

Performance telecommunications, institutional quality and FDI: application panel data for the MENA Zone

Hela Bouras¹

¹ PhD student at the Faculty of Economic Sciences and Management of Tunis

SUMMARY

This article try to detect and analyze the interaction of attractiveness of FDI and the role of ICTs, specifically telecommunications as a key factor in increasing FDI flows. The theoretical approach, a particular interest in the theory of knowledge economy and the theory of New Institutional Economics, and to detect factors attractivités FDI and the mechanisms through which ICT will attract more foreign investors. The method used is an OLS estimation. In our study, we will discuss the relevance of such expectations for the MENA region. we will identify and analyze the interaction of attractiveness for FDI and the role of ICT, Telecommunications precisely, as a factor in the increase in FDI flows. In addition, our work is of particular interest to the economic theory of knowledge and the theory of New Institutional Economics, and to detect factors attractivités FDI and the mechanisms through which ICT will attract more foreign investors.

Keywords: *institutional quality, IDE, performance of Telecommunications, Human capital.....*

INTRODUCTION

The increased competition for the attraction of foreign investment among emerging countries, like South East Asian countries, the countries of Latin America and the Maghreb and the Middle East, exposes sites offices in several other requirements that the market size and dynamism (Thomas L Brewer (1993)). Net inflows of FDI to the MENA region has stagnated between 1985 and 1999, a period during which FDI inflows as a percentage of GDP increased six times more than other regions (Chan and Gemayel 2004). Many countries in the region share similar characteristics that discourage FDI, including political instability and restrictions on FDI in some sectors (Eid and Paua 2003).

Other factors are able to reduce the flow of FDI in MENA countries lining the heavy dependence on natural resources like oil, the exchange rate appreciated that discourage manufacturing activity, weak infrastructures and the underdeveloped institutions and low rates of return on physical and human capital (Bashir and Hassan 2002; Makdisi, Fattah, and Liman, 2002).

The new institutional economics or economic comparisons (Djankov and Shleifer, 2003) was one of the liveliest areas of political economy over the last decade. This field, which explores the relationship between political governance and economic performance, has set up "issues of governance" (Kaufmann et Kraa., 1999b), or "the rule of institutions" (Rodrik et al., 2004) . Initiatives such as the strategy of fight against corruption (World Bank 1997), "Convention on the fight against corruption" (OECD 1999) and "against corruption treaty" (UN 2003), show that governance issues gained password to policy makers.

Academic empirical research has been stimulated by the availability of measures of institutional quality. Previous studies have found the impact of governance on total income, measured either by per capita income growth (Mauro (1995)) or by income level (Knack and Keefer (1995)) and either the level per capita income (Acemoglu et al. (2001)). Research is now focused on the establishment of channels through which institutions affect income. Indeed, in works such as Mauro (1995) and Knack and Keefer (1995), the total investment was analyzed as a channel through which institutional quality affect economic growth. Other studies have focused on the quantity and quality of public investment (Tanzi and Davoudi (1997) and Mauro (1998)).

The case of foreign direct investment remains more interesting for its role in stimulating economic growth. Indeed, institutional conditions and local policies have always been considered by foreign companies that require caution and the existence of rating agencies of political risk.

Despite the reforms established investment codes, which aim to make them more consistent with the expectations of foreign investors on improving the business climate, FDI towards countries of North Africa and the Middle East have not increased.

The improved business climates must be accompanied by an essentially macro-institutional environment and a good quality of manpower confirmed by the quality of education in the education system in a context where technological breakthroughs are increasing.

In our study, we will discuss the relevance of such expectations for the MENA region. we will identify and analyze the interaction of attractiveness for FDI and the role of ICT, Telecommunications precisely, as a factor in the increase in FDI flows. In addition, our work is of particular interest to the economic theory of knowledge and the theory of New Institutional Economics, and to detect factors attractivités FDI and the mechanisms through which ICT will attract more foreign investors.

Our work will address an econometric analysis of the relationship between the performance of telecommunication services and FDI inflows on the one hand, and between the quality of the macroeconomic environment and institutional FDI inflows on the other hand, and see the interaction of the two components together: To what extent institutional quality affects the performance you she telecommunications to attract more foreign investors.

The main question that arises is whether, after controlling corruption and the quality of the macroeconomic environment and institutional control of other structural determinants of economies considered, better performance telecommunications services Will she associated with higher flows of FDI.

1-PERFORMANCE OF TELECOMMUNICATIONS, INSTITUTIONAL QUALITY AND FDI:

Application Panel Data for the Mena Zone

There are several methods for estimating panel data. The choice depends on the assumptions depends of parameters and disturbances. Three estimation methods are possible: an estimate by OLS, fixed effects estimation, or estimation with random effects. Given that the technique (OLS) may be biased if the inherent heterogeneity of countries is neglected, the tests showed that the models generally fixed or random effects provide a better fit.

The data are annual series covering the period 1990-2011 and are derived from four sources. FDI variable is the explanatory variables of the model, after the world wide based Global Investment and the World Bank. Data on the variables that determine FDI are from World Development Indicators based World Bank with the exception of data on institutional quality are derived from global basis worldwide governance. The education data from the database of UNESCO.

Our study is conducted on a panel of 15 countries and connects the FDI growth, year by year, from 1990 to 2011 with its determinants by dividing the sample of countries into two categories, high back country (Qatar, Bahrain, Saudi Arabia, UAE, Kuwait, Libya, Israel) and countries with revenues intermediate (Morocco, Jordan, Tunisia, Oman, Algeria, yemen, Egypt and Syria).

