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RESEARCH ARTICLE

The attracting factors of Foreign Direct Investment: Tunisia's cause after the revolution

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Abstract

The objective of this article is to identify the attracting factors of Foreign Direct Investment (FDI) in Tunisia after the Jasmine Revolution. Therefore, to examine the determinant of FDI in this period, a survey was administered to a sample of foreign companies or with foreign participation.. We estimated the probability that foreign firms implant new filial in Tunisia after the revolution, using the econometric model of "logit". The results show that Tunisia is still an attractive country by the presence of the main attractive determinants as well as the qualified human resources, the low labor's cost, geographical proximity, and the infrastructure. As regard the factors of political and economic stability, they aren't the attractively factors for FDI after the revolution.

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INTRODUCTION

The attracting territory's issue is at the center of the major concerns in both developed countries than in developing countries. For example, several states are encouraged to develop their territory in order to attract the maximum participation of foreign firms.

In recent decades, Tunisia has embarked on the path of gradual integration into the world economic processes. The country was able to achieve an upgrade program, designed to achieve several objectives including taking an economic policy of opening to the outside world. So, attracting FDI has become a primary objective of the Tunisian government.

Until 2010, the country was considered an example of success in terms of attracting direct foreign investment with open policies and its political and economic stability. However, since the revolution of 2011, the country's stability has changed dramatically.

In fact, we found that FDI flows to this country becomes disappointing compared to the flows recorded before the Jasmine Revolution.

So the purpose of this article is to determine the factors attracting FDI Tunisian territory after the revolution. The remainder of the article is organized as follows: section 2 presents a review of the literature on the theoretical approach to the region's attractiveness and the FDI's determinants. Section 3 investigating the econometric estimation of attracting factors in Tunisia in the period after the revolution. Section 4 concludes.

1. The theoretical basis of the attractiveness of the territory and the determinants of the FDI's location : a literature review

The attractiveness of the territory is a major challenge for economic policy in the context of globalization. The abundant literature shows the existence of several analysis that can explain the attractiveness of regions. The latter can be defined generally as a set of various economic, institutional and fiscal policies that the state has developed to make region more attractive and generate even more incoming investment.(Hatem F, 2004).

Other definitions can be advanced to the attractiveness: the ability of a nation to attract investors, particularly the ability to provide a permanent installation in the host country. The importance of this concept has led most countries to engage in competition to become more attractive, relative to other nations by providing all the necessary conditions for the establishment of foreign investors.

This highlights the indispensability of local performance to ensure the stability of the installation of foreign firms. For this, the foreign investors must control all "the necessary conditions and preconditions" (Michalet (1999)), in order to make the choice of their establishment installation.

According to the author (Michalet (1999)), the "necessary conditions" for attractiveness can combine the size and growth rate of the market, the availability of qualified human resources, the presence of performance local firms and the availability of a system communications and telecommunications to facilitate contact between the parent company and its foreign subsidiaries, While the "preconditions" include the stability of macro-policy framework and macro-economic framework.

Sekkat and Végazonès-Varoudakis (2004) used the panel data on a sample of 72 developing countries in order to identify the main factors of attractiveness in these countries. They found that political and economic reforms carried primarily on the exchange rate, trade liberalization and investment climate are the key factors of attractiveness. The results found in the MENA region (Algeria, Syria, Egypt and Iran) show that the attractiveness of these countries is rather low due to the delay of political and economic reforms in the region. Other countries such as Jordan and Morocco have several reforms, but despite their efforts, they are considered less attractive for FDI compared to the countries of East Asia. Finally, the authors conclude that in order to attract the maximum number of foreign companies, the countries are obliged to adopt more interesting political and economic reforms than those adopted in the countries of the East Asian.

According to Ayachi and Berthomieu (2006), the MENA region cannot achieve a high level of FDI attraction despite the various reforms adopted in these countries. Indeed, the authors found that the main attracting factors for FDI received in Europe are good governance, infrastructure, market size, agglomeration effect and distance.

The empirical study of Brainard (1997), based on American data, show that the main determinants of the location of American companies overseas are the level of tariffs, the economies of scale and transport costs. While other study of Markusen and Maskus (1999), based on the same data, confirms the positive correlation between the location of these companies and the size of the host country. For the difference in size of countries and the relative difference in qualifying labor, no longer, appear to be the determinants of the location of American companies abroad. The empirical study of Gao (2003), based on OECD data, also showed that the location of firms abroad is related to the market size and per capita income between the host and the investor country.

