



WORKING PAPER

Impact of Foreign Direct Investment on Economic Growth in Morocco

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Abstract

This paper aims at analysing the effects of FDI that mostly originate from the EU country partners, on economic growth in Morocco. Using yearly time series data from 1973 to 2014, the Vector Autoregressive Regression (VAR) modelling has been used to study the different relations that link FDI, GDP and international trade (imports and exports). Furthermore, Granger causality model has also been implemented to capture causality relationships between the macroeconomic variables. Given that agriculture is a key sector within the structure of the Moroccan economy, both models are performed likewise. Results show that there is a unidirectional relationship between FDI and economic growth in Morocco; meaning that GDP causes FDI, while FDI does not cause GDP growth. Similarly, the agricultural GDP seems to be significantly co-integrated only with its own lagged values, stressing that no role of agricultural FDI is econometrically noted. Surely, these results have to be linked to the relative weakness of inflowing FDI during the considered period, as it theoretically would be expected. However, policy makers would have to review the whole policy that aims at encouraging FDI as an economic growth promoter in Morocco, including the diversification of FDI origin.

Key words: FDI Economic growth VAR Causality Morocco

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1. Introduction

Faced with the market globalisation stream, the internationalisation of monetary policies and an increasing indebtedness, developing countries are now compelled to look for non-traditional sources of investment that are not generating debts. This is the reason why they have turned to Foreign Direct Investment (FDI), as it is less sensitive to financial crises.

Morocco, a South Mediterranean country, has worked on policies that have proven to be adequate for the attraction of foreign investors. The comparative advantage of Morocco through its geographical and historical proximity, particularly with France and Spain, determines the orientation of foreign investors. These two European countries are the main suppliers of FDI entering Morocco, even though FDI from the Gulf countries has increased in recent years.

Thus, since 1983 based on the logic of the Structural Adjustment Programmes with the perspective of improving its investment climate and developing its attractiveness for FDI, Morocco has adopted multiple and varied economic reforms. Currently, the attractiveness of FDI is at the centre of Moroccan development strategies, because it is seen as being more stable and long-term committed than other forms of capital flows. FDI is also sought after, because it can promote economic growth through, inter alia, development of domestic investment, creation of employment and improvement of the balance of payments. It participates in the creation of direct value added, through the production of foreign companies, as well as increased competition and competitiveness of the national economy. It also involves new methods and managerial techniques, through direct and indirect contacts between foreign subsidiaries and local firms, which could facilitate the transfer of knowledge and technological standards to the host economy.

As a result, the evolution of FDI in Morocco has registered an upward trend since the 1990s, mainly due to privatisation transactions, which accounted for around 60% of FDI receipts. The 2017 attractiveness barometer, published by the international company Ernst & Young (EY), has placed Morocco at the top of the most attractive FDI countries on the African continent. Quoting EY, *"investors' confidence in the future prospects of the Moroccan economy is strengthened by the stability enjoyed by the Kingdom, including during the turbulent period in North Africa in the context of the Arab Spring"*.

Indeed, according to the report of the Moroccan Exchange Agency (2018), at the end of January 2017, FDI flows amounted to more than 1.7

billion Moroccan dirhams¹ against 1.4 billion dirhams in 2016, registering a sharp increase of 22.4 percent.

These observations lead us to ask the following questions:

- Does FDI stimulate economic growth, support domestic investment and contribute to the country's development? Are there conditions which are likely to improve the impact of FDI on economic growth?
- What is the relationship between FDI, GDP and international trade (imports, exports)? What is the meaning of causality between these three components? In other words: does FDI stimulate GDP, or is it the improvement of economic growth that stimulates FDI?
- Given that the agricultural sector in Morocco is a major component of the country's economic growth, what is the importance of FDI in this sector? What is the impact of agricultural FDI on agricultural GDP?

To answer these questions, we adopt VAR (Vector Auto Regressive) and VECM (Vector Error Correction Model) modelling. From these two models, we apply the Granger causality test to find out the causal relationships between the variables taken into account.