Our model is the following;

$$\ln(FDI)_{it} = l_0 + l_1 \ln(GDP)_{it} + l_2 XGDPH_{it} + l_3 infla_{it} + l_4 LFEM_{it} + l_5 NAM_{it} + l_6 INTER_{it} \\ + l_7 MITT_{it} + l_8 GE_{it} + l_9 PS_{it} + l_{10} CC_{it} + l_{11} RL_{it} + l_{12} RQ_{it} + l_{13} VA_{it} + l_{14} ESSE_{it} + l_{15} LFSE_{it} + l_{16} HEPC_{it}$$

FDLi = Inflows of FDI, GDPi = Gross Domestic Product, XGDPHi = annual growth rate of GDP per capita, inflation = inflation in the host country, MLPE = main lines per employee (number of mainlines / total employment), NAM = Number of mobile subscribers / Jobs Mobile, INTER = Number of Internet users per 100 inhabitants, GE = The effectiveness of public action, PS = political stability, CC = Control of Corruption, RL = quality legal procedures, RQ = The regulatory quality, VA = "Voice and Accountability", LFSE = the labor force with secondary education level, ESSE = expenditure per student in secondary education, HEPC = health spending by capital.

2- PANEL DATA TO FIXED OR RANDOM EFFECTS: A METHODOLOGY FOR ESTIMATING STEP BY STEP.

The construction of a macroeconomic empirical study should be based on a theoretical model that defines the relationship between FDI and the performance of telecommunications. In this respect, the study of Varoudakis (2000) responds to our need, but it has neglected some performance measures of telecommunications, and other structural factors like institutional quality and human capital.

In our modeling and following the economic literature cited earlier on this topic, we will model the foreign direct investment based on current values of performance telecommunications, current values of economic growth, the current values of institutional quality and human capital.

To do this, we will proceed to a step by step model to detect the weight of each component and differentiate the direct impact of the indirect impact of these components on the attractiveness of FDI.

Model 1 is a suitable theoretical basis for the development of our econometric study. However, it does not introduce the effects of instrumental variables on FDI. These variables are assumed exogenous and at the same time crucial to understanding the changes in domestic investment. They may in particular represent the specific characteristics of MENA zone countries such as institutional, financial, human and physical. Thus, the introduction of instrumental variables (instruments) in econometric estimates to control the robustness of the effects of infrastructure on Foreign Direct Investment. Indeed, if these effects do not change despite the introduction of instruments so they will be qualified as robust. Otherwise, they will qualify as fragile:

$$\ln (FDI)_{it} = l_0 + l_4 LFEM_{it} + l_5 NAM_{it} + l_6 INTER_{it} + l_7 MITT_{it} \quad (1)$$

The first group contains variables as shown in the theoretical model Agosin and Mayer (2000), the variables of infrastructure (telecommunications performance). The estimated coefficients of these variables will determine the impact of infrastructure on FDI. In model 2, we adapt the function (1) in two samples of the study area by adding a set of variables of economic activity. Therefore, the model to estimate is the following:

$$\ln (FDI)_{it} = l_0 + l_1 \ln(GDP)_{it} + l_2 XGDPHit + l_3 infla_{it} + l_4 LFEM_{it} + l_5 NAM_{it} + l_6 INTER_{it} + l_7 MITT_{it} \quad (2)$$

The second group of variables consists of variables directly related to the process and FDI may be endogenous (correlated errors in the process). As such, we believe the effects of GDP growth, market size and inflation. The third group of variables contains the variables of institutional quality (effectiveness of public action, control of corruption) are integrated in the 3rd model. In our work we classify the available indicators of governance into six independent groups. Each indicator refers to a dimension of governance. It varies from -2.5 to 2.5 in the work of Kaufman (1996).

Governance indicators can be presented in three pairs of indices as mentioned above. The first related to the political, the second related to economic governance and the third related to corporate governance. Political governance is measured by two indicators namely voice and accountability and political stability. Economic governance is measured by two indicators of regulatory quality, as measured by regulatory barriers to the functioning of markets and government effectiveness, as measured by the competence of the bureaucracy and the quality of public services. Finally, corporate governance is measured by two indicators namely, respect for rules and laws and control of corruption:

$$\ln (FDI)_{it} = l_0 + l_1 \ln(GDP)_{it} + l_2 XGDPHit + l_3 infla_{it} + l_4 LFEM_{it} + l_5 NAM_{it} + l_6 INTER_{it} + l_7 MITT_{it} + l_8 GE_{it} + l_9 PS_{it} + l_{10} CC_{it} + l_{11} RL_{it} + l_{12} RQ_{it} + l_{13} VA_{it} \quad (3)$$

The fourth group of variables includes the effort in human capital. We will test three variables determinant of human capital, expenditure per pupil in secondary education, the labor force with secondary education and capital expenditures in health . In addition to the variables included in Model 3, these three additional variables are included in model 4:

$$\ln (FDI)_{it} = l_0 + l_1 \ln(GDP)_{it} + l_2 XGDPHit + l_3 infla_{it} + l_4 LFEM_{it} + l_5 NAM_{it} + l_6 INTER_{it} + l_7 MITT_{it} + l_8 GE_{it} + l_9 PS_{it} + l_{10} CC_{it} + l_{11} RL_{it} + l_{12} RQ_{it} + l_{13} VA_{it} + l_{14} DESit + l_{15} LFSE_{it} + l_{16} HEPC_{it} \quad (4)$$

An estimation process random effect was applied in this section. To identify the determinants of FDI, the explanatory variables are included in the model step by step.

Before interpreting the results, several important points are to be noted, there is the robustness of the coefficients of most explanatory variables used in the different specifications. Thus, when adding a variable, the other the value of coefficient of determination remains more or less constant, in fact, it varies from 37% to 84% of an estimate to another. This suggests that the determinants supported for each specification, explain between 37% and 84% of the attraction of FDI despite the introduction of new variables. We also note that the majority of the coefficients are significant at 10%. This is a good indication of the validity of the results. The interpretation of our results will be based on two main axes, namely, the weight of each part of the appeal, the detection of significant variables for each dimension and detection of direct and indirect effects.

3-RESULTS AND DISCUSSION

In our estimation we will proceed for either a fixed effect model or a random effects model. The Hausman test (1978) leads us to adopt a random effects model for all regressions performed. The best estimator is the GLS estimator.

In this study we gave importance to different aspects of human capital and institutional quality. Regression is performed for both groups. If the null hypothesis of no correlation is checked, both estimators are consistent and the random effects is more effective. After discrimination by the Hausman test, the null hypothesis of no correlation between the individual effects and the explanatory variables is accepted. The most appropriate specification is the random effects model.