Other author, such as Charzat (2001) suggests that attracting FDI is related to several factors such as:

- Promoting the image of the host country by facilitating for example: the international exchange of this country, simplifying the administrative formalities and also by enabling the communication between foreign investors and host country.
- Strengthening the assets of the host country (by strengthening research and innovation as well as the training system ...)
- Ensure fiscal framework adapted to the implementation of foreign companies and their development.(recast).

Oman (2000), has distinguished between two different attracting policies: policies based on fiscal and financial incentives and policies based on rules such as infrastructure, market size, quality of labor, economic and political stability of the country...

Other studies have tried to show the main reasons that justify the attracting policy. Moreover, the study of Dunning and Narula (2000) presents those reasons to emphasize the importance of attractiveness of a developing country for FDI. In fact, the developing countries are unable to acquire new technologies through foreign market for reasons

principally related to the increased costs of acquiring new technologies and to the lack of domestic capital in these countries.

According to these authors, the second reason is related to market liberalization, which can promote the localization of multinational firms in these developing countries. The last reason is the importance of knowledge intensive capital in the development of the industry of the host country.

After presenting the different studies that explain the concept of attractiveness and the main determinants of the location of FDI, we expose a special case of Tunisia by identifying the key incentive policies and the various factors of attractiveness to FDI in this country through econometric estimation.

2. Econometric estimation of attracting factors in Tunisia after the revolution :

The purpose of this empirical analysis is to identify the determinants' attracting in Tunisia after the revolution using an econometric model based on the data from our survey conducted in a seventy companies.

2.1. Methodology and presentation of the model and variables:

In order to identify the main attracting factors of FDI in Tunisia, we conducted a survey through a questionnaire. This survey involved seventy companies with foreign participation of French origin, German, Italian and Belgian (Bannour, 2013).

In a first step, the ACM method (Multiple Correspondence Analysis) was used with SPSS.11 and SPSS.19 software. Indeed, the use of this method can be explained by the presence of nominal qualitative nature of most of the variables used in the sample. In addition, the large number of variables that exist in this study makes it necessary to use this method, which aims to reduce that number to a smaller number of factors. This is in order to facilitate the reading of the results, and also facilitate the detection of different relationships and existing links between qualitative variables.

The present work has provided 17 qualitative variables to assess the attractiveness of FDI in Tunisia. Because of the small size of the sample, this number is considered important to be introduced into an econometric model. For this, we will use the ACM method described in the previous paragraph.

After identifying three dimensions based on cumulative percentages of inertia, we retain in each of these axes the most important modalities that are strongly correlated with these axes.

Table 1 : Discrimination Measures

	Dimension			Average
	1	2	3	
- The low cost of labor	,230	,008	,012	,083
-Political instability	,052	,068	,441	,187
-Macroeconomic instability	,001	,001	,202	,068
-Legislation and judicial system	,011	,055	,239	,101
-The proper infrastructure	,329	,011	,068	,136
-The supply of skilled labor	,038	,430	,002	,156
-The importance of the market size	,254	,108	,045	,135
- The cost of transport	,062	,029	,050	,047
-Tax Benefits	,008	,028	,012	,016
-The source of raw material	,023	,022	,024	,023
-The proximity to the European market	,042	,463	,084	,196
-The existence of natural resources	,000	,023	,022	,015
-The existence of an advanced technology	,180	,083	,102	,121
-The existence of business relationships	,096	,038	,068	,067
-Easy access to other markets	,131	,180	,042	,117
-The free transfer of capital	,006	,002	,102	,036
-The administrative formalities	,060	,019	,311	,130
Total assets	1,523	1,577	1,826	1,642

Source : SPSS.19 software

According to the table it is evident that the first axis is correlated primarily with three factors which are: the proper infrastructure, the importance of the market size and the low cost of labor. We name this axis "market factors / infrastructure / the labor cost".

Only two variables are correlated with the second axis. These variables are the proximity to the European market and the supply of skilled labor which constitutes the axis named "proximity factors / supply of labor". Then in the last axis, it consists of four significant variables are: the political instability, the administrative formalities, the legislation and judicial system and finally the macroeconomic instability. We name this axis "instability factors / legislation / formalities".

