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The Contribution of Transport in the Attractiveness of Foreign Direct Investment and the Accumulation of Tunisian Public Capital

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ABSTRACT

In this article, we tried to determine the role of transport in the accumulation of Tunisian public capital. Theoretically, it is very rare to find works that examine the direct link between the public capital accumulation and transportation. In our work, we treated the issue through foreign direct investment. For econometric modeling, we studied the different relationships that may exist between transport, foreign direct investment and the public capital accumulation. The empirical study focuses on a period of 38 years (1975 - 2012). Applying the method of least squares, we found that the attractiveness of FDI, favored by efficient transport systems, participate effectively in the accumulation of the Tunisian public capital. The latter will have, subsequently a more advantageous participation in the economic growth of Tunisia in the long term.

Keywords: *Transport Infrastructure, Foreign Direct Investment, Public Capital, Endogenous Growth, Tunisia.*

1. INTRODUCTION

According to endogenous growth theory, human capital, technological capital and public capital are the most important factors of growth in the long term (Romer, 1986, 1990; Lucas 1988; Barro, 1991; Barro and Sala-i -Martin, 1995; Grossman and Helpman, 1991). In this same framework, Borensztein et al. (1998); Berthélemy and Demurger (2000); Baldwin et al. (2005) found that the FDI represents an interesting channel that effectively ensures the accumulation of different capitals. Also, they showed that FDI can stimulate the economic growth through their contribution in increasing the knowledge of stock in the host country. Indeed, FDI actively participate in the creation of dynamic benefits leading to the transfer of technology, human capital accumulation and increased public capital (Bende et al 2000; OECD, 2002).

In the present article, we will try to evaluate the role of transport in the accumulation of the Tunisian public capital. Theoretically, it is very rare to find works that examine the direct link between the accumulation of this capital and transportation. In our work, we will treat the issue through the FDI channel. In other words, we want to know if the Tunisian investments in the public transport sector promote the capital accumulation mainly through the channel of foreign direct investment.

The present work is formed by a first theoretical section in which we will discuss the role of transport in economic activity and its contribution in improving the territorial attractiveness of Tunisia in terms of FDI. In the same section, we will study the relationship between the presence of the MNC in a host country and the accumulation of different capitals. Also, we have an empirical part, in which we used a time series of 38 observations. By applying OLS method, we will try to study the participation of transport systems with a high added value in the accumulation of Tunisian public capital through the FDI received by Tunisia during the period of study from 1975 to 2012.

1.1 The Role of Transport in the FDI Attractiveness

The transport has important functions in the global economic world. It is a key factor of globalization that enables businesses and individuals to take advantage of this phenomenon. Practically, companies and individuals can especially benefit from globalization when the transport networks are efficient and profitable. Specifically, the role of physical transport infrastructures becomes more important if their quality becomes higher. Brainard (1997) found that the costs of transportation, customs duty and economies of scale help the American companies to increase their investments abroad.

Today, in a world where competition is becoming increasingly serious, companies need to procure the raw materials at the best conditions. Also, they work to achieve the delivery of their products under the right conditions (time, cost and quality). For them, transportation is a key determinant of competitiveness. Despite the long distances and the various problems encountered during supplies and also to make distributions, their offers must be competitive with those of competing firms. Several theoretical studies confirm that FDI is more attracted to areas where transportation systems are more efficient (Coughlin, Joseph and Arromdee 1991; Loree and Guisinger, 1995). For this reason, MNCs integrate transport into their activities and regarded it as a production factor at the same importance as the human, financial and technological capital. Also, they treat them as a key determinant of the new localization.

For host countries, a good functioning system of freight transport is a cornerstone of a successful economy with good attractiveness of MNC. Fluidity of transport and profitability of flows are closely related. This fluidity is dependent on the efficiency of loading, unloading and transhipment carried out in the terminals, the reliability of the vehicles, the number of stops peppering routes and the degree of use of intelligent transport systems. Anything, that interrupts the flow lengthens the duration and adds costs generates negative repercussions on equipment rotation. Conversely, anything that fluidifies and shortens them tends to reduce costs and improve equipment rotation.