The null hypothesis is that the coefficients estimated by the efficient random effects estimator are as effective as the fixed effect. More clearly, H_0 : difference in coefficients is not systematic.

$\chi^2(4) = (bB)'[(V_b - V_B)^{-1}](bB) = 77.74$ and $\text{Prob} > \chi^2 = 0.0000$. Thus, the pvalue insignificant suggests using the random effects estimator. We note that the p-value is less than 0.5 for all specifications and for both samples ($p < 0.05$), so the null hypothesis of no correlation is checked.

One can easily select the model according to the difference between the estimated coefficient (b) and (B) in the output. The p-value is explicit and we suggest to accept or reject the null hypothesis of Hausman test.

In our work, as it was mentioned above, we will estimate the work step by step. We first began by introducing the variables of performance of telecommunications for both country samples (specification 1 (S1)) for countries with intermediate and Revenue (specification 2 (S2)) for countries with high back. Model 1 includes three variables, which are the number of main lines / Employment total number of mobile subscribers / Employment mobile, the number of Internet users per 100 inhabitants and the number of outgoing international telecommunication minutes. The result for S1 shows that the variable number of fixed line per employee is significant at the 5% level with a coefficient of 0.021, and variable number of Internet users at the 1% and the number of outgoing international telecommunication minutes with a negative coefficient is very small. Indeed, the number of fixed line per employee measures the level of infrastructure development and the degree of penetration or use of the technology has positive and significant effects. This result is not surprising given the importance of infrastructure development in the attraction of FDI.

So for countries with high revenues, there was a significance of 1% of the number of internet users with a fairly large coefficient (0.16), and NMIT with a positive coefficient, but very minimal. These results argue that a better use of ICT should reduce consumer prices, thereby attracting foreign investors. The explanatory power of S1 is 83.2% higher than that of S2 (45.7).

Specification 1 shows that the estimated increase of internet users increases FDI flows and the coefficient is statistically significant (Annex Table 1). The effect of mobile subscribers, however, appeared to be zero and insignificant. As has been argued in the literature, better use of ICT is detected by the use of the Internet should lower consumer prices, thus attracting foreign investors. The effect of no fixed number of users on FDI is explained by the strong and significant effect of the Internet on the attractiveness of FDI, an increase of 10% of internet users is increasing FDI 7, 33% for intermediate countries back a bigger effect than for high-income countries (1.6%).

Subsequently, in Model 2 (Annex Table 2), we introduced structural variable, GDP, GDP growth rate and inflation. The results show that the three variables are significantly correlated with FDI (1% level), and the explanatory power of this specification is 84%.

For countries RI, increased growth rate of 10% leads to a 7.3% increase in FDI, and a 10% increase in market size (GDP) leads to a 4% increase in FDI. The growth rate of GDP is a good indicator of health of an economy. Most empirical studies show a positive correlation between FDI and economic growth. Looking for a market is a most significant variable of FDI in most econometric tests. Nevertheless, our results are consistent with previous studies in the case of intermediate and back country which is not the case for countries with higher revenues. There is a strong positive and significant correlation between economic growth and attracting FDI for the first group.

Inflation has a significant and negative effect on FDI: a 10% increase in price leads to a decrease of 0, 3% of FDI, which is consistent with the literature: A decrease in inflation is associated with power higher purchase, it is able to attract more FDI. Therefore the coefficient 3 should be negative, which is the case in our work to S1.

Price stability is an important determinant of the competitiveness of enterprises and a necessary element in order to inspire confidence among economic operators, whether savers or investors, domestic or foreign.

The introduction of structural variable did not change the results widely, the number of Internet users and the number of fixed line employees are the key variables of the attractiveness of FDI for countries with intermediate revenues, with slight decrease in their sensitivities to IDE (respectively 0.19% against 0.21% and 6% instead of 7%), and we find that the explanatory power of the specification has not changed.

Thus, it detects a direct and indirect impact of country size and economic activity on the internal IDE, via the performance of telecommunications for countries Revenue intermediate characterized by a strong economic potential mainly for Jordan, Morocco, Tunisia and Egypt.

The low economic potential recorded by the high back country like SA, Kuwait, Bahrain and Libya marked by low economic growth, explains the insignificant impact of the growth rate of GDP, the level of GDP and inflation on FDI. Found this result contradicts the theoretical advancement, as explained by the IDE made in this area are essentially vertical FDI. A paper prepared by lim (2001) has argued that a very large market encourages horizontal FDI, while vertical FDI are indifferent to the market size of the host country.

Therefore, and because of the weak economy, there has been no change in the impact of performance on Telecommunications FDI. However, the explanatory power of the specification for these countries has decreased from 45% to 37%, the introduction of these variables for countries with high back only deteriorate the explanatory power of the model, explained by the low economic potential.

Therefore, no indirect impact is recorded on the size of the country and the economic potential of FDI through the performance of telecommunications for this group of countries.

In the M3 model we introduced quality variables macro institutional objective of our work is to see the interaction between the two components (ICT and institutional quality) simultaneously and their impact on FDI (Annex Table 3), so March 1 th model is established to meet this goal.

Adding the variables of institutional quality model 2, we see that the variable number of fixed-line employee is no longer significant and the impact of the number of Internet users on the attractiveness of FDI is slightly attenuated a sensitivity from 6.5% to 5.8%. This result is explained by the negative impact of corruption control on the attractiveness of FDI, in fact, a 10% increase of corruption generates a 5.8% decline in FDI. This corroborates the results of Kaufman (1977) has argued in his book that corruption has a positive effect on the mechanism of FDI, as Bardhan (1977), Egger and Winner (2005), have clearly demonstrated the generating effect of corruption to attract more foreign firms. Corruption and dishonesty of public officials are measures play favors foreign investors.

However, a 10% improvement in the efficiency of public action induces a 6% increase in FDI. Certainly, the efficiency of public services has a significant effect on FDI. Moreover, there is only the determinants of economic governance and institutional will have a significant impact on the attractiveness of FDI in our sample countries returned intermediate zone.

