



THE EFFECTS OF FDI ON THE MOROCCAN ECONOMY: AN EMPIRICAL ESTIMATE FROM A STRUCTURAL MODEL



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ABSTRACT

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The primary aim of the present article is to study whether foreign direct investment (FDI) exerts positive or negative effects on the Moroccan economy. Thus, through a structural model of simultaneous equations, the effects of FDI were examined in terms of economic growth, foreign trade, human capital and domestic investment in Morocco. The empirical results of this study show that FDI clearly demonstrates significant and positive effects on the first three variables whereas, it appears that there is no significant correlation with the domestic investment variable.

JEL Classification

C32, F21.

Contribution/ Originality: This study contributes to provide the effects of foreign direct investment on the Moroccan economy by estimating an econometric structural model of simultaneous equations.

1. INTRODUCTION

Since the 80s, many developing countries have opted for implementing a vast range of incentives and reforms in order to boost their chances of attracting foreign direct investment (FDI). To this effect, several countries have engaged on liberalization of their economies programs in order to promote direct investment and attract foreign funds. This explains the great wave of structural reforms and attractive strategies that marked savings in development over the past two decades. Thus, when the flow of the FDI into North Africa was on the decrease, Morocco has experienced record growth in terms of FDI inflows in recent years. Indeed, this country has undertaken several incentives reforms to ensure a favorable climate for attracting foreign investments.

A multitude of studies have confirmed the existence of positive externalities of foreign direct investment on the productivity of the host country. For example, studies conducted by [Caves \(1974\)](#) and [Globerman \(1979\)](#) insisted on the presence of positive externalities on local productivity and economy through the presence of foreign firms in the host country. Other studies have been implemented by [Blomström and Persson \(1983\)](#) were able to demonstrate the positive relationship between FDI and productivity. In fact, they showed that Mexican sectors which benefited from a higher degree of foreign investment have witnessed unprecedented levels productivity. This increase in the productivity of local firms is explained, according to this study, by creating direct competition on the local market and the ripple effect experienced by these firms because of the foreign presence. The empirical study conducted by [De Gregorio \(1992\)](#) shows the existence of positive effects of FDI on economic growth as well as a better productivity of FDI compared with the domestic investment. In fact, De Gregorio has shown that the effect of FDI is three times greater than that of domestic investment and he also noticed that FDI promote economic growth when the country has a high level of education. [Balasubramanyam et al. \(1996\)](#) confirm that the countries that advocated an export promotion policy can benefit from FDI as countries that have adopted an import substitution strategy will not have positive effects on FDI. The results of the 1995 study by [Borensztein et al. \(1995\)](#) confirmed the existence of the positive effects of FDI on economic growth of the host country. According to these authors, the countries hosting foreign direct investment in their territories will have a high level of quality of workers, transfer of new technologies; an increase in the competitiveness of their firms, resulting in increased the economic growth of these countries. [Imbriani and Reganati \(2003\)](#) and [Smarzynska \(2002\)](#) stress in their work on the presence of the positive effects of FDI on the host country through the existence of positive externalities in productivity related to contacts between the MNF and domestic companies. This was also proved by the study of [Xiaoying and Xiaming \(2004\)](#). Studies conducted by [Jabbour and Mucchielli \(2007\)](#) revealed that the manufacturing sector in Spain showed positive technological externalities that have benefited Spain's export-oriented firms. This is partly attributable to the role of the trade regime in determining the technological externalities of FDI in host countries.

2. MOROCCO AND THE ATTRACTIVENESS OF THE TERRITORY

Morocco was aware of the importance of international competitiveness and foreign direct investment in economic development. In the context of financial and trade liberalization and the promotion of investment, the country has embarked on several structural, institutional and regulatory reforms such as tax relief, restructuring of the judicial system, Liberalization of trade, strengthening of industrial property, modernization of the banking sector, development of infrastructure and development of several free zones. The development of human capital qualitatively and quantitatively was also part of the country's structural policies. For example, new branches have been introduced in higher education and vocational training in order to meet the demands of the labor market.

Two periodic phases have identified the movement of FDI in Morocco. The first period was marked by the volatility of foreign inflows significantly dependent on the launch of privatization operations (1993-2005). Each year that follows an opening of capital has a low inflow of foreign investment. The second period (1994-2014) is distinguished by an increase in FDI inflows, irrespective of privatization operations. Indeed, the conclusion of several bilateral agreements especially with the United States began to bear fruit from 2005 onwards by stimulating investment. European companies have maintained a significant presence in Morocco for the sole purpose of re-exporting to the United States, by enjoying the preferential advantages brought about by the Moroccan-American agreement. Moreover, the deviation of investments from the Arab countries, especially the Gulf countries, to Morocco and other Arab countries, were mainly directed towards tourism and real estate sectors. All in all, Morocco has three main trade partners with different participations: Europe, North America and the Arab countries or more precisely the countries of the Gulf region. The heavy presence of Europe, namely France, Spain and to a lesser extent Britain can be explained in terms of the strong commercial relations that link Morocco to the old continent.