2. Evolution of total FDI and agricultural FDI in Morocco

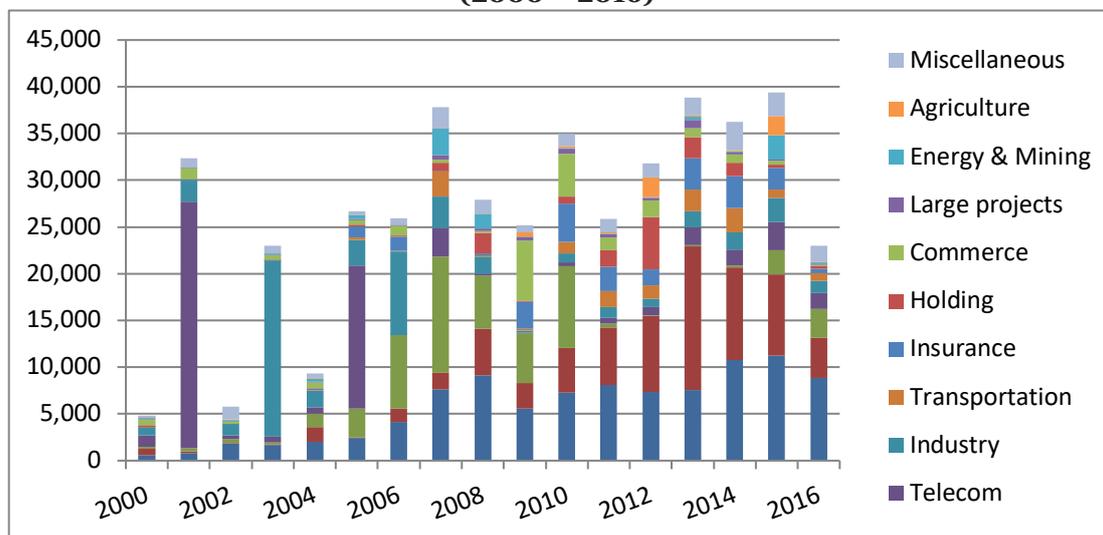
Since the 1990s, foreign investors have placed importance on Morocco as a preferred destination, which has made FDI a factor influencing the national economic environment. Since then, foreign investment has become a source of financing for the national economy and the development of business sectors in terms of wealth creation and employment. However, the FDI inflows over the last two decades have been characterised by erratic fluctuations and unequal distribution across economic sectors. In addition, the FDI countries of origin in Morocco are not diversified; the two traditional partners, France and Spain, still remain at the top of source countries.

According to data from the Moroccan Exchange Agency (2017), the country has recorded a significant increase in FDI flows since 2000. The average FDI over the 2007-2012 period was 27.9 billion Moroccan dirhams, compared to 17.2 billion dirhams for the 2000-2006 period, a significant increase of 62%. Over the 2000-2012 period, FDI recorded an annual growth rate of 9.63%. Recently, this rate has been twice as high as the growth rate of

¹ 1 Moroccan dirham equals 0.091 Euro in average.

GDP (3.7%). In 2016, the total FDI amounted to around 23 billion dirham (Figure 1).

**Figure 1: FDI evolution by sector (Million Moroccan dirham)
(2000 – 2016)**



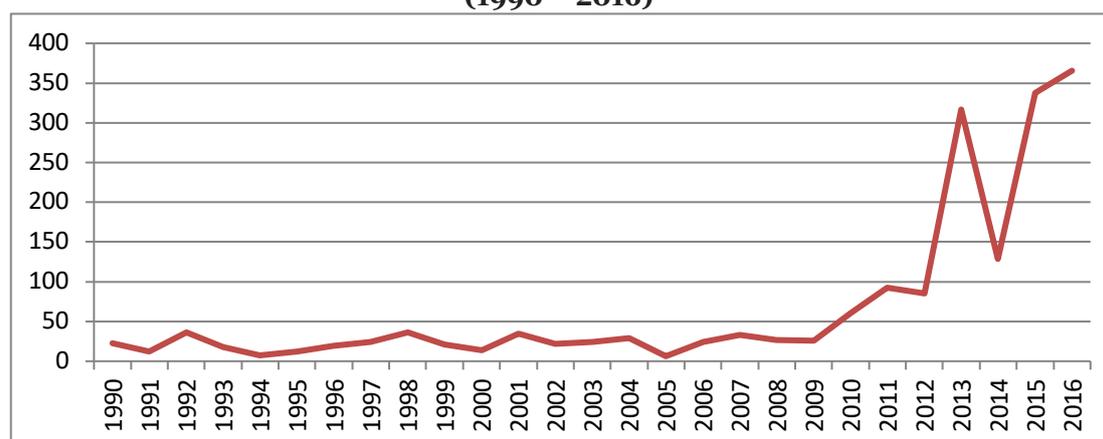
Source: Office des changes (2017).