For these countries there is a direct impact of institutional quality on FDI, detected by the control of corruption and effectiveness of public action and an indirect impact through the performance of telecommunications in mitigating the impact of the number of users internet on the attractiveness of FDI and eliminating the impact of

fixed line number used on the IDE. The explanatory power of the model remained unchanged after the introduction of institutional quality variables.

Similarly, the introduction of institutional quality variables for countries with high Revenue attenuated the impact of the number of Internet users on the attractiveness of FDI from 1.4% to 1.3% are of a impact indirect institutional quality on FDI performance via telecommunications (table 3). The explanatory power of S2 has improved after the introduction of institutional quality variables from 37% to 56%.

However, the direct impact is detected in part by a significant and negative quality procedure law and immediate demands and capacity of expression, and secondly by a significant and positive effect on the quality of regulation and political stability. A 10% increase in rl and Va respectively drive a significant decrease of 27% and 23% of FDI. These results contradict some theoretical contributions, but argue further work. Indeed, Huntington and Dominguez (1975) in their work have argued that the poor quality of legal procedure and bureaucracy provide better protection of property rights better than democratic regimes and the right legal procedures, and stimulates the adoption of reforms effective, attracting foreign investors.

However, an increase of 10% Rq and Ps respectively drive an increase of 16% and 9.6%. However, it can be noted that the political dimension (VA and Ps) is the most significant dimension of institutional quality being able to attract or deter foreign investors, while the economic dimension revealed only by the quality of regulations (Rq) and the institutional dimension revealed only by the quality of process of law (RL).

It is therefore an indirect impact of governance on FDI, certainly, as was advocated by Sekkat (2007), governance can have an indirect effect on FDI flows through its impact on other variables. FDI flows are sensitive to the quality of infrastructure, therefore affecting this dimension variables, institutional quality will certainly affect FDI.

By adding human capital variables for countries with intermediate revenues (Annex Table 4 specification 1), we see that the market size detected by the GDP has a greater impact on the FDI attractiveness, sensitivity is increased from 6.19% to 7.91%, and a magnified impact on the effectiveness of public policy on FDI, in fact, a 10% increase in the efficiency of public action leads to an increase of 9.9% FDI, a greater elasticity than that found in the model 3.

A more educated workforce is potentially more productive is expected to attract foreign investors. We must therefore expect a $l14$, $l15$, $l16$ positive.

Nevertheless, there are only health expenditures by capital (HEPC), the determinant is significant at the 5% level of the three determinants of human capital taken in this work. A 10% increase in investment in human capital, as detected by the health expenditures per capital leads to an increase of 0.16% of FDI. This work has plead El-Erian et al. (1998) who found a weak link between education and economic growth in six countries of the MENA region, is explained by the low quality of educational services to the distortion of the labor market in these countries.

In addition, it detects the direct and indirect spending in human capital on the attractiveness of FDI: A direct impact statement by an increase of 0.16% of FDI, and an indirect impact statement by the potential economic (GDP) and economic dimension of governance detected by the effectiveness of public action.

For countries with high revenues, there is a net change of circumstances in the case of the introduction of variable investment in human capital. It is a significant lack of economic potential impact on the attractiveness of FDI.

In addition, telecommunications have no significant impact on the attractiveness of FDI, in fact, in Model 3, the sample is a significant number of Internet users on the attractiveness of FDI. Low human capital potential in these countries rich in natural resources such as Kuwait, Libya, Bahrain and Saudi Arabia to the exception of Israel, is responsible for internal mismanagement internet where an insignificant impact on FDI. Indeed, we detect an impact of human capital on the performance of telecommunications.

The Internet offers a huge potential for businesses by facilitating access to information, facilitating relationships between customers and suppliers and improving interaction with public authorities. Therefore, in order to achieve these objectives, a private national or foreign, will need an internet connection at an affordable price and the knowledge and skills needed to operate.

The growth of Internet use in countries marked development is explained by the increase in devices that offer the ability to connect to the internet. For these countries the insignificant impact of human capital on the performance of telecommunications is explained by the low skill necessary to exploit them. The use of ICT is able to acquire some skills of internal management, such as training, costing, product design or administration of the company.

Certainly, the assumption of technological bias, ICT generates an increased demand for highly skilled labor at the expense of unskilled labor. This request is based primarily on the skills, knowledge and appropriate training-induced enhancement of the education and research system [Clévenot Michael David Doyere (2008)], which is not the case of countries with revenues high MENA Zone.

Moreover, the insignificant coefficients of health expenditures per capital (HEPC) and expenditure per student (the) result of the weak efforts in these areas for these countries. Our advanced just accept those Prtichett (1996, 2001) noted the lack of relationship between the increase of human capital and the growth rate in the MENA region, is detected mainly done by the institutional environment prevailing in many countries do not prohibit the accumulation of human capital already concentrated in rent-seeking activities that stifle economic growth.

The ICT landscape is expanding the range of mobile applications; text messaging financial transactions requires skills and a high qualification to increase services for private sector development, foreign and domestic.

For institutional quality, it detects that there is a greater sensitivity detected significant variables in Model 3. Indeed, a 10% increase in the quality of regulation leads to a 19.2% increase in FDI (as against 16.9% for model 3) and a 10% increase in the quality of legislation procedure leads to a decrease 30% of FDI (as against 27% for model 3), this result confirms that Huntington and Dominguez (1975).

However, the control of corruption has a significant and negative at the 5% growth of 10% control of corruption reduces FDI by 13%. For this specification, there has been an increase of 10% of the claim-expressions (VA) and political stability (PS) results in a decrease of 25% (against 23% sensitivity for model 3) and an increase 1.83% of FDI (against a sensitivity of 9% for model 3). However, for countries with rich revenues, low investment effort in higher education leads to poor institutional quality characterized by an important indicator of corruption, improper procedure laws, and strong regulatory barriers that negatively affect the attractiveness of FDI. Similarly, the investment effort managed by the bureaucracy encourages corruption and negatively affect the attractiveness of FDI.

