

# INVESTMENT, GLOBALIZATION, AID, AND ECONOMIC GROWTH: EVIDENCE FROM MOROCCO

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*Abstract:* For the past three decades, globalization in terms of the expansion of both international trade and FDI inflows has proceeded and, in the meantime, the economic growth rates have risen in Morocco. The current paper applies Stock and Watson's small sample cointegration test and the error correction model to reveal the determinants of Morocco's economic growth. The empirical evidence supports the existence of a long-run equilibrium relationship among the variables concerned. Regardless of the measure of international trade, investment and/or aid inflows are revealed to have caused economic growth in Morocco positively.

*Keywords:* FDI, trade, aid, economic growth, Morocco

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## 1. INTRODUCTION

Morocco is a middle-income developing country with a per capita GNI of US\$2,960 in 2011. Although its average ratio of investment to GDP was recorded as 23.4 percent during the 1980s and the 1990s, it increased to 30.7 percent during 2000-2011. In the meantime, the annual average real GDP growth rate rose from 3.5 per cent during 1980-1999 to 4.6 percent during 2000-2011. Although the trade dependence ratio, defined as (export values + import values)/GDP, was recorded as 60 per cent for the whole period, it increased gradually from 54 percent during 1980-1999 to 71 percent during 2000-2011.

The higher economic growth rates during the 2000s were accompanied by a larger amount of FDI inflows in the same period. That is, although the amount of FDI inflows was smaller than US\$1 billion for each year until the year 2002, it has been recorded as between US\$.8 billion and US\$2.8 billion each year since 2003. For instance, the ratio of FDI inflows/GDP reached 4.6 per cent in 2003. As a developing country, Morocco has received official development assistance (ODA) from developed countries.

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Although the ratio of ODA inflows/GDP continued to be higher than 3 percent in general until 1993, it has decreased since then and has remained lower than 2 percent since 1995 (World Bank, 2012).

As explained above, the economic growth of Morocco has been accompanied by a larger amount of investment and progress in globalization, such as the expansion of international trade and the proliferation of FDI inflows. Regarding international trade, Morocco continued to record trade deficits for the whole period, which were offset by surpluses in tourism and unilateral transfers from Moroccans working abroad. The majority of export products were manufactured products. For instance, during the 2000s, the manufacturing sector accounted for about two-thirds of the total exports. The significant rise in exports during the 2000s may be partly attributed to the establishment of free export zones in the late 1990s; tax exemption and the reduction of corporation tax and income tax for enterprises exporting goods or services; duty drawback schemes; export finance; and export insurance, among others. The marked increase in FDI inflows during the 2000s may be attributed to privatization operations, which were initiated in 1993, and the investment incentives provided by the Hasan II Fund for Economic and Social Development created in 2000 (World Trade Organization (WTO), 2009: Chapters I and III).

The current paper reveals the determinants of the economic growth of Morocco. The structure of this paper is as follows. Section 2 presents the literature concerned and the model for estimation. Section 3 shows the empirical evidence drawn from small-sample cointegration test and the error-correction model to test causality. The conclusions are provided in Section 4.

## 2. THE MODEL

The typical production function in economic analysis shows that investment, among others, leads to economic growth. Covering a cross-section of 96 countries, Hall, Sobel, and Crowley's (2010) ordinary least squares (OLS) estimation results show that increases in human and physical capital have a larger effect on economic growth rates in countries with strong institutions than in countries with poor institutions. Besides investment as a whole, foreign direct investment (FDI) inflows have often attracted the attention of development economists. In addition to the aspect of the generation of employment opportunities, they may be beneficial to the economic growth of developing countries in the sense of the transfer of advanced technologies and the increase in export earnings. Meanwhile, they may affect the economic growth of the host country negatively in the case of a substantial amount of repatriation of profits and dividends, the host country's lack of the capacity to absorb advanced technology, a large amount of royalty payments, or foreign invested enterprises' (FIEs') crowding out of indigenous companies, for instance (Zhang, 2001; Ram and Zhang, 2002; Ramirez, 2006). Many empirical works have examined the effect of FDI inflows on economic growth. The conclusions of those works have been mixed: for instance, Chang (2007), Duttaray *et al.* (2008), and Liu, Shu, and Sinclair (2009).

The results of many empirical works testing the causality between FDI inflows and economic growth show that the effect of the former on the latter depends on the specific situation of the countries concerned. Zhang (2001) tested the causality between those two variables for eleven developing economies in East Asia and Latin America. He showed that the impact of FDI on host economies depends on the situation of each country. Chakraborty and Basu (2002) applied a structural cointegration model to data for India over the period 1974-1996 and reported a causal link from economic growth to FDI inflows. Alguacil *et al.* (2002) supported the existence of an FDI-led economic growth relationship in the case of Mexico. Ramirez's (2006) estimation results showed that the growth rate of the foreign capital stock per worker has a positive and significant effect on the labor productivity growth rate in Mexico. Akinlo (2004) revealed that extractive FDI might not lead to economic growth as much as manufacturing FDI, while exports, labor, and human capital were revealed to be positively related to economic growth in Nigeria. Chang (2007) showed that there is no causal relationship between FDI inflows and economic growth in Taiwan.

