

The Impact of Deregulation and Privatization on Financial and Operation Performance of Telecommunication Sector in Arab Countries

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Abstract

The main objectives of this study are to evaluate the impact of deregulation and privatization on financial and operating performance of telecommunication sector in Arab countries. Previous Studies clearly showed positive effects of privatization on the privatized firms performance provided that privatization is accompanied by effective, independent regulation as well as by fair competition. In this study, financial and operating performance of 15 telecoms in Arab countries, privatized through public share offering over the time period (1994-2003) is investigated. MNR (Megginson and Netter Regressions) univariate testing procedure is used to compare performance levels of the studied telecoms after and before privatization. Although privatization has led to significant increase in operating efficiency and capital expenditure, these increases were accompanied by significant decrease in employment. Panel data analyses was employed to determine whether the change in liquidity and sales as well as privatization and market value of the Arab privatized firms are attributed to privatization. It is found that profitability, operating efficiency and capital expenditure have significantly increased after privatization, accompanied by a significant decrease in employment.

Keywords: Privatization, Financial and operating performance, Telecommunication sector, Arab countries, Profitability, employment.

Introduction

The term “privatization” can have different meanings. The most popular one refers to the sale of (total or partial) previously state-owned enterprises (SOE) to private sector equity holders, assuming that firm’s internal efficiency and profitability would increase. Few economic studies approach the subject of privatization. One example is the World Bank study by Shirley and Walsh (2000), which they review 52 studies of privatization, 32 of them found significant improvement in performance of privatized enterprises, second group of privatized companies which consists of 15 found no significant differences and the last 5 found superior performances in state-owned enterprises.

One of the main purposes of privatization is to post the welfare of the people by bringing about an open market place of wide variety that offers advanced services with affordable access to all people in the country. There is actually no standard distinction which accurately draws clear boundaries to distinguish methods states use to privatize properties owned by them. Nevertheless, literatures mentioned common methods which are usually used to privatize state-owned corporations, noticing that these methods sometimes overlap and that states in some instances use more than one method for a single case of privatization. Theoretically, privatization would affect the performance of enterprises through multiple channels.

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First, it might cause these enterprises to operate more productively as new managements are subjected to more pressures from the profit-oriented investors and the financial markets. Second, the change in ownership structure of the privatized enterprises would shift their objectives away from the previous one which imposed by politicians, toward new objectives aim to maximize enterprises efficiency, profitability, and shareholders equities. Third, privatized enterprises would have more entrepreneurial opportunities as the government control decreased (D'souza, Megginson.& Nash, 2007).

The privatization of publicly-owned telecommunication firms began in Japan in the 1980s. Since then, the telecommunication sector all over the world has been undergoing dramatic reforms coupled with major innovations that pushed telecommunication costs drastically down and increased demand. The percentage of countries that goes through sort of privatization to their telecommunication sectors rose from 2% in 1980 to 56% in 2001 (international Telecommunication Union, ITU 2002). At the same time markets for new entrants in the mobile and the internet were opened up 78% of the mobile market in the 201 countries included in the ITU database and 86% in the internet market had some degree of competition by 2001.

Liberalization of the telecommunication sector has been taking place in developed and developing countries alike as part of wider economic reforms started in the 1980s. The trend of telecommunication sector liberalization has not manifested itself in a uniform manner because its interpretation, goals, rational and implementation vary across countries. In addition, theorists and policy markers progressively recognize the importance of broader access to this sector in promoting economical and social development. According to Boutchkova and Megginson (2000), telecoms account for a percentage exceeding 30% of the total capitalization and for an even larger portion of the total trade volume.

The Arab countries have embraced telecommunication sector liberalization at various ways and speeds. Countries have followed two policies in this regard. The first step consists of the enactment of telecom law and the establishing of an independent authority. In the second step, the telecommunication authority starts to liberalize the telecommunication market by changing of ownership and the introduction of competition. In terms of the liberalization spectrum, Bahrain and Jordan were the most liberalized stats regarding their telecommunication sectors, while Qatar and UAE are the least, and the number of mobile operators in the region increased rapidly since 1999. The main explanation of the heterogeneity of Arab states at the regional level are the distinctive structural features of the economies in the region (karshenas, 2001). As the World Bank (2013) argued, Arab states may find their economies in a resource trap if they do not strengthen their institutions and create better investment climate.

The telecom sector in the Arab countries shows slower market liberalization than elsewhere in other developing countries and remain less open to competition, which has resulted in lower performance. The level of telecommunication restrictive policies that affect the Arab countries on average is 0.46 compared to 0.35 in developing countries (in a sample of 79 countries from Asia, Africa, Latin America,..) which denying the region many advantages from increasing participation into global trade, with stronger export and growth performance (Rossotto et al., 2005). The relatively low performance of the telecommunication sectors in some Arab countries should be studied taking into account the institutional factors that might affect that performance.

