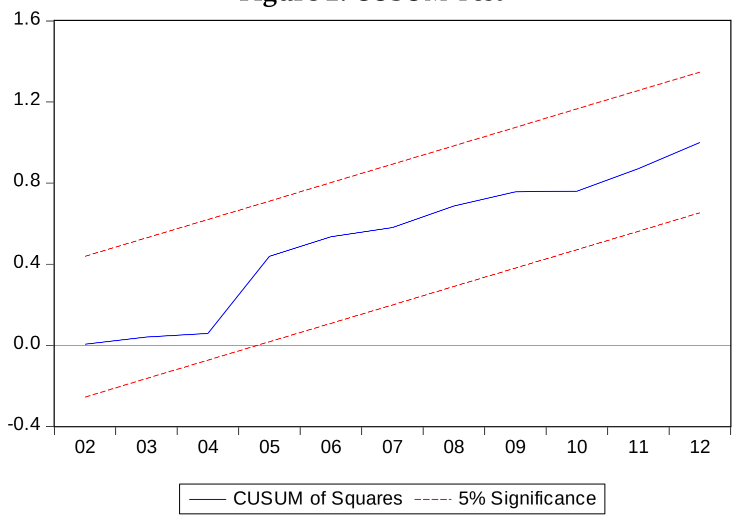

Figure 3: CUSUM of Squares Test

Thus, the estimated coefficients of this specification are valid for interpretation. The explanatory power of this model is very high as indicated by the coefficeint of determinantion (R^2 = 0.953581). The value of this coefficient implies that the independent variables included in the regression model explain more than 95% of the depedent variable variation. Furthermore, the coefficients of all the explanatory variables in levels and their first differences are statistically significant at the most common levels of significance. The "crisis" dummy is also highly significant carrying the expected negative sign.

The presence of cointegration between lngdp and lnfdi is checked by using the Wald test. The computed F-statistic is compared to the critical values of the F-statistic provided by Narayan (2005), to decide whether a long run relation between these two variables exists.

Table 4: Critical values for the cointegration analysis provided by [16]

Significance level (α)	**Lower bound critical value**	**Upper bound critical value**
1%	8.170	9.285
5%	5.395	6.350
10%	4.290	5.080

Note: critical values are cited from [16] for case III (unrestricted intercept and no trend) for number of regressors (k) = 1 and number of time periods (n) = 30. The number of time periods in our study is 21 but we use the critical values computed for a sample size of 30 because it is the smallest sample size for which they are calculated by the author. However, this should have only a small impact on the results.

The computed F-statistic is 36.48601. As it is much larger than the upper bound critical value of 9.285 at the 1% level of significance the null of no cointegration is safely rejected implying a long-run relationship between lngdp and lnfdi.

This long-run relation is written as:

$$lngdp_t = 3.326163 + 0.141 lnfdi_t \qquad (5)$$

The long-run coefficients are calculated as suggested by [17] Bardsen (1989) and they are statistically significant. Evidence suggests a positive relation between the two variables of interest. A 10% increase of the FDI inflow seem to be accompanied with a 1.4% increase of economic growth in Albania.

Conclusions

We find evidence in favor of a positive long-term relation between FDI inflow and economic growth in the post-communist Albania. This finding implies that policies to attract FDI in Albania are likely to be associated with higher economic growth. Considering the small country size and the scarce domestic funds available, the FDI inflow could be an important growth promoting instrument. Therefore, to promote the country's economic growth efforts should be made by its policymakers to encourage the inflow of FDI. This is not an easy task though considering the intense competition among countries of the region to attract FDI. It is high time that important reforms be implemented to address several serious weaknesses that adversely impact the country's ability to attract FDI. Major such obstacles include widespread corruption, weak rule of law, not properly defined property rights, lack of a modern infrastructure (lack of reliable energy supply in particular), and the prevailing fierce political conflict that damages the country's political stability.

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