3. AN EMPIRICAL ANALYSIS OF THE EFFECTS OF FDI ON MOROCCO'S ECONOMY

We present in this empirical part a structural model with simultaneous equations system in order to study the effects of FDI on the Moroccan economy for the period between 1980 and 2014. This structural model is inspired by the works of some authors such as Bende-Nabende *et al.* (2000); Alaya (2004); Lahimer (2006) and Ngouhouo (2008). Some variables and equations have been taken out and others, which proved to be more pertinent to the present study, have been added.

3.1. Presentation of the Methodology and Variables

While taking into account the spillovers effects, we will check whether the flows of FDI have positive or negative effects on the Moroccan economy by employing a model with simultaneous equations system. The aim behind using this model is to relate the variables of economic growth and the FDI variable with several other variables such as trade openness, domestic investment and human capital.

$$TxCroiss_{it} = \beta_0 + \beta_1 IDE_{it} + \beta_2 TxOUV_{it} + \beta_3 KH_{it} + \beta_4 InvDom_{it} + \mu_{it}$$

« i » : this index represents the country concerned, which is Morocco

« t » : this is the time index

TxCroiss : This is the variable of the GDP growth rate

IDE : These are the flows of foreign direct investment

TxOUV : This is the rate of trade openness

KH : This is the human capital variable

InvDom : These are domestic investments

μ_{it} : This is the residue vector

This model is represented by a system of five simultaneous equations which are presented in their linear form as follows:

$$\text{Eq1: } LTxCroiss = f(LIDE, LTxOUV, LKH, LInvDom)$$

$$\text{Eq2: } LTxOUV = f(LTxCroiss, LIDE, LKH, LInvDom, LTxChg)$$

$$\text{Eq3: } LKH = f(LTxCroiss, LIDE, LTrTech, LEmp, LRvH, LDepEduc, LDepSant)$$

$$\text{Eq4: } LInvDom = f(LTxCroiss, LIDE, LKH, LTxOUV, LCréd, LTxInfl, LTxEpar)$$

$$\text{Eq5: } LIDE = f(LTxCroiss, LKH, LTxOUV, LPop, LCréd, LInfr, StabP, LRn)$$

LInfr : It is the variable of infrastructures

StabP : It is the variable of political stability

Rn : It is the variable of natural resources available in Morocco

Pop : It is the variable of the total population in Morocco

Créd : This is the domestic credit variable provided to the private sector as a percentage of GDP.

TrTech : The transfer of technology

Emp : This is total employment

RvH : This is the national per capita income variable based on purchasing power parity rates.

TxChg : This is the real exchange rate variable

TxInfl : This is the inflation rate variable

TxEpar : This is the variable saving rate

DepEduc : This is the variable of public spending on education as a percentage of the GDP of Morocco.

DepSant : This is variable in total health expenditure as a percentage of Morocco's GDP.

In order to take account of the properties of the simultaneous equations, these equations will be estimated with the DMC (Double Minor Square) method and this is after having ensured the stationarity of the variables through the unit root tests.

3.2. Results of the Empirical Estimate

In this empirical part of the study, the results of the econometric estimation of each equation by the DMC method will be interpreted.

3.2.1. Effect of FDI on Moroccan Economic Growth

Table-1. Effect of FDI on Moroccan economic growth

Variables	Estimation
C	1,34 (1,11)
IDE	0,22 (4,92)***
TXOUV	5,56 (2,98)***
KH	3,02 (2,11)**
INVDOM	1,11 (1,09)
R-squared : 0,86	
F-statistic : 18,09***	

Source: Author calculations.

*, **, *** significant at 10 %, 5 %, 1 % level

(): t-statistic

One can easily note that the variables of the openness rate and the FDI have the expected positive sign and have a significant significance on the economic growth (they are significant at a threshold of 1%). In this model, FDI appears to act positively and strongly on Morocco's economic growth. This result is expected in view of the increase in FDI inflows in recent years in this country. Indeed, the Moroccan authorities succeeded in attracting a relatively interesting flow of foreign capital relying mainly on investment attraction programs and especially on the stability of this country compared to other countries that have experienced revolutions such as Tunisia. Then, the highly significant result of the variable of openness rate came as no surprise since the more open the country's trade and investment policies are, the greater is the tendency to achieve faster economic growth. For the human capital variable, it has the positive sign and is significant at a threshold of 5%. This is also an expected result as the development of human capital has been part of the attractive policies of this country. As for the domestic investment variable, it has no significant effect on Morocco's economic growth. This brings us back to confirming that this country must necessarily make more effort to improve this domestic investment sector so that it can act positively on the economic growth of this country. In light of these results, one can easily conclude that economic growth could be strongly and significantly explained by its two key drivers, namely FDI and openness to the outside world, whereas it can be explained moderately and significantly by the third main determinant which is the human capital.

3.2.2. Effect of FDI on the Moroccan International Trade

Table-2. Effect of FDI on the Moroccan international trade

Variables	Estimation
C	10,01 (4,62)***
TXCROISS	2,33 (1,87)*
IDE	2,13 (3,97)***
KH	3,06 (1,24)
INVDOM	2,18 (2,29)**
TXCHG	0,55 (1,99)**
R-squared : 0,78	
F-statistic : 20,53***	

Source: Author calculations.