In this study, it is attempted to find answers to a set of questions related to the effects of privatization on the performance of privatized corporations in an essential, vital industry in developing economies; namely national telecommunication industry, which can be described as being the most economically significant industry ,as well as the most politically sensitive industry in all economies. Since the beginning of the electronic technology epoch and the introduction of traditional and then advanced telecommunication systems, national telecoms' administration and control have been in the hands of national states in most of the world's countries, being developed or developing ones. As a result of the importance and significance of the telecom industry, administrating telecoms has always been a matter of national sovereignty. This has made the privatization of telecoms, according to Wallsten (2000 a) and Noll (2000), a very significant shift in the balance of state power.

Economic significance of telecom industry, as well as the various regulatory and financial issues resulting from telecom privatization, made this field an important one to academic researchers and empiricists to investigate. In essence, the present study follows earlier telecom privatization studies, but it presents two important new empirical contributions, which are:

- Presenting the first multi-national investigation of performance changes associated with privatization of telecoms, replying on the methodology of comparing performance measures after and before privatization introduced by Megginson, Nash and Van Randenborgh [MNR] (1994).
- Performing the first panel data estimation of the impacts of telecom privatization and regulation using country –specific information.

Studying individual companies permits to examining firm-specific sources of performance changes documented. Particularly, it is then possible to examine the effects of privatization on efficiency, profitability and employment of privatized telecoms.

In the present study, financial and operating performance of thirty telecoms in Arab countries, which have been privatized through public share offering over the time period extending from 1998 to 2003, is investigated. First, a dataset is built using balance sheet data for a period of 7 years around the privatization date, taking into account various measures for efficiency, profitability, capital expenditure and employment. MNR univariate testing procedure is used to compare performance levels of these companies after and before privatization.

It is found that profitability, operating efficiency and capital expenditure have significantly increased after privatization, accompanied by a significant decrease in Employment. However, these comparisons do not take into account separate ownership and regularity effects, such as retained government stakes. This separate effect is examined before and after privatization for a period of 7 years around the privatization date using both random and fixed effect panel data estimation techniques. It is verified that privatization is significantly associated with higher profitability and efficiency, as well as with lower employment. Efficiency is enhanced through incentives to raise the workers productivity and not through firing them. In addition; profitability is raised by cost reduction rather than by price increase.

Significance of study

The significance of this study stems from the significance of the telecom industry ,which constitutes a main pillar of the national economy and an important income source to all countries all over the world; being developed or developing .Results obtained in relation to the impact of privatization of national telecom, on their financial and operating performance will be a guide for Arab countries to whether it is wise to further continue with privatization in this vital sector or retain the state's role in the administration and regulation of national telecoms.

Being a multi-national study examining 15 national telecoms in Arab countries, which have been privatized either partially or completely. This is done through comparison of pre-post privatization financial and operational performance of privatized national telecoms, represented in: Profitability, efficiency, capital expenditure and employment.

The main objective of this study is evaluating the impact of privatization on financial and operating performance of telecommunication industry in Arab countries. To achieve this objective, theoretical aspects of privatization have been addressed by reviewing concepts , methods and experiences of a number of Arab countries Furthermore ,this study aims at guiding officials and policy makers in Arab countries to become acquainted with advantages and disadvantages of telecom privatization in order to maximize benefits and minimize drawbacks and decide whether to continue applying their policies pertinent to privatization or perhaps review their policies pertinent to privatization as a whole and telecom privatization in particular.

Literature Review

Communication industry is a significant industry, in which the regulatory environment has an essential impact upon performance .Therefore, in order to yield meaningful outcomes; one should investigate numerous branches of literature.

These branches include empirical research examining performance changes due to privatization by using a comparison technique of performance before and after privatization. Another branch is to investigate empirical studies, which aimed at studying the effect of privatization upon performance in one regulated corporation or industry. A further branch is associated with studying, the effect of privatization as well as regulatory changes upon performance in telecom firms which have been owned by the state prior to privatization.

Multi-national research methodology (MNR) study conducted by Megginson, Netter and Randenborgh (1994), it was conducted on 61 companies from 18 countries belonging to 32 industries. It aimed at investigating financial and operating performance of those companies before and after privatization, noting that those companies were partially or fully privatized during the period of time extending from 1961 to 1990. Results revealed that the companies examined have become more efficient and more profitable. Furthermore, those companies succeeded in increasing real sales and capital expenditures lowering their debt levels and elevating dividend payments.

Evidence has not been found on a decline in employment levels, which could be attributed to privatization. On the contrary, about 64% of the study sample witnessed an increase in employment levels. A study on the financial and operating performance of 79 companies working in 21 developing countries was carried out in 1998 by Boubakri and Cosset, noting that the investigated companies were privatized over the time period extending from 1980 to 1992. Here also, results revealed an increase in real sales, capital expenditure, profitability and operating efficiency. Dividends and total employment increased as well.