It should be added that, for multinational companies (MNCs) and domestic firms, their operations are largely dependent on the capacity and quality of transport infrastructure especially those providing international transport. In addition, Zhou, Delios and Yang (2002) explain that the transport infrastructure is directly related to the nature of production, which requires the availability of roads, railways, ports and other installations for operational efficiency. Also, with the increasing competition, companies are seeking to distinguish themselves by some of their offers. They choose to be located near ports and well equipped logistics areas to ship their products in the best conditions.

Currently, the modern economy depends on a qualified labor force and flexible production strategies called "just in time". In the context of globalization and integration of markets, strengthening the competitiveness of enterprises and regional clusters and networks requires efficient, competitive and connected transportation systems. Minimizing the supply and delivery deadlines increases the competitiveness of firms. For Bouinot (2010) "The location of a factory near the national network facilitates the production processes and completes the forms of accessibility."

1.2 FDI and Endogenous Growth Generators: Interdependence and Causality

In 1957, Solow tried to give us a complete explanation to the growth theory. He spoke of a third factor of the economic growth next to capital and work that is called technical progress. But Solow cannot explain it in a complete and clear manner. Thereafter, the endogenous approach leaders Romer (1986, 1990), Lucas (1988), Barro (1991), Barro and Sala-i-Martin (1995) and Grossman and Helpman (1991) give several economic explanations for the technical progress recently introduced by Solow. They argue that growth is a phenomenon assimilated to self-sustain by the accumulation of four main factors: technology, physical capital, human capital and public capital.

Generally, physical capital is defined as equipment in which a company invests to product goods and services. From this definition, Romer (1986) renewed the analysis by proposing a model that is based on the phenomenon of externalities between firms. He showed that when a company increases its physical capital, it contributes to improving that of other companies. Thus, endogenous growth assumes that FDI help industrial fabric of host countries to acquire new technologies capable to increase their productivity.

Another explanation of this phenomenon resides in the fact that investment in new technologies is the starting point for new learning by doing. Indeed, once the MNCs have introduced new machines in their production lines, they have to increase employee skills that will promote the engineering.... Practically, the MNC cannot prevent diffusion of this new technology to domestic firms. In this sense, the endogenous theory assumes that investment in physical capital acts directly on the productivity of foreign and local firm, it also acts indirectly on the technical progress.

Concerning the technological capital, many empirical studies show that a transfer of MNCs technology to local firms becomes faster through trade and foreign investment. In recent decades, it becomes a real catalyst for growth in the host countries. However, the relationship between technology transfer and FDI is more complex than it appears. This complexity is due, mainly but not exclusively, to the close link between FDI and characteristics of the host country. It is essentially the host country's responsibility to provide transparent general conditions capable to enhance investment and strengthen human and institutional capacity needed to ensure that foreign capital flows can have real effects on growth.

In the same vein, endogenous growth theory studies the accumulation of human capital in developing countries. This was demonstrated for the first time by the studies conducted by Lucas (Nobel Prize in 1995). Blomström and Kokko (2003) emphasize the relative importance of MNCs on training the workforce in developing countries. They see that MNCs stimulate developing countries to invest more in human capital. For them, if the role of MNCs is a bit marginal on primary and secondary education, skilled labor demand by MNCs can encourage governments to invest in higher education.

Also, there are other channels through which FDI can improve human capital in developing countries. Indeed, the skills acquired by working in a foreign company can take an unquantifiable form, it is obviously tacit knowledge, that is to say, difficult to codify and develop. The best way to transmit them is by demonstration and experience. "In addition, tacit knowledge is difficult to exchange over long distances. The best way for developing countries to acquire knowledge content in the production process of the most

developed economies could be the presence of foreign enterprises in the national economy "(OECD, 2002).

The role of public capital as a factor of economic growth has remarkably evolved over the past decades. Also, the special role of the capital in the FDI attractiveness is well studied theoretically. In a given host country, the private capital performance is directly determined by the availability of an efficient public capital. Indeed, it contributes to the development of regional attractiveness of FDI. Also, we can say that public capital is an important element for the functioning of MNCs and domestic firms. To attract more FDI, developing countries have worked to develop their public capital. They give more importance to physical infrastructure and especially those of transport. In the same vein, the arrival of foreign companies requires a public capital with high performance. In this sense, public spending has risen significantly for the development of public capital available to all companies.