However, regardless of the improvement of FDI inflows in Morocco over the last two decades, their distribution has been characterised by the predominance of four sectors that amounted to 85% of total FDI. Real estate comes first, with a share of 29%, followed by banking (21%), telecommunications (18%) and industry (16%). Despite its importance in the national economy, agriculture did not begin to attract significant capital from FDI until 2013.

Over the 1990 – 2009 period, drained agricultural FDI (AFDI) flows show a stationary trend, around an average of 25 million dirham. These investments were made almost exclusively by European investors, in particular Spanish and French, who relocated part of their production activity to Morocco in order to guarantee a regular and low-cost supply of European markets, especially in fruit and vegetables.

From 2009 to 2016, the evolution of AFDI has fluctuated significantly, achieving remarkable growth in 2013 with 317 million dirham, before falling to 129 million dirham in 2014. Then, they began a recovery to 338 million dirham in 2015, which continued to increase in 2016, reaching 366 million dirham, a record level since 1990. As already indicated, FDI in Morocco has experienced a significant increase over the period 2006-2016, thanks to the increase in FDI received from Arab countries, and agriculture stands out as a main sector of choice of these FDIs (Figure 2).

Figure 2: Agricultural FDI evolution (Million Moroccan dirham) (1990 – 2016)



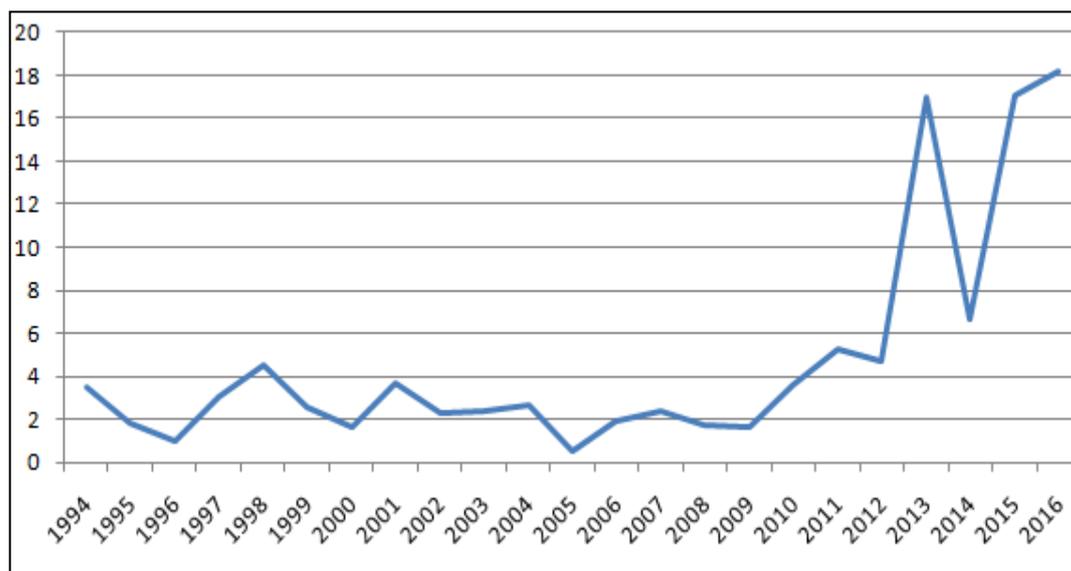
Source: Office des Changes (2017)

Figure 2 shows that agricultural FDI depicts an upward trend over the period 1990-2016. However, their share in total FDI remains lower than those of other traditional sectors, such as banking or real estate. This can be explained by the absence of privatisation operations in this sector, as well as the rise in FDI concentrated in the high-tech sectors.

