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Quality institutional reform and economic performance: Case of telecommunications in the MENA region

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Abstract— This paper tries to find the determinants and the economic performance measurements in the telecom sector by studying the impact of policy reform and the macro-institutional environment along with external factors such as the investment effort, population size and sector revenues in the MENA region on the economic performance in the sector.

The privatization in the MENA region corresponded in many cases to a foreign capital participation which makes the analysis of the effect of this interaction very important.

In a dynamic Panel data model, the System GMM estimator of Blundel and Bond (1998) allows us estimating the coefficients of each determinant as well as the weight of the reform policy and the institutional environment on the economic performance of the sector

Keywords— privatization, policy of openness, institutional quality, economic performance.

I. INTRODUCTION

During the last two decades, there has been a global reform wave that significantly affected both the market structure and institutions infrastructure industries, including sectors such as telecommunications, electricity and more traditional areas such as water and postal services.

Moreover, the political task is to redesign the basic legal and regulatory framework to generate economic incentives in these sectors.

And more particularly, it is encouraging operators to improve their offers in terms of cost-effectiveness, quality of service and pricing.

Since the 90s, policy makers in developing countries have further the process of reforms of their infrastructure sectors. After a period of implementation of policies of liberalization and privatization of some segments accompanied by the creation of regulatory authorities, major efforts have been allocated to improve the efficiency of the functioning of these authorities.

The degree of independence, the ability of human capital, and in particular the quality governance in the sector are the three elements of policy have mobilized a large part of these efforts. The economic theory advocated by L variables. Boltanski and L.Thévenot (1987), argue quantities derived from a social rather than industrial. In this framework, a complementary

approach emphasizes the interest of the discussion around a framework for integrated analysis that takes into account the quality of sectoral regulatory bodies at the same time as that of the overall environment in which these bodies operate (Gasmi et al., 2006).

To demonstrate the vital role that institutions play in the development and growth (Edison, 2003), many studies based on this new paradigm were conducted, highlighting the influence of institutional environments on the effectiveness sector reforms. A large part of these studies for infrastructure sectors, particularly telecommunications and energy, traditionally structured vertically integrated monopolies.

In a structuralist approach to industrial economy (Masson 1939), performance is supposed to express the set of a set of variables relating to industry structures and behaviors of its businesses. Indeed, assessing the nature of competition laws has led economists to explain industrial linkages between market structures and various performance related thereto. The characteristic of this approach is the minimization of the role of behavior "C" in the sequence "PCS". Thus, this approach suggests a model highlighting the market structure and performance associated with it. Studies of policies in this area recognize that the results of the liberalization of trade in services largely depend on the regulatory environment.

For New Institutional School (NIE), the type of property has significant effects on the behavior of the firm and performance. Certainly, a change in the allocation of property causes a different structure for encouraging management thus inducing a change in managerial behavior and performance of the company.

This paper has two objectives. First, the introduction of a new dataset for MENA countries on Telecommunications Policy. Secondly, the analysis of the impact of telecommunications policy on the performance of the telecommunications sector. Firstly, we are called to answer the following questions: first, what impact changes in specific policies - relating to ownership, competition and regulation - have on sectoral performance? Second, the order in which reforms are implemented there an impact on performance?

Results found (Gasmi et al. (2006)) show a positive effect of policy reforms on the performance of the sector. However, it is unclear to what extent these results can be applied to developing countries, most of them have introduced reforms with less developed networks in the world.

This concern can be clarified using the database of the World Bank / ITU telecommunications policy.

Moreover, in the context of this work through a panel model with dynamic effect, we evaluate the impact of alternative

reform policies and regulations in 15 economies of the MENA Zone for the period 1990-2009.

For each country and for each year, we identify the information about the status of the incumbent (government, corporation and / or private company), on the state of competition in different market segments (local and mobile services), and the presence of a regulatory body separate from the incumbent.

After taking into account the effects of exogenous wealth, technological effort and the size of the population, we will analyze how changes in policy affect different measures of performance of telecommunications services, and what is the measure most appropriate economic performance.

This paper is organized as follows. The second section describes the determinants of the performance of the telecommunications sector citing two components: the component and the institutional reform. Section three presents a conceptual framework to analyze the extent of the Performance of telecommunication services for the MENA area.

II- Determinants of Telecommunications Performance: Theoretical and Empirical:

The theoretical and empirical studies do not draw clear conclusions, about the determinants and measurement of economic performance and especially sectoral performance. The definition of performance is multiple. Obeying a key economic component, which reflects the efficiency performance in terms of cost and efficiency that translate in terms of objectives. This definition is related to three economic approaches namely the neoclassical theory of the firm, evolutionary theory and organizational theory (Liliane Bensahel 1997).