*, **, *** significant at 10 %, 5 %, 1 % level

(): t-statistic

According to the results of the estimate, the FDI variable appears to have a positive and highly significant effect on Morocco's international trade. This result is expected in view of the fact that the presence of multinational firms in the host country prompts the government to open up to the outside world in order to facilitate the import and export activities for these foreign firms. As regards the exchange rate and the domestic investment variables, these two are significant at a threshold of 5%. As for the first variable, a depreciation of the local currency has a very interesting role in the country in view of the fact that the monetary authorities can act on the exchange rate in order to improve the competitiveness of the export products, which will lead to an improvement in exports and subsequently increase the openness rate. For the domestic investment variable it can play a decisive role in the country's international trade through the improvement of the import and export activities of local firms, which in turn leads to an improvement in international trade and trade outdoors. Finally, economic growth appears to have a positive and slightly significant effect on Moroccan international trade.

3.2.3. Effect of FDI on Human Capital in Morocco

Table-3. Effect of FDI on human capital in Morocco

Variables	Estimation
C	-0,56 (-1,13)
TXCROISS	0,77 (1,55)
IDE	2,03 (4,27)***
TRTECH	0,66 (2,31)**
EMP	4,42 (0,59)
RVH	0,18 (1,16)
DEPEDUC	0,89 (2,88)***
DEPSANT	2,12 (2,24)**
R-squared : 0,81	
F-statistic : 17,04***	

Source: Author calculations.

*, **, *** significant at 10 %, 5 %, 1 % level

(): t-statistic

The results of the regression of the third equation show that the FDI variable has a positive and highly significant effect (at the 1% threshold) on human capital. This result came as no surprise given the importance of the role of FDI in improving the quality of human capital in the host country. As for the technology transfer variable, it has the expected positive sign and has a significant effect (at the 5% threshold) on human capital. This result demonstrates the importance of technology transfer in contributing to the development of knowledge and the quality of human capital. As for the expenditure variables relating to education and healthcare, they have the expected positive sign and have significant effects at the 1% and 5% thresholds respectively on the human capital factor. In fact, this is expected given the upward trend in educational expenditure as well as healthcare expenditure and its impact on human capital accumulation. Finally, the results of the effects of the variables of economic growth, employment and per capita income on human capital are not significant, which shows that these variables have no significant effect on the development of human resources. This confirms the non-existence of a significant relationship between all of these variables.

3.2.4. Effect of FDI on Domestic Investment in Morocco

According to the econometric results, foreign direct investment has a negative and significant effect at a 10% threshold on domestic investment. Indeed, it can be noted that FDI has a crowding-out effect on local investment. This effect can be explained by the fact that Morocco draws the majority of incoming FDI flows from privatization operations, which further limits the spread of spillovers in domestic investment. For the variables of the growth rate and the openness rate, they are positive and significant at the 5% threshold. Indeed, a change in the rate of growth and in the rate of openness leads to the same change for the sign of domestic investment. This result is expected given that the economic growth of a country and its openness to the outside are the best references for domestic firms to decide to invest.

Table-4. Effect of FDI on domestic investment in Morocco

Variables	Estimation
C	6,80 (0,33)
TXCROISS	3,50 (2,27)**
IDE	-0,43 (-1, 78)*
KH	1,06 (1,21)
TXOUV	2,14 (2,38)**
CRED	3,68 (2,01)**
TXINFL	-4, 12 (-0,87)
TXEPAR	1,57 (1,88)*
R-squared : 0,83	
F-statistic : 16,09***	

Source: Author calculations.

*, **, *** significant at 10 %, 5 %, 1 % level

(): t-statistic

So in this study these indicators seem sufficiently enough for local investors to decide to invest. Credit and savings variables also have a positive and significant effect at the 5% and 10% threshold on domestic investment, respectively. The positive sign of the credit variable was expected since granting credit facilities to the private sector encourages firms to invest which confirms the existence of a positive and robust relationship between the credit variable and the Domestic investment variable. Moreover, as for the savings rate variable, there is hesitancy about its effect which seems positive and significant. As a result, we may be looking at a complementary relationship between this variable and the domestic investment variable. Accordingly, these data suggest that as the savings rate increases, the capital that finances the investment also increases, which in turn spurs and promotes domestic investment. Finally, it can be noted that there is no complementary relationship between the variables of human capital and the rate of inflation with the domestic investment variable.

4. CONCLUSION

Aware of the crucial role foreign direct investment plays in the external funding of developing countries, Morocco has proved to be one of the countries that have invested heavily in reinforcing the attractiveness of their territories, owing to a multitude of structural, institutional and regulatory reforms that aim to improve the investment climate and be an attractive country for FDI. The objective of this article is to study the effects of FDI on the Moroccan economy through a structural model with simultaneous equations system. The study found that FDI has positive and significant effects on economic growth, foreign trade and human capital, while the domestic investment variable seems to have no significant relationship with FDI.

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