In fact, FDI captured by agriculture over the entire period 2000-2016, represents only 1.7% of total FDI. At the same time, the contribution of agriculture to total GDP varies between 13% and 17%, which reinforces the relevance of the question about the role of agricultural FDI in agricultural GDP. The new Moroccan agricultural strategy, named "*Green Morocco Plan*"² set up by the Ministry of Agriculture in 2008, aims to consolidate the success to date and meet the new challenges of Morocco, in terms of competitiveness, opening up markets and FDI attractiveness.

Figure 3 shows that over the period 1994-2010, the rate of AFDI in agricultural GDP (AGDP) is almost static, fluctuating around 2.5% on average. In 2011, AFDI accounted for 5.3% of AGDP before falling by 0.5% in 2012. In 2013, this share increased significantly to reach 17% before falling once again to 6.6% in 2014. In 2015, the rate picked up (17%) and has continued to increase, reaching its maximum value in 2016 (18%).

² *Plan Maroc Vert* in French

Figure 3: Evolution of agricultural FDI/agricultural GDP rate (%)

Source: The Exchange Agency (2017)

Ultimately, despite the promotional efforts that have led to a significant improvement in the investment climate and their substantial increase in recent years, Moroccan FDI inflows have remained relatively low, compared to the country's strengths and opportunities for investors. However, it must be pointed out that the positive and lasting impact of FDI on the growth of the Moroccan economy cannot take place without the introduction of an investment policy geared particularly to productive sectors, as in the case of the agricultural sector and new information and communication technologies. It is also about diversifying the sources of FDI and targeting new European countries, other than the traditional partners.

3. Research objectives and empirical overview

We reiterate that the main objective of this study is to contribute to the analysis of the impact of FDI flows in general, and agricultural FDI in particular, on the economic growth in Morocco. This objective is sought through econometric analysis using dynamic modelling.

Several empirical studies have dealt with the subject of the relationship between FDI, foreign trade and economic growth. Most FDI studies conclude that FDI contributes to both factor productivity and income growth in host countries, beyond the impact on local investment. This beneficial effect is explained by the ability of FDI to release scarce domestic resources and, thus, to become available for other investment projects.

Kojima (1973) confirmed that FDI stimulates international trade and promotes economic activity. Borensztein & al (1998) have proved that inward flows of FDI increase total investment and growth. Their results, which cover 69 countries in a panel study, showed that FDI facilitates technology transfer, raises workers' skills and increases exports and the competitiveness of local firms in developing countries. They also showed that an increase, by one percent ratio of FDI to GDP, increases the growth rate of the host country per capita GDP by 0.8 percent. Furthermore, Menegaldo and Moustier (2002), in a study of bilateral FDI flows between the southern Mediterranean countries and Europe, detected the existence of a long-term relationship (co-integration relationship) between FDI and GDP, on one hand, and between FDI and exports and imports, on the other hand.

In the case of developing countries, FDI appears to have a slightly smaller effect on growth, which has been attributed to the existence of a threshold effect. In other words, these countries must have a certain level of development in education, technology, infrastructure and health in order to benefit from a foreign presence in the market.

Ozturk and Kalyoncu (2007), using Engel-Granger co-integration and causality tests in the analysis of the impact of FDI on economic growth in Turkey and Pakistan over the period 1975-2004, have found that these two variables are co-integrated for both countries, which means that FDI accounts for long-term economic growth. For Rodrik (2001), the recipe for countries that have been economically successful, has been to combine the opportunities offered by global markets with a national investment and institutional strengthening strategy, to stimulate the enthusiasm of local entrepreneurs.

For Tunisia, Malyah (2012), found that GDP causes FDI (in the sense of Granger) while FDI does not cause GDP. In addition, there is a two-way causal relationship between exports and FDI, on the one hand, and between imports and FDI on the other.