Chakraborty and Nunnenkamp (2008) employed the Indian data for 1987-2000 and examined the growth implications of FDI at the sectoral level by subjecting industry-specific FDI and output data to Granger causality tests within a panel cointegration framework. Their results showed that the growth effects of FDI are in general restricted to the manufacturing sector. Duttaray *et al.* (2008) selected 66 developing countries and showed that FDI causes economic growth in 29 developing countries, and for the majority of developing countries, economic growth does not cause FDI, which implies that the causal effect from FDI to economic growth appears to be country-specific. Mah's (2010) cointegration test results showed that trade openness does not influence the impact of FDI inflows on economic growth in Korea.

Together with the literature examining the effect of the expansion of FDI inflows on economic growth, there have been many empirical works on the impact of international trade on the economic growth of developing countries. The current literature shows that they differ depending on the countries. The hypothesis that export growth leads to economic growth, i.e., the export-led economic growth hypothesis, has often attracted development and international economists' attention. According to this hypothesis, the expansion of exports leads to economic growth due to the positive externality and economies of scale properties associated with expanded sales opportunities. One can also expect an improvement of the technology level due to the more severe competition that exporters face. Richards (2001) showed that more rapid economic growth has a positive long-run effect on the export share of the national product, while the causality from the latter to the former is not supported in Paraguay.

Krishina, Ozyildirim, and Swanson (2003) used annually observed panel data for 39 developing countries. Their estimation results showed that the coefficient on investment was significantly different from zero for countries above the fiftieth percentile, while this was not true for countries below the fiftieth percentile. Exports were revealed to be much more important in GDP growth regressions involving

countries with GDP growth rates below the mean GDP growth rate than in those with GDP growth rates above the mean. Cuaresma and Worz's (2005) estimation results supported the superior performance of high-tech exports. Kneller (2007) reported that, even if the effect of fiscal policy is controlled, trade liberalization does not affect economic growth. Liao and Liu (2009) showed bidirectional causality between exports and productivity growth in the case of Korea, Singapore, and Taiwan, while for the rest of the East Asian countries, they found unidirectional causality running from productivity to exports. Kim, Lim, and Park (2009) showed that exports do not have a significant effect on either productivity or GDP growth. Thus, the conclusions of many empirical works since the 2000s using time series analyses do not support the export-led growth hypothesis unanimously.

For the past several decades, a huge amount of aid has been poured into developing countries. Regardless of the motives of aid giving, aid may contribute to the economic growth of the recipient in two basic ways. By relaxing financing constraints, the aid inflow can finance investment that promotes economic growth. Aid can encourage policy reform in recipients as well (Morrissey, 2004: 154). Meanwhile, there have been mixed results with respect to the effectiveness of aid in contributing to the economic growth of developing countries. For instance, Burnside and Dollar (2000) showed that aid has a positive impact on economic growth in developing countries only with good economic policies. Easterly *et al.* (2004) derived empirical evidence that good policies are not the conditions for the impact of aid on economic growth. Dalgaard *et al.* (2004) noticed the possible correlations between aid and the economic growth rate as both factors can be explained by some other common exogenous institutional factors.

The economic growth model can basically be considered using a typical production function. Due to the high unemployment rate, population growth is assumed not to lead to economic growth, while a change in capital formation is expected to result in economic growth. The expansion of international trade and FDI inflows are expected to raise the economic growth rate due to their contribution to the improvement of the technology level. Inflows of economic aid may also contribute to improving the economic growth rates of developing countries. Therefore, in the current paper economic growth is captured by the following equation:

$$Y(t) = a_0 + a_1 * INV(t) + a_2 * FDI(t) + a_3 * TRADE(t) + a_4 * AID(t) + e(t)$$

where  $Y$ ,  $INV$ ,  $FDI$ ,  $TRADE$ , and  $AID$  denote the real GDP growth rate, gross domestic investment/GDP, FDI inflows/GDP, international trade, and amount of ODA inflows/GDP, respectively. International trade is measured by the trade dependence ratio (TDR), defined as (exports + imports)/GDP, or the export dependence ratio (EDR), defined as exports/GDP. The annually observed data cover the period 1980-2011 and are drawn from the World Bank data set, available at <http://data.worldbank.org>. The signs of  $a_1$  to  $a_4$  are expected to be positive.

### 3. EMPIRICAL EVIDENCE

The augmented Dickey-Fuller (ADF) and Phillips-Perron unit root tests are applied to the variables to test their stationarity. The optimal lags are selected by the Schwarz lag selection criterion. The results are reported in Table 1, which shows that INV, FDI, TDR, and AID are integrated of order one, while Y is integrated of order zero, at the 1 or 5 per cent level of significance. Since some of the variables concerned appear to be non-stationary, it is necessary to examine the existence of cointegration among the concerned variables.