In their work, Henry John Gathon, Pierre Pestieau (1996) classified the missions and objectives of economics into three categories: efficiency, equity and macroeconomic stability. However, macroeconomic and distributional objectives took back by supplying the requirements of efficiency and profitability, which justified the mode of privatization. These authors subdivided efficiency in two dimensions; technical efficiency explained by the ability of a firm to produce goods or services with the least possible resources and allocative efficiency explained by a better use of resources to produce goods and services providing welfare highest in the community.

In the traditional model of performance (Tertre 2009), the first register being quality is defined on the basis of a standardization process based on standards that the company designs and controlled from its scientific and technical knowledge.

The second register ie productivity or rather the productivity gains from three determinants (Tertre 2009) combining their effects. The first determinant is the economies of scale, for

which the unit cost of products decreases with increasing the volume of production.

The second is the intensity of direct labor, certainly, the division of labor made from simple tasks, repetitive and controllable can initiate learning logic thereby reducing unit production times.

The last determinant is the "integration hardware" Indeed, technological innovation promotes the integration of previously separate different sequences productive.

The third register is manifested in the return on capital, the profitability is ensured by two dynamics: the productivity gains which leads to lower unit costs, then lower relative prices, thus increasing effective demand and the volume of production and the steady evolution of quality started by merely technical progress to ensure a lower relative prices less than the lower unit costs (Tertre 2009).

In addition, the service sector is a difficult area to analyze and study. Certainly, for an analysis of the effect of liberalization, which is a crucial milestone in the sector's performance, ownership of competition policy, regulatory reforms are crucial in the study of liberalization "immaterial".

III-Econometric Investigation A-Variables and data entry

Economic performance of the sector is the dependent variable, it is entered through five indicators of levels of service offer, prices and productivity in the sector.

For each performance measure (Model productivity, price and quality), we defined the following reduced form model, expressing for each country i , sector s and period t the dependent variable Y_{ist} based on the following:

a) a country-specific effects, f_i ; b) a set of exogenous economic characteristics expected to affect performance regardless of the regulatory and market structure, $Z_s [i, t]$ c) a group of indicators for market reform, $M_s [i, t]$ d) x_{it} is the vector of regressors representing, among others, the quality of the macro-institutional.

$$Y_{ist} = c + \alpha_{is} f_i + Z'_s \beta_s + M'_s \gamma_s + x'_{it} \beta + \varepsilon_{ist} \quad (1)$$

It assesses the impact of regulation and market structure, institutional quality and exogenous factors on productivity, the price of mobile services and fixed and the quality of service, from equation (1).

Be determined in the first place, the greatest weight that influences the performance of its three dimensions, is that institutional quality and policy reform? And the single most decisive.

In the second place, the performance measure most significant and most suitable for our study sample?

In the third place, the order in which reforms are implemented on performance.

The exogenous characteristics are supposed to reflect national specificities in terms of economic structure (income levels, population size, input costs and pricing structures) and technology (capital intensity and quality), in addition to specific effects country. In addition, the indicators of regulation and market structure does not just its shadow. These variables introduced in order to understand the evolution of regulatory frameworks over time and across countries in the region, thus increasing the accuracy and reliability of the estimated coefficients.

Whatever can save several potential sources of error in the variables. In addition, performance indicators can be difficult to compare and interpret, as well as the explanatory variables may not be truly exogenous to performance. The choice of technology may depend on the performance of the sector and the regulatory framework, as well, the extent of regulatory reforms may be influenced by the performance of the sector.

As has been stated above, it is difficult to define productivity in the service sector and a precise measurement of this variable. Productivity of telecommunications may be based on the number of users served, the number of minutes assured communications, the number of bytes transmitted, the range and quality of services as well as network externalities (generally not measurable).

In addition, the measurement of prices also poses difficult problems. For the price of the fixed and mobile telephony, we limit ourselves to the weighted average cost of call 3 minutes during rush hour and the cost of 3 minute call to call off peak hours, lack of availability of data. It will be ideal to take into account with this basket of prices, the burden of residential telephone connections load connections Business telephony and prepaid connection load and post paid mobile.