According to the theories of endogenous growth, physical capital, human capital, technological capital and public capital are the factors that explain in a large part the long-term growth of nations. Also, some authors have shown that FDI entering a country can effectively promote the accumulation of capital. They say the massive arrival of MNCs can help host countries to improve the qualities of different capitals. In the next part, we will try to clearly express the relationship between the Tunisian public capital and the volume of FDI entering Tunisia. Our application is to check the nature of the relationship that may exist between the two variables. The data used are from the World Bank database over a period of 38 years.

1.3 Effects of FDI on the Accumulation of Public Capital: Empirical Study

In recent years, the debate on the impact of public capital on economic growth had an exceptional magnitude. It resulted in a high number of theoretical analysis and empirical studies. Also, it has important practical implications in terms of economic policy decisions in industrialized, in transition and developing countries. Several theoretical studies talk about the importance of public investment in basic infrastructure and they consider it an improvement factor of productive performance of the private sector.

For an estimation of an expanded function of productivity to the public capital, Aschauer (1989) focused on the role of the latter in the slowdown in American productivity from years 70. Thereafter, public spending becomes a main component of the various studies which seek to determinate the factors of self-sustained gains in productivity and endogenous growth. In our econometric equation, we try to give a clear study of the relationship between the performance of public capital presented by the total number of routes in Tunisia, the flow of FDI and the transport. The model is in its log-linear form following:

$$\ln(KP_t) = \beta + \alpha_1 \ln(GDPC_t) + \alpha_2 \ln(FDI_t)$$
$$+ \alpha_3 \ln(URB_t) + \alpha_4 \ln(EXP01_t)$$
$$+ \alpha_5 \ln(TRSP_t) + \alpha_6 \ln(INV_t) + \varepsilon_t$$

With

KP_t: variable to be explained,
X_t: vector of explanatory variables,
ε_t: classical error term.

In this work, we will use economic variables that have been widely introduced in previous research works. In the following table, we present the variables and methods of calculation.

Table 1: Endogenous and Exogenous variables.

	Variables Presentation
KP	Public capital: total number of kilometers of roads in Tunisia.
GDPC	Gross domestic product per capita.
FDI	Foreign direct investment in current dollars.
INV	Domestic Investment: gross fixed capital formation.
EXP01	Export of goods and services.
TRSP	Transport service:% of exports of commercial services.
URB	Urbanization level: Urban population as a percentage of the total population.

2. ECONOMETRIC ANALYSIS

2.1 Study of Series Stationarity

The stationarity test is a necessary step to avoid spurious estimations. The Dickey-Fuller test (ADF), the Phillips-Perron (PP) test and the KPSS test are the usual tests most used to verify the stationarity of different series. In our estimation, we use the Dickey-Fuller test increased and the Phillips-Perron test.

By using the ADF and PP test, the recorded results of the unit root test (Table 1, Appendix 1;) show that all variables are non-stationary in levels. But, at first differentiation variables (KP, GDPC, FDI, TRSP, INV, EXP01 and URB) become stationary in first differentiation, so integrated at order 1.

2.2 Cointegration Test

As to econometric methods, estimations in first differences are challenging the results in levels. Cointegration is a more satisfactory approach, despite a high sensitivity to the specification of individual effects. According to the ADF and PP tests, the variables in our model are integrated in the same order, so we can use the Johannsen test. The later helps to check whether there are long-term relationships between public capital and the explanatory variables in our model. According to the Johannsen approach, the cointegration test is in two parts: trace test and eigenvalue test.

The trace test is based on a null hypothesis accepted if the given probability is greater than 5% and the critical value is greater than the calculated one. In our case, we must reject H_0 if r = 0 and r = 1. When r exceeds one, we can say that there are no long-term relationships between the variables (Table 2 appendix 1).

Also, the eigenvalue test follows the same principle as the trace test. A null hypothesis accepted if the probability found is greater than 5% and if the calculated maximum eigenvalue is less than the critical value. For this equation, the cointegration test using the method of Johannsen confirms the presence of long-term relationship between the Tunisian public capital and between exogenous variables (GDPC, TRSP, FDI, EXP01, URB) as we have r ≤ 1 (table 3, Appendix 1).

2.3 Causality Test

The OLS regression, that has just been analyzed, assumes the exogeneity of variables and the cointegration test shows the presence of a long-term relationship. But the two tests provide no indication of the existence and the direction of possible causality between the independent variables and the endogenous variable (public capital). However, we can think that if the volumes of FDI, the transport services offered by Tunisia for the foreign investors and GDP per capita determine public capital, as postulated by our theoretical framework using a Cobb-Douglas production function, public capital can also influence them in return.