In the case of Morocco, Alaya (2006) demonstrates, in an empirical study covering seven Mediterranean countries from 1975 to 2002, that the presence of FDI seems to have a negative effect on economic growth in Morocco, in Tunisia and Turkey. The author has justified this result by the effect of the fluctuation of FDI directed towards these countries. Bouoiyour (2008) finds, in turn, that FDI has a negative but insignificant impact on economic growth in Morocco. While both results are surprising, Azeroual (2016), demonstrated that FDI (mostly originating from France) has a significantly positive effect on total factor productivity (TFP), because of the concentration of these investments in the industrial sector, which is one of the

most important sectors in terms of know-how, technology and economic growth transfers.

In the agricultural sector, very few studies dealing with the relationship between FDI and GDP have been performed. However, Oloyede (2014), using data from 1981 to 2012 in Nigeria, demonstrated that FDI positively affects economic growth in the agricultural sector. In Morocco, to our knowledge, no investigation on this subject has been carried out up to now.

To help improve economic knowledge in this area, we test the hypothesis of positive relation between FDI and economic growth in Morocco, using the theoretical tools presented in the next section, namely VAR causality models.

4. Methodology

VAR model allows the capturing of the relations between the endogenous variable with the lagged explaining variables. According to Sims (1986), this model provides a statistical answer to all the criticisms related to restrictions on the exogeneity of variables, the arbitrary choice of functional forms and the inadequate treatment of agents' expectations. This new representation, however, is based on the assumption that the evolution of the economy can be well approximated by the description of the dynamic behaviour of a vector of N variables linearly dependent on the past (Bourbonnais, 2015). VAR models must be estimated from stationary series.

The concept of causality, proposed by Granger (1959) and cited by Bourbonnais (2015), plays a key role in economics since it allows a better understanding of the relationships between variables. Indeed, we consider that the variable Y_{1t} causes Y_{2t} in the Granger sense, if the prediction of Y_{2t} is based on the knowledge of the past values of Y_{1t} and Y_{2t} is better than that, based on the only knowledge of the previous values of Y_{2t} . The test consists of using past value information to predict the present and future values of the studied variables.

To perform the causality tests, the first step verifies the stationarity of the series, as well as their order of integration, using the unit root tests of Dickey-Fuller (1979). This is necessary because, on the one hand, causality tests are very sensitive to the stationarity of series and, on the other hand, it has been found that most macroeconomic series are not stationary (Nelson & Plosser, 1982). Then, we introduce the theory of co-integration which is, in fact, the multivariate version of the unit root concept. It consists of finding a stable long-term relationship between non-stationary time series through the identification of stable linear relationships linking these series.

The VAR model, that allows the modelling of economic growth (GDP) in Morocco according to FDI, exports (EXP) and imports (IMP), is of the following matrix form:

$$Y_t = A_0 + A_1 Y_{t-1} + v_t$$

The same approach is adopted for agricultural GDP (AGDP), agricultural-related FDI (AFDI), agricultural exports (AEXP) and agricultural imports (AIMP).

5. Results

After having tested the stability and the validity of the models through the examination of the values of the unit roots, on the one hand, and the tests of autocorrelation and homoscedasticity, on the other hand, we have obtained the following results. It should be noted that, whether for total or agricultural FDI cases, it appears that the appropriate lag chosen by almost all the criteria is 1.

6. FDI, foreign trade and economic growth

Table 1 gives the estimate results of the VAR(1) model implemented, using the Eviews software.

Table1: VAR(-1) model estimates

	PIB	IMP	EXP	LnIDE
PIB(-1)	0.736505 (0.15550)	-0.043033 (0.11807)	0.082464 (0.07693)	-0.016183 (0.04132)
	[4.73646]*	[-0.36446]	[1.07189]	[-0.39164]
IMP(-1)	-0.795800 (0.33556)	0.259420 (0.25480)	-0.307043 (0.16602)	-0.151066 (0.08917)
	[-2.37157]*	[1.01814]	[-1.84943]	[-1.69413]
EXP(-1)	1.715987 (0.69698)	1.071938 (0.52924)	1.164250 (0.34484)	0.312669 (0.18521)
	[2.46202]*	[2.02544]*	[3.37622]*	[1.68815]
LnIDE(-1)	0.586674	0.229877	0.172214	0.527298