Institutional environment for our database is the world wide governance indicators (September 2010). This database includes six governance indicators mentioned above, each indicator is aggregated from individual indicators from several sources. Our panel covers 15 countries in the MENA region for the period 1990-2009, a period capturing a large number of reform initiatives in this area. The inputs to the model are derived from several databases produced by various international organizations like the World Bank and the International Telecommunication Union.

B - Econometric methodology:

The configuration of our data suggests an approach for doing econometrics of panel data. The method differentiated GMM (DIFGMM) applied to time series-cross (TSCS). Tests and Lagrange multiply the Wald test applied to the data providing the presence of fixed and dynamic effects, this method has been suggested by Arellano and Bond (1991) to analyze panel data and has been applied by Beck and Katz (2004) data TSCS.

TABLE I
INTRODUCING VARIABLES

<i>Performance</i>	
<i>Rate</i>	<i>p-mbl</i>
	<i>p-fix</i>
<i>Productivity</i>	<i>l-emp</i>
	(MITT)/ET
	NAM/EM
<i>Quality</i>	DER/100L
	LA/LF
<i>Institutional Quality</i>	GE
	PS
	Crpt
	RL
	RQ
	VA
Reform	Priv
	IO
Z s	Taille -pop
	INVF /ET
	RT/POP
	PIB/Habitant
Indicators relating to technology and economic structure (exogenous economic characteristics).	

Certainly, the GMM estimator in dynamic panel is based on two variants: the first is the first-difference GMM estimator of Arellano and Bond (1991) is taken into account for each period the first difference of equation estimate to eliminate the effects of specific countries, and then instrumenting the explanatory variables in first difference equation by their values at a delayed period or more.

The second is the system GMM estimator Blundel and Bond (1998) which combines the first-difference equations with the

level equations in which the variables are instrumented by their first differences. The second estimator is more efficient than the first because it gives biased results in finite samples when the instruments are weak.

Indeed, Arellano and Bond (1991) extend the approach of Anderson and Hsiao (1981, 1982) using the Generalized Method of Moments in order to exploit all the orthogonality relations between the lagged endogenous variable and the term error, which leads to a proliferation of instruments. A typical relationship is specified as a dynamic equation given by:

$$\log(y_{it}) = \alpha_0 + \alpha_1 \log(y_{it-1}) + x'_{it} \beta + \mu_i + \varepsilon_{it} \quad (1)$$

where $i = 1, 2, \dots, N$, $t = 1, 2, \dots, T$, Y_{it} is the dependent variable representing dimensional economic performance of the sector, 0 and 1 are scalar parameters, X_{it} is a vector of explanatory variables, the vector of regressors representing the quality of the macro-institutional, β is the vector of parameters associated with régresseurs, μ_i parameter representing the country specific effect, ε_{it} is an error term.

The subscripts i and t denote the country and year. Standard assumptions are made as follows;

$$E(\mu_i) = 0, E(\varepsilon_{it}) = 0, E(\varepsilon_{it} \mu_i) = 0, E(y_{it} \varepsilon_{it}) = 0 \quad (2)$$

Moreover, the estimate can be potentially suffered endogeneity from a correlation of two types: a correlation between the regressors and fixed-term effect on the one hand, and the correlation between the regressors and the term error, on the other hand. In addition, the explanatory variables used to capture the degree of privatization and liberalization are likely to be endogenous, especially in the early stages of reform. Certainly, taking as an example the licenses are granted conditionally upon the achievement of certain performance based on penetration, quality or other aspects of the industry.

The problem of endogeneity resulting from the correlation of the first type is circumvented by the simple expression of equation (1) in first differences:

$$\Delta \log(y_{it}) = \alpha_1 \Delta \log(y_{it-1}) + \Delta x'_{it} \beta + \Delta \varepsilon_{it} \quad (3)$$

Δ is the first difference operator. However, this transformation brings with it another endogeneity problem due to the contemporaneous correlation between $\log(y_{it-1})$ and the error term ε_{it-1} . The question is to find tools that can be used in the estimation of equation (3). Unlike the GMM dynamic, standard econometric techniques such as OLS does not provide efficient estimates of such a model, because of the presence of the explanatory variable delayed.

III- Results and interpretations:

The purpose of this section is twofold. Firstly, we try to find some general properties of the data from a review of its static descriptive. Second, we discuss the analysis of the correlation matrix and the results of our estimation for the coefficients of variables reform and institutional environment variables.

A-Descriptive Statistics

Variables in our model has a dispersion of variability

(Appendix 2). Certainly, the rate variable mobile phone has an average of 0.227 and a low variability of 0, 35 (standard deviation), the variable rate fixed telephony has an average of 0.44 and a variability of 0.41.