Several explanations may justify this relationship; an additional demand effect of public capital indicates that the economy is growing. In the opposite direction, when GDP increases public expenditure dedicated to transport may increase too. An evolution of public capital encourages foreign and domestic investment and the development of investment helps to improve public capital. It is therefore necessary to rigorously test the statistical causality between the most important variables in our specification. The causality between the stock of public capital and other exogenous variables in our model (exp01, urb and inv) is also tested.

Table 2: Causality test

Null Hypothesis :	Obs	F-Statistic	Prob.
Pairwise Granger Causality Tests Sample : 1975 2012 Lags : 2			
IDE does not Granger Cause PIBT	33	6.05205	0.0194**
PIBT does not Granger Cause IDE		4.00146	0.0303**
KP does not Granger Cause PIBT	33	4.25614	0.0257**
PIBT does not Granger Cause KP		4.00843	0.0290**
KP does not Granger Cause IDE	33	5.24544	0.0201**
IDE does not Granger Cause KP		3.11595	0.0350**
TRSP does not Granger Cause IDE	33	4.77674	0.0206**
IDE does not Granger Cause TRSP		3.18724	0.0344**
TRSP does not Granger Cause KP	33	4.88157	0.0204**
KP does not Granger Cause TRSP		5.52002	0.0198 **

* H0: no causal relationship.   ** Null hypothesis rejected.

Table 2 gives the Fisher values of classical causality test of Granger, applied to the series of KP GDPC, INV, URB, TRSP, FDI and EXP01 with two lags. After a first reading, it appears to us that the public capital in Tunisia is influenced significantly by economic growth. Indeed, when the Tunisian GDP undergoes a positive change, government spending increase by turn, which promotes the quality of transport infrastructure. Another causal relationship is justified between public capital and the urbanization rate in Tunisia, also between public capital and investment (foreign and domestic) and exports. Table 2 allows us to say, following a second reading, that public capital has different impacts on other variables. A significant impact on the urbanization rate, investment, GDP per capita on transport services provided to investors, but the effect on exports is a little weak after the statistical values of Fisher.

The nature of causality between the different series requires, as suggested Hulten (1994), the implementation of a growth model in the form of a time series consisting by 38 observations and six exogenous variables can capture the all existing interactions between variables

2.4 Economic Interpretation of Results

The model is in the following logarithmic form:

$$\ln(KP_t) = \beta + \alpha_1 \ln(GDPC_t) + \alpha_2 \ln(FDI_t) + \alpha_3 \ln(URB_t) + \alpha_4 \ln(EXP01_t) + \alpha_5 \ln(TRSP_t) + \alpha_6 INV_t + \varepsilon_t$$

With
KP_t: variable to be explained,
X_t: vector of explanatory variables,,
ε_t: classical error term.

The explanatory effect of our model, its significance and other informations are given in Table 3:

Table 3: Estimated equation of the public capital

Dependent variable: public capital (KP)				
variables	coefficient	Std.error	t-statistic	prob
C	-0.221057	0.154407	-1.431648	0.1623
LOG(GDPC)	0.237266	0.121925	1.946001	0.0221**
LOG(INV)	1.263639	0.295633	4.274358	0.0002*
LOG(URB)	1.076827	0.274232	3.926706	0.0004*
LOG(TRSP)	10.90254	2.846337	3.830376	0.0006*
LOG(FDI)	0.063972	0.020786	3.077582	0.0043*
LOG(EXP01)	0.386718	0.109093	3.544835	0.0013*
R-squared	0.882066	Durbin-Watson stat		1.714610
F-statistic	12.53	Prob(F-statistic)		0.000000

* Significant at 1%   * * Significant at 5%   *** Significant at 10%

With a coefficient of determination equal to 0.88, the model is significant and can provide us considered information. Concerning the coefficients of exogenous variables, a first reading shows that all variables affect the stock of public capital and have significant coefficients with different threshold (1%, 5% and 10%).