However, there is a direct impact of human capital on very low FDI detected by the labor force with secondary education (lfse), a small impact on FDI with a coefficient of $2.81e-07$. With this last specification, we can meet for high income countries, a very small direct impact of human capital on FDI and an indirect impact through institutional quality, and more specifically the economic dimension (quality of regulation) and the institutional dimension (quality control procedure law and corruption) governance.

4-CONCLUSION AND RECOMMENDATIONS

Foreign direct investment is a major challenge and a great importance for the countries of the MENA Zone. An econometric study relies on a variety of determinants of the attractiveness of foreign capital.

Foreign investors require macroeconomic fundamentals, a good business environment, a good quality of manpower, a good level of development of infrastructure and telecommunications, a macro-institutional environment and social stability.

In our study, we noted the relevance of such expectations for the MENA region. we detect and analyze the interaction of attractiveness for FDI and the role of ICT, Telecommunications precisely, as a factor in the increase in FDI flows. We tested several specifications in an econometric model from three aspects of the macro institutional, economic activity and infrastructure on panel data random.

With our results, we detected a direct and indirect impact of country size and economic activity on the internal IDE, via performance telecommunications Revenue intermediate countries, marked by a strong economic potential mainly for Jordan, Morocco, Tunisia and Egypt.

However, the low economic potential recorded by the high back country like SA, Kuwait, Bahrain and Libya marked by low economic growth, explains the insignificant impact of the growth rate of GDP, the level GDP and inflation on FDI.

Moreover, it was deduced that only the determinants of economic governance and institutional have a significant impact on the attractiveness of countries for FDI returned intermediate zone. A direct impact of institutional quality on FDI was detected by the control of corruption and effectiveness of public action and an indirect impact through the performance of telecommunications in mitigating the impact of the number of users on the internet attractiveness of FDI and eliminating the impact of fixed line number used by the IDE.

For countries with intermediate back we showed a direct impact being detected, on the one hand by a significant and negative quality procedure law and immediate demands and capacity of expression, and secondly by a significant and positive regulatory quality and political stability. The political dimension (VA and Ps) is the most critical dimension of institutional quality affecting foreign investors, while the economic dimension is revealed only by the quality of regulations (Rq) and the institutional dimension is revealed only by the quality of process of law (RL).

Governance can have an indirect effect on FDI flows through its impact on other variables. FDI flows are sensitive to the quality of infrastructure, therefore affecting this dimension variables, institutional quality will certainly affect FDI.

In our study, there was no relationship between the increase in human capital and the growth rate in the MENA region, is detected mainly done by the institutional environment prevailing in many countries does not defend the accumulation of human capital. For countries with high income, we derived a direct impact very tiny human capital on FDI and an indirect impact through institutional quality, and more specifically the economic dimension (quality of regulation) and institutional dimension (quality procedural law and control of corruption) governance.

While revenues for countries with intermediate, detecting the direct and indirect impact of expenditure in human capital on the attractiveness of FDI noted the potential economic (GDP) and economic dimension of governance detected by efficiency public action.

In this part of work, we have not raised the trade factor in the attractiveness of FDI in order to raise the following chapters determinants effort to exports (X) for manufactured goods of countries in the area and see a disaggregated way the nature of the effect-X IDE.

REFERENCES

- Aghion, Philippe & David Paul A. & Foray, Dominique (2009): "Science, technology and innovation for economic growth: Linking policy research and practice in 'STIG Systems'," Research Policy, Elsevier, vol. 38(4), pages 681-693, May.
- Alaya, M, Nicet-Chenaf, N, Rougier, E (2007) : « Politique d'attractivité des IDE et dynamique de croissance et de convergence dans les Pays du Sud Est de la Méditerranée », Cahiers du GREThA n° 2007 – 06, Juin 2007.
- Amable, B (2005) : « Les cinq capitalismes : Diversité des systèmes économiques et sociaux dans la mondialisation », Paris, Seuil, p 374.
- Application to Asia", Journal of Asian Economics, vol. 13 n°6, p. 873–90.
- Arrow, K., (1962a), "Economic welfare and the allocation of resources for invention", in *the rate and direction of inventive activity*, Nelson R., ed., Princeton University Press.
- Axarlolou K(2005) : "What attracts foreign direct investment inflows in the United States", international trade journal, vol 19, n3, pp285-308
- Azais C., Corsani A., Dieuaide P., *vers un capitalisme cognitif ?*, l'Harmattan, Paris, 2001.
- Baayer A., « Maroc Telecom, un acteur majeur de la génération des NTIC au Maroc », *Multimédia Marketing Manager*, n° 21, mai 2001, p. 10-24.
- Bardhan (1977): « corruption and development: A review of issues », journal of Economic Literature volume 35, n°3.
- Basu, A., K. Srinivasan (2002): "Foreign Direct Investment in Africa – Some case studies", IMF working paper, wp/02/61, March 2002.
- Benassy-Quéré, A., M. Coupet, ET T. Mayer (2005): "Institutional determinants of foreign direct investment", CEPII Working Papers 2005-05.
- Bloningen, B (2005): "A Review of the Empirical Literature on FDI Determinants", Atlantic Economic Journal, 33(4), 383-403.
- Brunetti, A., G. Kisunko and B. Weder, 1998. "Credibility of Rules and Economic Growth: Evidence from a Worldwide Survey of the Private Sector", World Bank Economic Review, vol. 12 n° 3, p.353-384.