Variables measuring productivity, citing the main lines per employee, Minutes of outgoing international calls, number of mobile subscribers has an average and variability. The first and second respectively has an average of 4.9 and 9.6, and high variability of 1.02 and 1.16.

For variables representing the quality of service, recording a best result variable Faults per 100 main lines per year, has an average of 2.9 and a high variability (1.36). The waiting list for fixed line main has an average of 10.9 and a high variability (2,1).

Variables reforms present different variability in the effect variable privatization has an average of 0.29 and a low variability of 0.45. While the opening of the sector indicator has an average of 3.9 and a high variability of 2.07. Nevertheless, the macro variables have a strong institutional variability.

The variable quality of Legal procedures (RL) has an average of 51, 32 and a high variability 19, 98. The political stability variable has a mean of 37 and a high variability of 22.

The variable measuring control of corruption has an average of 50 and a high variability of 22. The regulatory quality has an average of 47.7 and a high variability 21, 56. The effectiveness of public action has an average of 50 and a high variability of 21.

Immediate demands and capacities of expression has an average of 24 and a high variability of 15.

In addition, the size of the population considered as a control variable has an average of 15.76 and a high variability of 1.34.

The total investment in fixed telecom in relation to total employment, which reflects the capital intensive technological effort and has an average of 9.14 and a high variability of 1.7.

Telecommunications revenue variable that reflects the economic structure has an average of 4.15 and a high variability of 1.66. The level of wealth (GDP per capita) has an average of 8.3 and a variability of 1.22.

Analysis the correlation matrix shows the existence of problems multicollinéarité between variables. According to Appendix 2, we see that the correlation between the variables reform and institutional macro environment is strongly influenced by a correlation between openness indicator (IO) sector and the Control of Corruption (CC) (0.06) thus validating the hypothesis that countries with a high level corruption discourages privatization (Auriol and Picard (2004)), and a strong correlation between openness indicator and quality of legal procedures (RL) (0.08).

In addition, there was a strong negative correlation between privatization and immediate demands and capabilities of expression (VA) (-0.0295), in fact, political and individual rights enjoyed by citizens discourage privatization.

B- correlation matrix

The analysis by the correlation matrix shows the existence of multi collinearity problems between variables Recipe Total telecommunications and level of wealth (GDP per capita), quality procedures between information (RL), control of corruption (CC) , the regulatory quality (RQ) and the effectiveness of public action (GE) between regulatory quality (RQ) and the effectiveness of public action (GE) and finally between GE and capabilities immediate demands and expression (VA). The problem of multi collinearity can conclude that we can not use all variables together in our model, where we'll settle for the institutional environment variables to take into consideration only the quality of process of law (RL), political stability and immediate demands and capabilities of expression (VA).

On variables related to technology and economic structure, it is limited to the size of the population, total revenue of the sector and the density of capital (total investment in the sector).

C- Method (SSGMM)

We find that the price of the mobile phone is significantly and positively affected by the rate of mobile telephony in the previous year and negatively by the macro-institutional capabilities detected by immediate demands and expression (VA). Immediate demands a capacity of 10% leads to a small decrease in price of mobile price by 0.01%.

While the rate of fixed telephony is significantly and positively affected by the price of fixed telephony in the previous period at 1%, and significantly and negatively affected by the size of the population at 10%. Indeed, an increase in the population size of 10% resulting in a population density causing a significant decrease in the price of mobile tariff of 1.07%, explained by a large economy of scale.

With regard to institutional quality, it is noted that the quality of legal procedures significantly and positively affects the price of a fixed rate.

The results of the first and second regression let us design the reform component detected by the indicator of openness and privatization of the incumbent has no significant effect on the performance of the sector where the performance is measured by the rate of the fixed or mobile.

However, the reform component has a significant enough weight on the sector's performance measured by labor productivity, certainly a policy of liberalization of the sector produces an improvement in productivity, this is particularly the case where the performance is measured by the Minutes outgoing international calls (MITT) in relation to the total employment, where privatization and openness indicator has a significant and positive effect on this measure.

The privatization of the historic operator causes an increase in outgoing minutes of international calls. Certainly, a change in the allocation of property causes a different structure for encouraging management thus inducing a change in managerial behavior and performance of the company.

The change in allocative efficiency is due largely to changes in

the ownership structure of firms and to a lesser extent to the market structure revealed by the openness indicator for the MENA area.