In 2012, Tunisia achieved an urbanization rate of 66.53% equivalent to more than seven million people in the cities. So it is essential to upgrade the capacity of cities to accommodate the growing number of inhabitants. In this context, the values of t-statistics (3.926) and p-value (0.0004) relating to urbanization are statistically significant. Because of a difference in size of cities in Tunisia, we find that the state is obliged to follow a long-term strategy to balance the level of inhabitant number in the cities. So, we see that the public expenditure on the construction of new transport infrastructure is increasing in both cases (in cities and in rural areas). The productive character of public capital also involves externalities that it generates in the regions. This result shows the importance of focusing on spatial externalities which public capital (public infrastructure) may be the source and allows us to reconsider in a new way the question of regional development. Our result confirms those given by a large literature that emphasizes the relationship between increasing rates of urbanization and the extension of transport networks.

Also, it should be noted that the relationship between the quality of transport services and public capital is statistically significant according to a t-student equal to 3.830. The associated probability shows that this relationship is significant at the 1%. Theoretically, a large literature has treated this relationship and confirmed the considered influence of transport on the public capital performance (Holtz-Eakin and Schwartz, 1995). In Tunisia, the development of basic

infrastructure, especially those of transport, requires a well-observed government effort in recent years.

Currently, the road network covers 20 000 km and 360 km of highways, providing a good connectivity between regions and a respectable flow of goods between the different production areas. Concerning the rail transport, the national network includes 2 167 km allowing the annual transport of 2.1 billion tonne-kilometers of freight and 39.2 million passengers. In addition, increasing the capacity and quality of maritime and air transport services requires greater public spending helping to make public capital more powerful and efficient and offers a high quality service for the industrial sector.

Several studies have confirmed that the exports promotion requires a good physical infrastructure at the transfer points. In this sense, our econometric estimation gives a t-statistic of 3.544 and a p-value equal to 0.0013 indicating that the volume of Tunisian exports has a direct and statistically significant effect on public spending at 1% level and hence the public capital. The coefficient above zero shows that exports in Tunisia affect positively the public capital. In order to encourage MNCs to come to Tunisia, the national government tries to ensure better flow of goods required in ports. In fact, Tunisia has nine commercial ports in different coastal regions. They welcome about 7600 ships with maritime freight traffic from an average of 30 million tonnes.

Theoretically, it is well proven that MNC present in the host countries promote their exports and thereafter they cause the increase in public expenditure provided for building and equipping the exchange areas necessary for the execution of various operations. In the case of Tunisia, we come to confirm these findings with the values stored in the table three (t = 3.077, P = 0.0043). In recent years, the volume of FDI inflows in Tunisia increase with a rhythm more and weaker because of strong competition mainly from neighboring countries. To retain MNC currently operational in Tunisia and to attract other international investors, Tunisia shall provide for MNC, high quality of transport which can satisfy the smooth flow of goods between the different internal areas of production and with its regional and international environment.

In a first step, the Tunisian government ensures the physical infrastructure to meet their requirements in terms of transporting goods. For land transport, the state continues to improve quality of the road and rail transport. For international transport, Tunisia is still working to provide a smooth flow of goods imported or exported to any country in the world. In this case, trade with the European Union is the most important, which explains the high frequency of weekly regular shipping freight. In a second step, to attract more FDI, Tunisia offers to international investors a transport of people organized according to the requirements of international

standards in the field. The Office of Civil Aviation and Airports (2011) gives statistics on the average frequency of weekly flights organized in nine airports in cooperation with 138 foreign airlines companies serving Tunisia. Finally, the attractiveness of FDI requires public capital to be up to the expectations of the MNC in terms of quality of service and physical ability.

To attract MNCs, it is no longer acceptable to speak of transport infrastructure only. Recently, the awareness of the value of FDI in the economies of host countries has increased more competition. For this reason, a modern telecommunications infrastructure is an obligation and not a choice. In Tunisia, the telecommunications sector is one of the most dynamic and among those whose growth rate is the highest (15% in 2009) compared with countries in the neighboring area. This sector absorbs an amount that has increased from 5,302 million dinars between 2001 and 2006 to 6 300 million dinars between 2007 and 2011. In addition, the organization of the second phase of the World Summit on the Information Society "WSIS "in November 2005 highlighted the potential and opportunities of the investment in Tunisia in this high added value sector. In short, almost all branches of industry have a sustained growth, allowing the ICT share in GDP to reach almost 10% in 2009 against only 2.5% in 2002 and 9% creating jobs across the country.