- Cameron, G., Proudman, J. et Redding, S. (2005): "Technological Convergence, R&D, Trade and Productivity Growth", *European Economic Review*, Vol. 49, No. 3, pp. 775-807.
- Campos, J.E.D., Lien and S. Pradhan, 1999. "The Impact of Corruption on Investment: Predictability Matters", *World Development*, vol 27 n°6, p.1059-1067.
- Card, D. et Krueger, A.B. (1992): "Does School Quality Matter? Returns to Education and the Characteristics of Public Schools in the United States", *Journal of Political Economy*, Vol 100, pp. 1-40.
- Carrolaggi P.L., *Les technologies d'information et de communication : opportunité ou obstacle dans les relations entre générations ?* Dept. Conseil-Recherche-Innovation, Greta du Velay, Le Puy-en-Velay, France, 2008.
- Catin M., Guilhon B., Le Bas C., (2001), *Activités technologiques, connaissances et organisation*, L'Harmattan, Paris.
- Chakrabarti, A. (2001): "The determinants of foreign direct investment : sensitivity analysis of cross-country regressions", *Kyklos*, vol. 54, n°1, pp. 89-114.
- Chan K.K. et Gemayel E.R. (2004): "Risk instability and the pattern of FDI in MENA", IMF Working Paper.
- Cohen, W. M. et Levinthal, D.A. (1989): "Innovation and Learning: Two faces of R&D", *Economics Journal* 99, pp. 569-596.
- Cohendet P., " Information, connaissances et théorie évolutionniste de la firme ", in Pascal P. et alii (sous la dir.), *L'économie de l'information. Les enseignements des théories économiques* ", Paris, La Découverte, 1998.
- Culem, C. (1988): "The Location Determinants of Foreign Direct Investment in Developing countries", The University of Adelaide Working paper n°12.
- Daniel Kaufmann Aart. Kraay, Pablo Zoido (1999): "Governance Matters", World Bank Policy Research Working Paper No. 2196
- De la pierre, M. Moatti, P. Mouhoud. M. (2000): «connaissance et mondialisation», Paris, Economica.
- Des Partenariats pour Transformer l'Afrique: « Rapport 2011 sur les progrès en Afrique », Africa Progress Panel.
- Devisch R., «Les sciences et les savoirs endogènes en Afrique noire: perspectives anthropologiques», in Nahavandy F. (sous la dir.), *L'enseignement universitaire et la coopération internationale au XXIe siècle*. Paris, Karthala, 2002, p.3-15.
- Djankov, S., E. Glaeser, R. La Porta, F. Lopez-de-Silanes and A. Shleifer, 2003. "The
- Dominique Foray & Edward Steinmueller (2003): "On the economics of R&D and technological collaborations: Insights and results from the project colline," *Economics of Innovation and New Technology*, Taylor and Francis Journals, vol. 12(1), pages 77-91.
- Dominique Foray (2009) : « L'économie de la connaissance », Harmatton.
- Dr. Khondoker Abdul Mottaleb: "Determinants of Foreign Direct Investment and Its Impact on Economic Growth in developing Countries", *The Journal of Applied Economic Research* November 2010 vol. 4 no. 4 369-404
- Drucker P., *Au-delà du capitalisme. La métamorphose de cette fin de siècle*, Paris, Dunod, 1994. (Ed. originale: *Post Capitalism Society*, 1993).
- Dunning, J.H. (1993): "Multinational Enterprises and the global Economy", Addison Wesley Workingham.
- Foray, D., et Lundvall, B.A., (1996), « The knowledge-based economy: from the economics of knowledge to the learning economy » dans *Employment and growth in the knowledge-based economy*, OECD Documents, OCDE, Paris.
- Gay C., (2003), "Économie de l'innovation technologique localisée : un essai sur les individus, organisations et réseaux apprenants", Thèse Université de Lyon 2, Décembre.
- Globerman, S. and D. Shapiro, 2002. "Global foreign direct investment flows: the role
- Haggard, S., 1990. *Pathways from the periphery: the politics of growth in the newly*
- Halévy M., *L'Age de la connaissance et réflexion sur la révolution noétique au 21ème siècle*, MM2, Paris ,2005.
- Hayek F., *Economics and Knowledge*, Economica, newser, London, 1937.
- Heidenheimer, M. Johnston and V.T. LeVine (eds.), Oxford, Transaction Books, p.51-66.
- Helpman, E. (2006): "Trade, FDI and the organization of Firms", NBER working paper 12091, National Bureau of Economic Research.
- Helpman, E.M. (1984) : "A Simple Theory of Trade with Multinational Corporations", *Journal of Political Economy*, Vol. 92, pp. 451-471.
- Hisamatsu, Y., 2003. "Does foreign demand affect corruption?", *Applied Economics*
- Huntington, S.P. and J.I. Dominguez, 1975. "Political development", in F.I. Greenstein and N.W. Polsby (eds.) *Handbook of Political Science* 3, Reading, Addison-Wesley, p.1-114. industrializing countries, Ithaca, N.Y.: Cornell University Press.