In addition, the increased competition increases the pressure on firms to adopt better technology eliminates the underutilization of resources and improves organizational performance in terms of productivity.

Procedures liberalization has a negative and statistically significant main lines per employee and the number of mobile subscribers.

Certainly, the establishment of an independent regulatory authority, the average degree of competition in different segments of the network of fixed and mobile telephony and openness to foreign direct investment in the fixed and mobile networks have a negative impact on performance sector measured by mainlines per employee and the number of mobile subscribers.

From our results, we conclude that institutional quality has a marginal effect on the performance of the sector where reforms adopted revealed by the degree of openness, the degree of competition and privatization have a significant and negative sector performance.

This negative effect of the liberalization of the sector is explained by the Premature liberalization in the MENA region, the institutional effort has no impact on the performance of the sector in an area where the network is in a growth phase.

We get results "unexpected" among the political variables (privatization and opening). Certainly, the effects of regulation and competition in local services are negative in our model. They nevertheless theoretical and empirical models exist specific market and / or regulator failure when barriers to entry increases welfare (Laffont, 1999).

It is also possible to think that competition in local services leads to inefficient duplication of networks in growth areas. Institutional quality as measured by immediate demands and capabilities of expression (VA) has a positive and statistically significant impact on labor productivity measured by Minutes outgoing international calls (MITT) reported the total employment and the number of mobile subscribers / Jobs Mobile. An improvement of 10% VA leads to an increase in the number of outgoing minutes of international calls (MITT) reported the total employment by 0.15% and an increase of 54, 6% of the number of mobile subscribers reported in Employment mobile. In addition, we can see that institutional quality to a marginal effect on the sector's performance, when it is measured by labor productivity.

With regard to the first register of the economic performance of the sector to know the quality of telecommunications services, institutional quality has a serious effect on the first step. Certainly, a 10% improvement in the quality of process of law (RL) causes a reduction of 0.19% of the number of faults per 100 main lines per year and a decrease of 0.28% of the waiting list for main fixed line. Moreover, in the same context registry is taken as an improvement in the macro-institutional detected by political

stability leads to an increase in waiting list for fixed line main 0.49%, which is explained by the slow administrative procedures.

Regarding the reform component, we find that neither the open market or the privatization of historic operator has no significant effect on the number of faults per 100 main lines per year, whereas the effort of openness has a negative and statistically significant impact on the waiting list for fixed line main.

Historic privatization of operators leads to a decrease of the waiting list for a fixed line for main area studied. Certainly, the opening of the sector to the outside and privatization increases competition and improves the quality of service.

In addition, the density measured by the total capital investment in fixed telecoms reported total employment has a positive and statistically significant effect on the quality of service as measured by the number of faults per 100 main lines per year, a 10% increase of total fixed investment in Telecom leads to an increase of 0.39% of the fault. This result can be explained by the made a major investment effort in the area causes an increase in fixed teledensity thus explaining the increase in the number of faults, or an investment effort must be accompanied by a major effort to reform (liberalization and openness) had a significant effect on the quality of service and network, to act positively on the economic performance of the sector.

This result is also confirmed by the third regression. Indeed, increased effort investment in the sector has a significant and positive effect on the number of main lines per employee (number of mainlines / total employment) accompanied by a significant effect of policy reform on this measure productivity.

In addition, technological effort detected by the density of capital must be accompanied by policy reforms to strengthen the sector's performance.

The income effect has a significant impact on the performance of the sector. A 10% increase in income sector as measured by total revenue Telecommunications relative to the size of the population leads to an increase of 0, 79% of main lines per employee, an increase of 21.5% of subscribers the mobile / Jobs Mobile.

In addition, an increase in the population size of 10% leads to a decrease of 3.28% inconvenience, this can be explained by the importance of scale economy triggered by the increase in consumers of fixed and mobile .

One lesson that emerges from the description of the institutional environment is that most countries in the region have opted for a "controlled competition". Although the traditional monopoly becomes rare, most governments are reluctant to give up discretionary policy and delegate completely the choice markets. A major challenge seems to be largely acquired: in many cases, privatization has been accompanied by the introduction of some measures of competition. But governments have been reluctant to allow free entry, and in many cases, the private and foreign participation has been limited in the capital of the incumbent.

Many governments also had difficulties to give credibility to their reform programs and weakness regulators "independent" or supposed to be. This is what increases the attractiveness of the GATS as a means to continue reforms and give them more credibility.

The objective of this review is to evaluate the hypothesis that the commitments in the GATS telecommunications have brought benefits to the countries of the MENA region who have made commitments in the sector. The measures used are a good representation of the performance of the sector.