Finally, we retained only those variables that are highly correlated with the three axes that are identified as follows:

- "market factors / infrastructure / the labor cost"
- "proximity factors / supply of labor"
- "instability factors / legislation / formalities"

To identify the attracting determinants of FDI for Tunisia after the revolution, we use the "logit" model. This linear regression model will study the probability that the foreign firm implements another subsidiary in Tunisia after the revolution.

Thus, the model is presented as follows:

$$Y_i = f(X_i, \alpha_i)$$

Y_i :the variable to be explained or to be predicted

X_i : the explanatory variables

f : the logistic distribution function

α_i : the vector of function parameters

$$(Y_i = f(X_i, \alpha) = \frac{e^{(X_i, \alpha)}}{1 + e^{(X_i, \alpha)}} = \frac{1}{1 + e^{-(X_i, \alpha)}} = \frac{1}{1 + \exp(-X_i \alpha)})$$

Thus

$$p_i = p(Y_i = 1) = f(X_i, \alpha_i)$$

$$\text{prob}(\text{implant} = 1) = \gamma_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \varepsilon_i$$

- prob (implant): this dichotomous variable will define the probability that the foreign firm implements another subsidiary in Tunisia in the period after the revolution. It will take the value 1 if the firm will create another subsidiary and 0 if not.
- The X_1 variable: this variable represents all the factors of the importance of market size, proper infrastructure and low cost of labor. One expects a positive sign of this variable.

$$X_1 = \{\text{marketsize}, \text{infrast}, \text{laborcost}\}$$

- The X_2 variable: this variable includes two factors: the geographical proximity to the European market and supply of skilled labor. It also expects a positive sign of this variable.

$$X_2 = \{\text{proximi}, \text{supplylabor}\}$$

- The X_3 variable: This variable represents all the factors of political instability, macroeconomic instability, the legislation and judicial system and the administrative formalities. It is expected a negative sign for this variable.

$$X_3 = \{\text{politicalinst}, \text{macroeconomicinst}, \text{legislat}, \text{adminforma}\}$$

2.2. Empirical Results :

In this section, we present and interpret the empirical results. The first, second and third explanatory variables have been named respectively as follows: factX1, factX2 and factX3.

According to the summary table, we can identify the meaning of the model. So according to this table, we can see that the value of R^2 of Cox & Snell and Nagelkerke are high (34.7% and 85.5%), which shows that the model is significant. We can also consider that the model fits the data given the interesting value of R^2 of Cox & Snell and Nagelkerke.

Table 2 : Model Summary

Model Summary			
Step	-2 log-likelihood	R^2 of Cox & Snell	R^2 of Nagelkerke
1	66,491	,347	,855

Source : SPSS.19 software

Also in this table, we note that the value of 2log-likelihood is not very high (66.491). So we can conclude that the estimated model is a perfect model.

Table 3: Test of Hosmer-Lemeshow

Test of Hosmer-Lemeshow			
Step	Chi-square	ddl	Sig.
1	4,169	8	,842

Source : SPSS.19 software

According to the Table of test of Hosmer-Lemeshow, we check if the specified model is good or bad. This model fit test is based on two hypotheses:

H_0 : a good fit

H_1 : a poor fit

Accepting H_0 where the significance is greater than the 5% threshold. Otherwise, we reject this hypothesis.

Note that the results of the test of Hosmer-Lemeshow shows that the significance of chi-square is 84.2%. Thus, we accept H_0 in the 5% threshold, so the model fit is good. We can also notice that the difference between the observed values and the values predicted is in the order of 4.169, which is a low value. This implies that the difference between the two values was not significant. So, we can conclude that the model is well calibrated.

In conclusion, the logistic model significantly predicted probability that the foreign company implements another subsidiary in the territory of Tunisia after the revolution.

In what follows, we present the econometric results of the logit model in the table of variables in the equation.