**Table 1**  
Unit Root Test Results, 1980-2011

Variables	Augmented Dickey-Fuller Test		Phillips-Perron Test	
	level form	first-differenced form	level form	first-differenced form
Y	-5.956**	-	-11.242**	-
INV	-1.750	-4.441**	-0.865	-5.244**
FDI	-1.669	-5.334*	-2.676	-9.161**
TDR	-1.308	-4.567**	-0.975	-6.291**
EDR	-1.011	-4.623**	-0.954	-6.067**
AID	-2.894*	-5.519**	-2.591	-7.437**

*Notes:* Lags are checked up to 3 in case of the ADF test. For the PP test, the lag truncation number suggested by Newey and West is used.

\* statistically significant at the 5 percent level of significance

\*\* statistically significant at the 1 percent level of significance

Stock and Watson (1993) suggested the dynamic ordinary least squares (DOLS) estimation method as a way to test cointegration with respect to variables of different orders of integration. Stock and Watson's (1993) cointegration test starts by estimating the DOLS and then applies the ADF or PP test to the residuals, which would show the cointegration test results. The ADF and PP test statistics from the residuals, which are reported in Table 2, are revealed to be stationary at the 1 percent level of significance regardless of the measure of international trade. That is, there is a long-run equilibrium relationship among the variables concerned.

**Table 2**  
Stock and Watson's cointegration test results: the ADF test/PP test with respect to the residuals

Variables	Measure of TRADE	
	TDR	EDR
Y, INV, FDI, and TRADE	-5.391** / -9.674**	-4.562** / -8.156**
Y, INV, FDI, TRADE, and AID	-4.153** / -9.217**	-4.215** / -8.984**

*Note:* number of lead (lag) = 0 (1)

\* statistically significant at the 5 percent level of significance

\*\* statistically significant at the 1 percent level of significance

The cointegration test results indicate that the error correction model exists. The estimation results for the error correction model are reported in Table 3. The number of optimal lags of variables appearing on the right-hand side of the error correction model is chosen by the Schwarz optimal lag election criterion. The estimated model appears to be plausible in terms of the explanatory power regardless of the measure of international trade.

When TDR is used as the measure of international trade, the error correction term is shown to be negative and statistically significant at the 1 percent level of significance. Investment is revealed to cause economic growth in Morocco positively at the 5 percent level of significance, while TDR is shown to cause economic growth negatively at the 1 percent level of significance. Although the latter appears not to be consistent with the common sense in the literature, it may be explained by the negative effect of imports on the GDP in the case of Morocco. That is, the imports of manufactured products may hinder the development of the manufacturing sector and the economic growth as a whole.

**Table 3**  
**Estimation results**

<i>Right hand side variables</i>	<i>measure of international trade</i>	
	<i>TDR</i>	<i>EDR</i>
constant	1.121 (1.594)	-.025 (-.045)
EC(t-1)	-1.688** (-4.252)	-1.855*** (-5.634)
dINV(t)	24.389* (2.352)	-4.185 (-.701)
dFDI(t)	.097 (1.744)	.034 (.678)
dTDR(t)	-10.830** (-3.109)	
dEDR(t)		-10.895 (-2.020)
dAID(t)	.746 (1.719)	.834* (2.404)
Adjusted R <sup>2</sup>	.947	.899
Durbin-Watson statistic	1.675	1.727
F-statistic	16.736**	25.820**

*Notes:* EC refers to the error correction term. Values within the parentheses denote the calculated t statistics. The estimated coefficients of the lagged terms on the right hand side of the equation are not reported here to save space.

\* statistically significant at the 5 per cent level of significance

\*\* statistically significant at the 1 per cent level of significance

Table 3 also shows the estimation results of the error correction model when EDR, i.e. exports/GDP, is used as the measure of international trade. In that case, the coefficient of the error correction term is shown to be negative and statistically

significant at the 1 percent level of significance. INV, FDI, and EDR are revealed to be statistically not significant at the 5 percent level of significance. That is, the negative causal effect of international trade on economic growth in Morocco appears to be due to the negative effect of imports with respect to economic growth. The aid inflow is revealed to cause economic growth positively at the 5 percent level of significance. The results of the error correction model appearing in Table 3 can be summarized in the following manner. It reconfirms the existence of cointegration between the real GDP growth rate and the explanatory variables. Although the estimation results depend on the measure of international trade, investment and/or aid inflows are revealed to have caused the economic growth of Morocco positively. FDI is shown not to have caused it. Export values have not caused it, while the expansion of import values appears to have caused it negatively.

#### 4. CONCLUSION

For the past three decades, globalization in terms of both the expansion of international trade values and the proliferation of FDI inflows has proceeded and, in the meantime, the economic growth rates have risen in Morocco. The current paper applies the small-sample cointegration test and the error correction model to reveal the determinants of its economic growth. Stock and Watson's (1993) DOLS estimation method is applied as the way to test cointegration with respect to the variables concerned. The cointegration test results support the existence of a long-run equilibrium relationship among such variables. The results of the error correction model show that, regardless of the measures of international trade, investment and/or aid inflows have caused the economic growth of Morocco since the 1980s positively.

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