At this level, Tunisia has set up a logistic function with high added value requested by the MNC necessarily. Also, the trade of a company with foreign partners remains sensitive to the logistical organization which has and which largely depends on adequate infrastructure provided by Tunisia. Nationally, an exporting economy cannot be competitive with poor logistics organization. Indeed, the very high logistics costs can destroy any export promotion policy.

Today, the logistics function not only affects the competitiveness of exporters, but it is also the basis of relocation decisions of foreign companies who are trying to settle in our country. For many years, it has focused on the advantage of labor cost to attract these companies. However, recent developments in the competitive environment have shown the limits of a strategy based primarily on the production costs. It is not only cheaper to produce, but also to be more responsive by controlling the time-to-market of manufactured products.

Besides production costs, investors focus more and more to the traffic costs of goods and information. What drives companies to control and optimize the various links of the supply chain with time, reliability and quality constraints that are becoming more stringent. Outsourcers progress to delivery "just in time" which translates to partners in a very short time; sometimes less than a week between order and delivery. Under the obligation to be competitive, Tunisia provides for MNC:

• A telecommunications network among the most modern networks in the Mediterranean region, high-speed multi-function switches which ensure same time telephone traffic, Internet and multimedia.

• A migration of the architecture of a network service to a broadband multi-service architecture.

• A fully digitalized telephone network that provides 100% coverage of the country.

• A fixed and mobile telephone density of 117.3 lines / 100 inhabitants in late 2010.

• 10 775 public telecommunication centers in late 2009 spread across all regions of the country.

• A wireless broadband network with experimentation of CDMA transmission technology as a solution for the expansion of the transmission network in areas inaccessible to the WIFI coverage for a number of districts of the capital.

3. CONCLUSION

To study the impact of FDI on the accumulation of public capital, we sought if government spending increases in the presence of MNC or on the contrary, they remain unchanged. In this work, we discussed the importance of public capital for the functioning of domestic and foreign companies. Also in order to improve its competitiveness, Tunisia is working to convince the MNC to invest more in its territory. It means that we must put in place an efficient and modern infrastructure with all the working mechanisms. In addition, to attract business to internal areas, Tunisia has a transport infrastructure that ensures smooth flow of goods between regions. So the entry of FDI helps the government to increase public spending to raise public capital performance. Indeed the transport network becomes wider and covers most of the territory. Also a maritime transport with bigger capacity helps to speed up the process of imports and exports of goods. Regarding the transport of people, Tunisia still trying to further improve the competitiveness of its airlines.

The results obtained in this work allow us to say that transport infrastructure with good quality represents a key factor of FDI. Indeed these infrastructures affect business localization and are directly involved in the structuring of economic space. Regarding the FDI attractiveness, transport infrastructures are seen by international investors as the most important functioning element. They are essential for improving the efficiency of enterprises and increasing their competitive power. For the host country, Tunisia in our work, FDI have a positive and significant impact on domestic economic activity. They promote job creation, payment of higher wages than domestic investments and many other effects. Also FDI positively encourage investment in

Tunisia in public capital. The latter is largely treated by the theorists of endogenous approach that emphasized its role in securing a stable and sustainable economic growth in the long term.

REFERENCES

[1]. Aschauer A. D., (1989), « Is Public Expenditure Productive ? », Journal of Monetary Economics, vol. 23, n°2, pp. 177-200.

[2]. Asiedu E., (2002), "On the determinants of foreign direct investment to developing countries: is Africa different?" World Development 30(1): 107–118.

[3]. Blomström M., Kokko A., (1998), "Multinational Corporations and Spillovers", Journal of Economic Surveys, Vol. 12, 247-248.

[4]. Borenztein E., De Gregorio J. and Lee J.-W., (1998). "How does foreign direct investment affect economic growth", Journal of International Economics, 45, 115-135.

[5]. Bouinot J., (2010), « Les facteurs de choix des localisations : les infrastructures de transport », Cybergeo : European Journal of Geography.

[6]. Brainard L., (1997), "An Empirical Assessment of the Proximity-Concentration Trade off between Multinational Sales and Trade", American Economic review, Vol. 87 (4), September, pp. 520-544.

[7]. Cnuced (2009), « rapport sur l'investissement dans le monde : Sociétés transnationales, production agricole et développement », Nations unies, New York et Genève.

[8]. Coughlin C., Joseph V.T., Arromdee V., (1991). "State Characteristics and the Location of Foreign Direct Investment within the United States." The Review of Economics and Statistics 73, 675–683.