Table 4: Variables in the equation

		Variables in the equation					
		B	E.S.	Wald	ddl	Sig.	Exp(B)
Step 1(a)	factX1	3,850	1,800	4,578***	1	,001	17,005
	factX2	3,292	1,779	3,424***	1	,005	3,187
	factX3	-2,382	2,576	,855	1	,355	,092
	Constant	-7,197	4,750	2,296	1	,013	,001
a Variable(s) entered in step 1: factX1, factX2, factX3. *, **, *** significant at 10 %, 5 %, et 1 % level							

Source : SPSS.19 software

The econometric result shows that the variable factX1 is positively related to the probability of introducing another subsidiary in Tunisia after the revolution (the coefficient B is in the order of 3.850). This variable has a positive effect, which predicts the studied probability, and at the same time it is significant at 1%. The positive sign is expected since the factors that form this variable are: the importance of market size, the proper infrastructure and the low cost of labor. Indeed, the importance of market size is an attractive asset for the host country as it reflects a high GDP that attracts foreign investors. Then, the proper infrastructure is considered an important determinant for the attractiveness of FDI in several empirical studies. Thus, a good infrastructure reduces transaction costs, which encourages foreign investors to locate in the host country. Finally, the low cost of labor also attracts foreign firms who are always looking to take advantage of their location and reduce their expenses through the low labor costs.

As regards the second variable factX2, its relationship with the dependent variable is positive (the coefficient B is in the order of 3.292) and significant at the 1% level. So this variable predicts the probability that the foreign company creates another subsidiary in Tunisia after the revolution. Therefore, the influence of the variable factX2 on the probability studied is positive and significant. This result is expected given the factors that constitute this variable. Indeed, geographic proximity to the European market is an essential determinant for the attraction of foreign investors who are mostly of European origin. So this is an advantage for Tunisia to be an attractive area. In addition, the supply of skilled labor (the second factor constituting the variable factX2) is considered a main support for Tunisia to attract FDI. Moreover, the foreign investors are encouraged to settle in a country with a skilled human capital.

Then on the last variable factX3, it is not significant. This result is expected since we can confirm that the situation (political and economic instability) experienced by Tunisia after the revolution does not encourage foreign investors to settle in Tunisia. So the more volatility increases the more probability that foreign company set up another subsidiary decreases. In addition, the legislation and judicial system seem to have a negative and insignificant effect on the probability of creating another subsidiary.

According to the estimation results, we could identify this regression model as follows:

$$Y_i = -7,197 + 3,850 X_1 + 3,292 X_2 - 2,382 X_3 + \varepsilon_i$$

However, the results of the econometric estimation requires an analysis of the correlation between variables to see if there is a presence or absence of multicollinearity between these variables.

Table 5 : Correlation matrix

Correlation matrix					
		Constant	factX1	factX2	factX3
Step 1	Constant	1,000	-,600	-,454	-,502
	factX1	-,600	1,000	,011	-,162
	factX2	-,454	,011	1,000	-,100
	factX3	-,502	-,162	-,100	1,000

Source : SPSS.19 software

These coefficients of the correlation matrix shows the influence variables have on each other. It may be noted that the variables factX1 and factX3 are weakly correlated (correlation coefficient is -0.162). Similarly, the variables factX2 and factX3 are negatively correlated (correlation coefficient is -0.1). While for variables factX1 and factX2 they are positively correlated with a very low correlation coefficient (0.011). So we can see that in this model there is no strong correlation between the explanatory variables that this could bias our econometric results.

In conclusion, the determinants of the attractiveness of Tunisia after the revolution were identified using the investigation of a seventy companies. So, the main factors that increase the probability that a foreign company implements another subsidiary in Tunisia after the revolution are the following:

- The importance of market size
- The proper infrastructure
- The low cost of labor
- The supply of skilled labor
- The proximity to the European market

3. CONCLUSION:

Tunisia has made great efforts to be attractive to FDI by engaging in the process of gradual integration into the global economic system. However, the country has experienced a Jasmine Revolution that brought the Tunisian economy in a difficult context.

As part of this work, we studied the factors of attractiveness of Tunisia through a survey of a sample of foreign firms. The estimation results have allowed us to identify the determinants of the attractiveness of Tunisia after the Jasmine Revolution. Thus, the attracting factors that have encouraged foreign companies to set up another subsidiary in Tunisia after the revolution are the following: the importance of market size, the proper infrastructure, the low cost of labor, the supply of skilled labor, the proximity to the European market.

Finally, we can notice the absence of the factors of political and macroeconomic stability among the attracting factors for the period after the revolution. This is justified by the instability of the economic and political situation of Tunisia, which provided a favorable climate for the insecurity and uncertainty. All these conditions discourage foreign investors to invest again in Tunisia and even many of them regretted to have invested in this area.

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