- Jamal Bouoiyour, Hicham Hanchane, ElMouhoub Mouhoud (2009): «Investissements directs étrangers et productivité : Quelles interactions dans le cas des pays du Moyen Orient et d'Afrique du Nord ? » *Revue économique* – vol. 60, N° 1, janvier 2009, p. 109-132.
- Kamaly, A (2003):” Behind the surge of FDI to developing countries in the 1990s : An empirical investigation, Cairo”, The American University of Cairo, Department of Economics, mimeo.
- Kauffman (1977):” la corruption: Some myths and facts”, in early version was publisher in foreign policy, pp 114-134.
- Kaufmann, D., Kraay, A. and P. Zoido-Lobaton (1999):” Aggregating Governance Indicators”, World Bank Policy Research Paper 2195.
- Kaufmann, D.A. Kraay and P. Zoido-Lobaton, 1999b. “Governance Matters”, World Bank, Working Paper n°2196.
- Knack, S. and O.Azfar, 2003. “Trade intensity, country size and corruption”, *Economics of Governance*, vol. 4 n°1, p.1-18.
- Korbin, S. (1981) : “Political Risk: A Review and Recommendation” , Journal of International Business.
- Lambsdorff, J.Graf, 2003. “How corruption affects persistent capital flows”, *Economics of Governance*, vol. 4 n°3, p.229-243.
- Le Bas C., *Economie de l'innovation*, Economica, 1995.
- Le PNUD dans son rapport mondial sur le développement humain de 2002, Approfondir la démocratie dans un monde fragmenté, De boeck, Bruxelles.
- Lecraw, D (1991):” Factors influencing FDI in host developing countries: a preliminary report”, in P.J. Buckley and J. Clegg (eds.) *Multinational enterprises in Less Developed Countries*, pp. 163-180.
- LEFI- Centre Walras, Institut des Sciences de l'Homme, lebas@univ-lyon2.fr.
- Letters*, vol. 10 n°1, p.1-2.
- Levasseur, Sandrine (2002):« Investissements directs à l'étranger et stratégies des firmes multinationales», *Revue de l'OFCE*, Hors série, Mars 2002.
- Leys, C. (1965), 1989. “What Is the Problem about Corruption?”, *Journal of Modern African Studies*, vol. 3, n°2, p.215-230. Reprint in *Political corruption: A handbook*, A.J.
- Lim, E.(2001):” Determinants of, and the relation between, foreign direct investment and growth: a summary of the recent literature, IMF working Paper, WP/01/175,
- Lucas R.F.B. (1993): «On The Determinants Of Direct Foreign Investment: Evidence from East and Southeast Asia », *World Development*, Vol.21 , n° 3, p. 391-406.
- Luyckx Ghisi M., *Au-delà de la modernité, du patriarcat et du capitalisme. La société ré enchantée*, Préface du Professeur Ilya Prigogine, Prix Nobel de Chimie 1977, L'Harmattan, Paris, 2001.
- Machlup, F., (1962), *The production and distribution of knowledge in the United-States*, Princeton University Press, Princeton.
- Mauro, P., 1998. “Corruption and the Composition of Government Expenditure”, *Journal of Public Economics*, vol. 69 n°2, p.263-79.
- McKinsey & Company (2010), “Lions on the move: The progress and potential of African economies”, The McKinsey Global Institute.
- Méon, P.-G. and K. Sekkat, 2005. “Does corruption grease or sand the wheels of growth?”, *Public Choice*, vol. 122 n°1-2, p. 69-97.
- Méon, P.-G. and L.Weill, 2006. “Is corruption an efficient grease? A cross-country aggregate analysis”, presented at the Public Choice Society Meeting, New Orleans.
- Michael. Clévenot, David. Doyère (2008) : « pour une critique de l'économie de la connaissance »,
- Mickaël Clévenot et David Douyère (2008) : « Pour une critique de l'économie de la connaissance comme vecteur du développement », Présenter dans un Colloque international « Economie de la connaissance et développement » XXIVe Journées du développement de l'Association Tiers-Monde, Organisé par l'Université Gaston Berger (Sénégal), le Bureau d'économie théorique et appliquée de l'Université Nancy2/CNRS., 2008, Saint Louis, Sénégal.
- Mody,A. and Srinivasan K., 1998.“Japanese and U.S. firms as foreign investors: do they march to the same tune?” *Canadian Journal of Economics*, vol. 31 n°4, p.778-799.
- Morisset. J et O. Lumenga Neso. (2002):” Administrative barriers to foreign investment in developing countries”,Washington, D.C., World Bank and International Finance Corporation, Foreign Investment Advisory Service.
- Nadiri, M.I (1993): “Innovations and technological spillovers”, NBER Working Paper, n°4423.
- Ndoye M., « L'éducation et l'économie de la connaissance », *Conférence “La connaissance pour le développement de l'Afrique”*, Johannesburg, Afrique du Sud, 8-10 mai 2006. New comparative economics”, *Journal of Comparative Economics*, vol.31 n°4, p.595-619.
- Nigh, D., and H. Schollhammer (1987):” Foreign direct investment, political conflicts, and cooperation: the asymmetric response hypothesis”, *Management Decision Economics*, Vol. 8 (December), pp. 307-312.

- Nonaka I., Takeuchi H., *La connaissance créatrice, traduction de la première version américaine*, De Boeck université, Paris Bruxelles, 1997.
- NORTH, D.C. (1990): "Institutions, institutional change and economic performance", Cambridge University Press, 1990.
- OCDE (1996a), The knowledge-based economy, OCDE/GD(96)102, p7.
[\[http://www.oecd.org/dsti/sti/s_t/inte/prod/kbe/.pdf\]](http://www.oecd.org/dsti/sti/s_t/inte/prod/kbe/.pdf)
- OCDE, *L'économie fondée sur le savoir*, OCDE, Paris, 1996.
- OCDE, *Société des savoirs et gestion des connaissances*, OCDE, Paris, 2000
- O'Donnell, G., 1978. "Reflections on the Patterns of Change in the Bureaucratic Authoritarian State", Latin American Research Review, vol. 13 n°1, p.3-38.
- Rapport sur l'économie de l'information, CNUCED (Février 2008)
- Rapport CNUCED (2010): «l'investissement dans le monde».
- Rapport CNUCED (2011) : « l'économie de l'information: les TIC, catalyseur du développement du secteur privé ».
- Rapport de Banque mondiale (1992) : "Gouvernance et développement"
- Resnick, A. L., 2001. "Investors, turbulence, and transition: democratic transition and foreign direct investment in nineteen developing countries", International Interactions, vol. 27 n°4, p.381-98.
- Rodrik, D (1999): "Making Openness Work: The New Global Economy and the Developing Countries": Overseas Development Council, Washington, DC, 1999.
- Rodrik, D., A. Subramanian and F. Trebbi, (2004) : "Institutions Rule: The Primacy of Institutions over Geography and Integration in Economic Development", Journal of Economic Growth, vol. 9, no.2, June 2004.
- Root, F. and Ahmad, A. (1979) : "Empirical Determinants of Manufacturing Direct Investment in Developing Countries," Economic Development and Cultural Change, Vol. 27, pp. 751-767.
- Schneider, F. and Frey, B. (1985) "Economic and Political Determinants of Foreign Direct Investment," World Development, vol. 13, pp. 161-175.
- Schultz, Th.W.(1960) : "Capital Formation by Education", Journal of Political Economy, Vol. 68, pp. 571-583.
- Schultz, Th.W.(1961): "Investment in Human Capital: Reply", American Economic Review, Vol.51, pp. 1035-1039.
- Sekkat. K et Méon. P.G (2004): "Does the quality of institutions limit the MENA's integration in the world economy?" Annual Bank conference on development economics-Europe, Belgium, May 10-11, 2004
- Simonis, D., Belgium's export performance (2000): "a constant market shares analysis", Working Paper 2-00, Bureau fédéral du Plan.
- Singh, Harinder and Kwang Jun (1995): "Some new evidence on determinants of foreign direct investment in developing countries", Policy Research Working Paper, No. 1531, Washington D.C, World Bank.
- Smith K., (2000), « What is the knowledge economy ? Knowledge-intensive industries and distributed knowledge bases », papier présenté à la conférence d'été de DRUID sur *L'économie apprenante – entreprises, régions et institutions*, 15-17 juin 2000, Aalborg, Danemark.
- Stein. E et Daude. C (2007) : "The quality of institutions and forein direct investment, Economics & Politics", volume 19, No. 3.
- Steinmuller, W.E.,(1999), *Networked knowledge and knowledge-based economies*, Telematica Institut, Delft, Février.
- Thomas L Brewer (1993): "Government Policies, Market Imperfections, and Foreign Direct Investment ", Journal of International Business Studies, , vol. 24, issue 1, pages 101-120.
- UNESCO, La société du savoir, *Revue internationale des sciences sociales*, n° 171, mars 2002.
- Vérez J-C, Quelle place pour l'économie de la connaissance dans les pays en développement africains ?, Mondes en développement , 2009/3 (n° 147), 154 pages .
- Vinod, H. D., 2003. "Open Economy and Financial Burden of Corruption: Theory and
- Walliser B., *L'économie cognitive*, Paris, Editions Odile Jacob, 2000.
- Wei, S.-J., 2000. "How Taxing Is Corruption on International Investors?", Review of Economics and Statistics, vol. 82 n°1, p.1-11.
- Wei. Shang-Jin (1997): "Why is Corruption so Much More Taxing than Tax? ", Arbitrariness Kills, NBER Working Paper 6255.
- Wei. Shang-Jin (2000): "How taxing is corruption to international investors?", Review of Economics and Statistics.
- Wheeler, D., and A. Mody (1992) : "International investment location decisions: the case of U.S firms", Journal of International Economics, vol. 33, pp. 57-76.
- WILLIAMSON, J. (1993): "Democracy and the 'Washington Consensus", World Development, 21(8), p.1329-1336.