	(0.53655)	(0.40742)	(0.26546)	(0.14258)
	[1.09341]	[0.56423]	[0.64873]	[3.69822]*
C	5.179789	0.877154	0.063688	-1.698003
	(2.92764)	(2.22303)	(1.44847)	(0.77798)
	[1.76927]	[0.39458]	[0.04397]	[-2.18257]*
R2	0.985377	0.962739	0.972905	0.772798
R2 Adjusted	0.983796	0.958710	0.969997	0.748236
F-Statistic	61.0437*	238.9956	332.1390	31.46267
Akaike AIC	5.731925	5.181277	4.324552	1.081429
Schwarz SC	5.938791	5.388142	4.531417	1.288294

(*) Significant at 5%.

The model that explains economic growth as a function of its past value and lagged values of explanatory variables is globally significant (P-Value = 0.000 < 0.05) with a coefficient of determination of 98%. Thus, the GDP of the previous year can be used to explain the change in GDP for the current year; an increase of one unit of GDP (-1) increases GDP by 0.74 units. Imports are significant but negatively affect GDP. An increase in imports leads to a decline in future GDP, mainly because of the importance of final goods in the import list. Conversely, and as it should be expected, exports are significant and have a positive impact on GDP.

Besides, the variable FDI is not significant, despite its positive sign. This result is different from that of Alaya (2006) which depicted a negative effect between FDI and economic growth. We stress here the importance of the FDI threshold that is necessary to trigger positive effects on the economic growth.

For the analysis of Granger causality, Table 2 gives the obtained results.

**Table 2: VAR Granger causality tests
(1973 – 2014)**

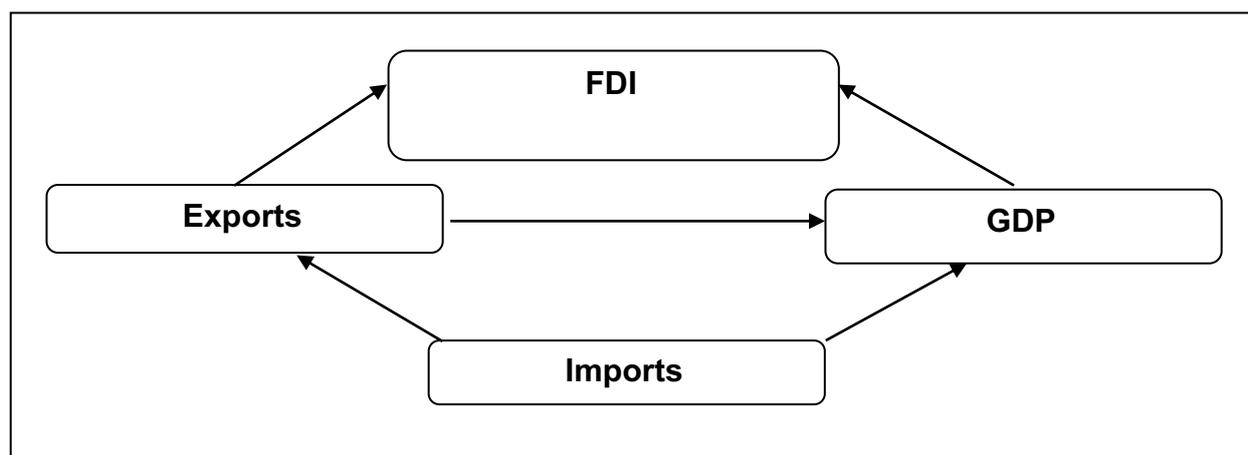
Dependent variable: GDP		
	Chi-sq	Prob.
LnFDI	1.332643	0.2483
EXP	4.233253	0.0332*
IMP	7.064041	0.0074*
All	8.748278	0.0328
Dependent variable: LnFDI		
	Chi-sq	Prob.