Econometric estimators allow an assessment of the relative importance of alternative policy reforms and, in some cases, their interactions. To capture the interdependence between policies, we introduced two interaction terms for privatization policies and openness. Privatization in the MENA region coincided in many cases with a foreign equity, it would be interesting to study the effect of this interaction on the economic performance of the sector.

The transfer of capital, technology and know-how seems to affect positively the performance of the telecommunications sector.

With our econometric analysis of interaction shows the existence of a significant interaction ente privatization and opening only the fourth two-stage specification and specification for the fifth one step. Indeed simultaneous action between the policy of opening coating of competition policy and regulation has a significant but negative effect on the number of outgoing minutes of international calls (MITT) / Total employment (0352) and the number of subscribers the mobile / Jobs Mobile (1.09).

When looking at the interaction terms in two dimensions, we find that the impact of changes to the policy of privatization (opening) is negatively influenced by the implementation of the open policy (privatization).

This leaves found that adoption of two policies simultaneously have a negative impact on the sector's performance is measured only by labor productivity.

Interaction terms also give some unexpected results for other specifications (other performance measures).

The negative effect of regulation may be surprising, but it may also indicate that the establishment of a separate regulator is a necessary but not sufficient for effective regulation.

IV-CONCLUSION

This paper has analyzed the relationship between the political sector reform and institutional policy on the telecommunications sector performance, taking into account the three registers of performance: quality, productivity and profitability. From the results, it has been noted that the reform component has a significant enough weight on the sector's performance measured by labor productivity, certainly a political liberalization and privatization policy leads to a

productivity improvement, This is particularly the case where the performance is measured by the Minutes outgoing international calls (MITT) compared to total employment.

Moreover, it has been found that the establishment of an independent regulatory authority, the average degree of competition in different segments of the network of fixed and mobile telephony and openness to foreign direct investment in the fixed and mobile networks have a negative impact on the sector's performance measured by mainlines per employee and the number of mobile subscribers, and a positive impact on the number of outgoing international minutes. As explained by that made this area began a premature liberalization of the sector.

The results obtained showed that the change in allocative efficiency is due largely to changes in the ownership structure of firms and to a lesser extent the structure of the market indicator integrated into opening the MENA Zone.

With our econometric approach, it has been shown that political reforms are being guided by supportive policies like a major technological effort and income sector, to improve the economic performance of the sector. Certainly, increased 10% investment in the sector on the one hand, a significant and positive effect on the number of main lines per employee, while being guided by a significant effect of policy reform on the latter measure, detected by an increase of 0.27%.

On the other hand, with this investment policy reform has a significant and positive effect on the quality of service and network, as marked by a decrease of 0.39% of the number of faults per 100 lines principal per year. Furthermore, we conclude that a policy reform must be accompanied by an effort reflecting technological capital density to enhance the performance of the sector. In addition, institutional quality has a marginal effect on the sector's performance is measured by labor productivity.

With regard to the first register of the economic performance of the sector to know the quality of telecommunications services, institutional quality has a serious effect on the first step. Certainly, a 10% improvement in the quality of process of law (RL) has resulted in a decrease of 0.19% in the number of faults per 100 main lines per year and a decrease of 0.28% of the waiting list for main fixed line. Moreover, in the same context registry is taken as an improvement in the macro-institutional detected by political stability leads to an increase in waiting list for fixed line main 0.49%, which is explained by the slow administrative procedures.

Privatization in the MENA region coincided in many cases with foreign capital participation, so an analysis of the effect of this interaction on the economic performance of the sector has shown that simultaneous action between the policy of opening coating a policy competition and regulation will have a significant but negative effect on the number of outgoing minutes of international calls (MITT) / total employment (0352) and the number of mobile subscribers / Jobs Mobile (1.09). The negative impact of the interaction of the two policies on economic performance is explained by the

premature liberalization of the sector in the study area, certainly premature liberalization accompanied by privatization of incumbents have a negative effect on the performance of the sector.

Moreover, the negative effect of a policy of openness including regulatory policy and political attractiveness of FDI on sector performance can be surprising, whatever may indicate premature liberalization of the sector and can indicate that the introduction of a separate controller is a necessary but not sufficient for effective control. It is therefore preferable to measure the quality of competition and regulatory structures as well as their actual independence in the econometric models. Now it is difficult to detect these measures for our sample, certainly time data on actual competition like the market shares of operators are not available and the lack of effective independence of regulators.

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