[9]. Didier M., Prud'homme R., (2007), « Infrastructures de transport, mobilité et croissance », La Documentation française. Paris, 2007, pp. 241.

[10]. Erenberg S.J., (1993), "The real effects of public investment on private investment". Applied Economics 23: 831 837.

[11]. Ernst & Young., (2002), « Etude sur la constitution d'une offre territoriale différenciée », Datar, 110 p.

[12]. Haughwout A.F., (2001), "Infrastructure and social welfare in metropolitian America", Economic Policy Review 7(3): 43–54.

[13]. Kokko A., (1994), "Technology, Market Characteristics, and Spillovers", Journal of Development Economics, Vol. 43, 279-293.

[14]. Krugman P., Venables A.J., (1995), « Globalization and The Inequalities of Nations », Quarterly Journal of Economics, vol. 110, pp.857-880.

[15]. Loree D. W., Guisinger S., (1995). "Policy and non-policy determinants of US equity foreign direct investment". Journal of International Business Studies 26(2): 281–299.

[16]. Morisset J., (2000), "Foreign Direct Investment in Africa: Policies Also Matter", Policy Research Working Paper N°.2481.

[17]. Morrison C., Schwartz A., (1996), "State infrastructure and productive performance". American Economic Review 86(5).

[18]. Nadiri M., Mamuneas T., (1994), "The effects of public infrastructure and R & D capital on the cost structure and performance of US manufacturing industries". The Review of Economics and Statistics LXXVI: 22–3.

[19]. OCDE, (2003), « Tendances de l'investissement direct étranger dans les pays de l'OCDE », n°73 2003/1, pp 193-201.

[20]. Sekkat K., Veganzones-Varoudakis M., (2004). "Trade and Foreign Exchange Liberalisation, Investment Climate and FDI in the MENA Countries". Working Papers DULBEA, Universite´ Libre de Bruxelles, Department of Applied Economics (DULBEA).

[21]. Wei S.J., (2000), « How taxing is corruption on international investors? », Review of Economics and Statistics, vol.82. N°1, pp. 1-11.

[22]. Wheeler D., Mody A., (1992), "International Investment Location Decisions: The Case of US Firms", Journal of International Economics, Juin.

[23]. Zhou C., Delios A., Yang J Y., (2002), "Locational Determinants of Japanese Foreign Direct Investment in China », Asia Pacific Journal of Management, 19, 63–86, 2002.

APPENDIXES

Table 1: Unit root test (ADF, PP)

	ADF		PP	
	At level	**In primary difference**	**At level**	**In primary difference**
GDPC	-2.18	-3,003***	-1,18	-3,11**
KP	-2,66	-6,45***	-2,66	-6,57***
INV	-2,32	-4,64***	-1,49	-4,57***
URB	-2,34	-2,4***	-3,18	-2,46***
TRSP	-2,76	-6,29***	-2,56	-6,32***
FDI	1,61	-4,11***	-2,04	-3,54***
EXP01	-1,85	-5,64***	-1,67	-6,11***

* stationnarity at 10%
** stationnarity at 5%*
***stationnarity at 1%

Table 2: Unrestricted Cointegration Rank Test (Trace)

	r=0	**r ≤1**	**r≤2**	**r≤3**	**r≤4**	**r≤5**	**r≤6**
eigenvalue	0.8031	0.803	0.610	0.380	0.265	0.168	0.007
Trace statistic	170.209	102.901	55.7342	28.3922	14.5236	5.5715	0.2662
Critical value	125.615	95.753	69.818	47.856	29.797	15.494	3.441
prob	0.000*	0.0147*	0.3887**	0.7964**	0.8100**	0.7455**	0.6419**

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H_0 : no cointegration relationships.   ** H_0 null hypothesis accepted at 0.05.

Table 3: Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

	r=0	**r ≤1**	**r ≤2**	**r≤3**	**r≤4**	**r≤5**	**r≤6**
eigenvalue	0.901	0.803	0.610	380	265	0.168	0.007
Max-Eigen statistic	67.307	47.167	27.342	13.868	8.952	5.355	0.216
Critical value	46.231	40.077	33.876	27.584	21.131	14.264	3.841
prob	0.0001*	0.0068*	0.2450**	0.8310**	0.8360**	0.6960**	0.6140**

H_0 : no cointegration relationships.   ** H_0 null hypothesis accepted at 0.05.