GDP	5.799540	0.0160 *
EXP	11.28174	0.0008 *
IMP	2.582717	0.1080
All	26.54605	0.0000
Dependent variable: EXP		
	Chi-sq	Prob.
GDP	2.466883	0.1163
LnFDI	2.074656	0.1498
IMP	4.493896	0.0340 *
All	10.62045	0.0140
Dependent variable: IMP		
	Chi-sq	Prob.
GDP	0.000318	0.9858
LnFDI	0.967687	0.3253
EXP	0.976435	0.0845
All	11.50841	0.0093

We see that the tests detect 5 causal links between the endogenous and explanatory variables, namely:

- Exports and imports cause economic growth because P-Value is $0.0332 < 0.05$ and $0.0074 < 0.05$, respectively. As a very interesting outcome, trade openness should contribute to improving welfare by boosting productivity. This result is in line with almost all the empirical studies, concluding that there is a causal link between trade openness and economic growth (Michaely, 1977, Frankel and Romer, 1999);
- FDI does not seem to be causing GDP in Morocco. This result is consistent with the VAR model estimate above, that suggested FDI is not a key variable in explaining the forecast of economic growth;
- FDI is caused by GDP and exports, so these last two variables would play a key role in the investment attractiveness of Morocco;
- Imports cause exports (P-Value = $0.0340 < 0.05$) which is in line with the theory claiming that imports of capital goods, and even energy products, would spur the production of exportable goods and improve economic growth in general.

Figure 3 summarises the different causal relationships between the involved variables.

Figure 3: FDI, GDP and international trade causality relationship

We see that there is a unidirectional relationship between FDI and economic growth in Morocco; meaning that GDP causes FDI while FDI does not cause GDP, which is similar to the result obtained by Malyah (2012) for Tunisia. Theoretically, we would expect to get a two-way causality relationship between FDI and GDP. At the same time, we could suspect that the weakness of foreign investments in Morocco would not have played a significant role in boosting economic growth during the 1973 – 2014 period. However, we should underline that the situation has notably changed since then because of recent investments, in particular, in the industrial sector (automobile, aviation, tourism...).

7. FDI, foreign trade and economic growth in the agricultural sector

Table 3 depicts the results of the VAR(1) model estimates for the agricultural sector.

Table 3 : Agricultural VAR(1) model estimates

	LnAGDP	DLnAFDI	DLnAEXP	DLnAIMP
LnAGDP(-1)	0,966433	0.149394	0.984230	-0.227553
sd	(0.01912)	(0.08341)	(0.56140)	(0.16992)
t	[50.5586]*	[1.79111]	[1.75318]	[-1.33918]
DLnAFDI(-1)	0.023947	-0.499045	-0.252608	0.629680
	(0.05870)	(0.25614)	(1.7402)	(0.52182)
	[0.40794]	[-1.94830]	[-0.14652]	[1.20671]
DLnAEXP(-1)	0.077461	-0.023900	-0.646177	0.265945
	(0.00806)	(0.03516)	(0.23665)	(0.07163)

	[0.96130]	[-0.67973]	[-2.73050]*	[3.71284]*
DlnAIMP(-1)	0.0278124 (0.02129)	0.008087 (0.09289)	-0.590805 (0.62521)	-0.137706 (0.18924)
	[1.30649]	[0.08706]	[-0.94497]	[-0.72770]
C	0.442643 (0.22343)	-1.669475 (0.97493)	-11.32285 (6.56191)	2.671124 (1.98613)
	[1.98114]*	[-1.71241]	[-1.72554]	[1.34489]
R2	0.995870	0.290488	0.420044	0.574233
R2 Adjusted	0.994599	0.072176	0.241596	0.443228
F-Statistic	783.6337*	1.330610	2.353870	4.383281
Akaike AIC	-4.507608	-1.561066	2.252286	0.109418
Schwarz SC	-4.260283	0.057010	0.128318	0.062290

(*) Significant at 5%

The VAR(1) model, explaining the variability of economic growth in terms of foreign direct investment and foreign trade in the agricultural sector, is globally significant and explains 99.6% of the total variability of the endogenous variable. However, despite the overall significance of the model, the results of individual coefficient significance are not robust. Indeed, only the lagged agricultural GDP is significant while the other variables are not. Thus, the agricultural GDP of the previous year allows the forecast of agricultural GDP for the current year with a coefficient of 0.96 unit.