ANNEXE

Table 1 - Results of the random effects model: Model 1

middle-income countries (S1)			High- income countries (S2)	
Variables	coefficient	t de student	coefficient	t de student
lfem	.0212911	2.39	.0009373	0.97
nam	-.0001851	-0.45	-.000079	-1.01
inter	.7338376	7.66	.1622373	5.06
mitt	-.0000138	-1.79	.0000274	4.28
cons	19.19193	97.71	18.34023	58.61
Observations	188		112	
Number of countries	9		6	
R ²	0.8328		0.4574	
Test of Hausman	Statistiques 61.07	p-value 0.0000	Statistiques 135.82	p-value 0.0000

Table 2 - Results of the random effects model: Model 2

middle-income countries (S1)			High- income countries (S2)	
Variables	coefficient	t de student	coefficient	t de student
lngdp	.4014312	3.44	.1090079	0.56
xgdph	.0734492	3.06	.0326466	0.71
infla	-.035584	-2.38	.0789142	1.84
lfem	.0019443	2.26	.0008834	0.90
nam	-.0002562	-0.62	-.0001414	-1.49
inter	.679216	7.19	.141477	4.16
mitt	-.0000107	-1.39	.0000318	4.76
cons	9.611653	3.42	15.30163	3.21
Observations	188		112	
Nombre de Pays	9		6	
R ²	0.8473		0.3758	
Test de Hausman	Statistiques 61.07	p-value 0.0000	Statistiques 135.82	p-value 0.0000

Table 3 - Results of the random effects model: Model 3

middle-income countries (S1)			High- income countries (S2)	
Variables	coefficient	t de student	coefficient	t de student
lngdp	.6194221	4.03	-.171633	-0.96
xgdph	.0705675	2.79	.0529958	1.45
infla	-.0439202	-2.85	.1064911	2.83
lfem	.0011074	1.06	.0007444	0.76
nam	-.0000344	-0.07	-.0001203	-1.39
inter	.5867219	5.60	.1365191	3.17
mitt	-2.70e-07	-0.03	.0000138	1.91
ge	.6010352	2.14	.3117711	0.46
cc	-.5610849	-2.00	-.569682	-1.03
rl	-.1030268	-0.41	-2.759236	-6.15
Rq	.2160817	0.54	1.693257	2.61
Va	.0884893	0.28	-2.391164	-3.83
Ps	.7320195	.001045	.9607073	2.58
cons	4.608164	1.26	21.27963	4.82
Observations	188		112	
Nombre de Pays	9		6	
R ²	0.8454		0.5698	
Test de Hausman	Statistiques	p-value	Statistiques	p-value
	16,04	0.1396	107.20	0.0000

Table 4 - Results of the random effects model: Model 4

middle-income countries (S1)			High- income countries (S2)	
Variables	coefficient	Tde Student	coefficient	T de Student
lngdp	.7919074	4.78	-.2393593	-1.16
xgdph	.0784608	3.11	.0341703	1.02
infla	-.0426785	-2.66	.0067465	0.15
lfem	.0008419	0.80	-.0006707	-0.69
nam	-.0001942	-0.41	7.98e-07	0.01
inter	.4499041	3.76	.0312436	0.61
mitt	8.77e-06	0.91	.0000117	1.74
ge	.9997995	2.97	.7071002	1.13
cc	-.6562025	-2.32	-1.372134	-2.49
rl	-.1499837	-0.54	-3.011912	-7.21
rq	.2672591	0.64	1.921216	2.80
Va	-.2336458	-0.68	-2.503608	-3.53
Ps			.1836405	0.47
des	-.0002823	-1.02	.000114	0.73
lfse	-7.37e-08	-0.37	2.81e-07	2.33
hepc	.0016761	2.53	.0011276	1.23
cons	.2103739	0.05	21.95264	4.34
Observations	188		112	
Nombre de Pays	9		6	
R ²	0.8042		0.7179	
Test de Hausman	Statistiques	p-value	Statistiques	p-value
	12.4	0.4940	19.04	0.0877