Given the weak results of the VAR model, causality tests are not justified. Nevertheless, to get an idea of the effect of AFDI on agricultural economic growth, we adopt the ordinary least squares (OLS) method. Table 4 gives the results obtained from the linear logarithm model.

Table 4: Agricultural GDP OLS regression results

Variable	Coefficient	Std.Error	t-statistic	Prob
LnIDEA	0.167247	0.044390	3.767631	0.0015*
C	10.49138	0.220811	47.51294	0.0000*
R2	0.455			
R2 Adjusted	0.423			
F-Statistic	0.001*			
D-W	0.448			

The estimated model is globally significant (Prob F-statistic <0.05) and accounts for 42% of the total variability in economic growth in agriculture. Thus, agricultural FDA flows are significant and positively affect agricultural GDP with an elasticity of 0.17. We, therefore, conclude that agricultural FDI is a relatively weak determinant of economic growth in Moroccan agriculture, but at a level that remains significant.

8. Conclusion

In this paper, we tested the interaction between FDI, economic growth and foreign trade via the Granger causality test, applied to the VAR Model during the 1973-2014 period in Morocco. The obtained results show that economic growth causes FDI, while FDI does not contribute directly to economic growth. In addition, exports and imports cause GDP, which underlines the crucial role of trade openness in improving economic growth. Also, a very important unidirectional relationship between imports and exports has been detected, since imports are causing exports. However, exports fail to cover imports, resulting in a chronic deficit trade balance. This means that imports of capital and intermediate goods should be encouraged to boost Moroccan exports.

On the other hand, despite its importance in the national economy, agriculture did not attract significant capital from FDI before 2013. This is mainly due to three factors. The first underlines the lack of a strategy to promote agricultural FDA, before the launch of the Green Morocco Plan in 2008 and the establishment of public-private partnerships for investment in the agricultural sector. The second factor would point towards the low profitability of the agricultural sector, as it is often raised by foreign investors. The last reason relates to the issue of land ownership in rural areas, which is still constraining the attraction of FDI, in particular because of the prohibition of agricultural land appropriation by foreigners in Morocco.

These findings have challenged us to study the effects of FDI on economic growth in the agricultural sector, but the results from the application of the VAR model on data for the 1994-2016 period are neither robust nor significant. Indeed, agricultural GDP is explained only by its values from the previous year, while agricultural FDA, agricultural exports and agricultural imports do not explain the future change in agricultural GDP. However, the regression of agricultural GDP on agricultural FDI, using ordinary least square approach, is statistically significant with a small elasticity of 0.17%.

These results open a research debate into the issue of FDI attractiveness, especially in the agricultural sector as a key component of the

Moroccan economy. It is a question of further consideration into the strategies and means that have to be used to diversify the sources of FDI and to encourage only those investment projects with high potential in terms of technology transfer, productivity improvement of local businesses and job creation.

This means that policy makers would have to i) review the policy of encouraging FDI as an economic growth promoter, ii) further encourage any policy aimed at promoting exports, in order to attract FDI from country partners, particularly from the European Union; and (iii) work towards the diversification of FDI country providers, in order to avoid the risk of shrinking capital from the main suppliers, notably France and Spain.

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The Euro-Mediterranean Network for Economic Studies - EMNES is a network of partners and associates research institutions and think tanks working on the Mediterranean region. EMNES aims to provide a renewed vision for socio-economic development in the Mediterranean region, mainly focusing on employment creation, social inclusion, and sustainable development.

EMNES areas of research include the role of institutions and institutional reforms, macro-economic policies, private sector and micro, small and medium sized enterprises and employment creation, role of education, innovation, skill mismatch and migration, finance, regulation and the real economy and regional integration.

EMNES will produce books, studies, scientific and policy papers and will disseminate through the organization of annual conferences, and workshop meetings in the region bringing together leading senior and junior researchers, academics, policy makers and representatives of the civil society to discuss and debate optimal policies for the future of the region.

EMNES is built on four core principles: independence, excellence, policy relevance and deep knowledge on Euro-Mediterranean affairs.

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