Another study in this domain was conducted by Dewenter and Malatesta (2000) on a sample consisting of 63 companies. The investigated companies were privatized over the period of time extending from 1981 to 1993. Results showed a significant increase after privatization in profitability calculated by using return on sales as a proxy. However, when profitability was calculated as a quotient of net profit before Privatization divided by sales, the result was a marginal decline. In addition, results revealed a significant increase in productivity. An important yield of this study was that there exists a significant difference in efficiency and profitability between privately owned companies, including privatized ones, and state-owned companies to the benefit of the former.

A further study was conducted by D'Souza and Megginson (1999), aiming at examining financial and operating performance of a sample of privatized companies before, through comparing financial and operating performance of the studied companies and after privatization. The study sample consisted of 85 companies from 28 countries. The investigated companies were privatized over the time period from 1990 to 1996. The researchers reported significant increases in the mean levels of operating investment real sales and profitability. They also found significant decreases in leverage ratios. Capital expenditures and employment changed only insignificantly.

Looking for the overall results of the MNR studies herein, one can find strong evidence on that privatization lifts the financial and operating performance of privatized companies and that privatization does not necessarily lead to wide employment losses. Another branch of research on privatization is the case study and industry-specific research. Studies belonging to this branch investigate econometrically the effect of privatization on the performance of one company or a small number of companies in one country. A comprehensive survey of these studies associated can be found in Megginson and Netter (2005). Focus is placed on studies with regulated industries or those strongly affected by regulation. In 1992, Galal, Jones, Tandon and Vogelsang conducted a study sponsored by the World Bank, to compare the actual performance after privatization of twelve large companies in Britain, Chile, Malaysia and Mexico in order to predict the performance of these companies if they were not privatized. Among them, three were telecommunication companies: British Telecom, Telmex and Chile's CTC.

The approach used in this study, as well as in similar studies, is known as the counter-factual approach. The researchers reported net welfare gains in 11 of the 12 cases studied, which equal on average 26% of the sales prior to privatization. There were three cases in which workers have considerably benefited. In no case the status of workers has significantly worsened. Parker (1994) conducted a case study to explore the impacts of privatization of British Telecom in 1984 on its investment expenditure; factors productivity, profitability and service level. Significant enhancement in performance has been revealed due to privatization based on most measures. There was a fall by 11% in prices after privatization, accompanied by improvements in profitability and level of services.

There was also a fall by nearly one third in employment over a period of 10 years. Tandon (1995) studied welfare impacts of privatization of the Mexican Telmex as well as two other large Mexican firms. It was found that factor productivity increased by a percentage of more than 15% during three years following privatization, accompanied by a rapid growth in the number of lines in service. Prices increased and quality of services improved. Due to regulatory changes and the introduction of competition, it was difficult to assess the benefits.

Rogozinski (1997) [in Sheshinski and Lopez –Calva(1999)] investigated the impacts of privatization of the Mexican company Telmex in 1990 on its investment ,teledensity, service level as well as its expenditures of investment over the four years following its privatization .Results revealed considerable increase in :number of towns with phone access , number of lines in service , teledensity , capital expenditures ,as well as usage of modern fiber optic technology .

Boles de Boer and Evans (1996) studied the effects of deregulation of Telecom New Zealand in 1987 and its privatization in 1990 on the quality and price of telephone services. Results revealed productivity growth which led to a cost decrease at an annual rate of 5.6% , accompanied by a significant enhancement in the quality of services Deregulation led to an employment increase as well as to price reduction ,where there were some effects that were possibly caused by privatization .This result has been revealed by Petrazzini and Clark (1996),who utilized 1994 ITU data to examine the effect of deregulation and privatization on both level of and growth in employment , service quality ,price and teldensity ; the latter meaning number of main telephone lines per 100 people , in telecoms in 26 developing countries .Another result was that both deregulation and privatization caused significant improvements in both level of and growth in teledensity . The impacts of deregulation and privatization on the quality of services have been found to be inconsistent.

Ross (1999) examined the impacts of privatization and competition on network expansion and efficiency in 110 countries all over the world over the time period extending from 1986 to 1995.This study utilized ITU data and panel data regression methodology for analysis .Results revealed that countries with 50% or more private ownership of telecom corporations enjoy higher levels of teledensity and higher growth rates thereof .Efficiency increase could be raised by both privatization and competition. Therefore, it is advisable to follow a strategy of privatization that concentrates on partial privatization, such that the investor's share in the property of privatized enterprises does not exceeded 49%, in order to attain competitiveness and avoid monopoly. However, network expansion is positively correlated to privatization only.

Wallsten (2001a) analyzed econometrically the impacts of telecom reforms in developing countries .Utilizing a panel database of 30 Latin American and African countries over the time period extending from 1984 to 1997, this study discussed the impacts of regulation, competition and privatization on the performance of telecom corporations. In another study conducted by Wallsten (2001b), 20 privatization cases from 15 developing countries were discussed in order to investigate the real impacts of giving exclusivity periods to privatized telecom firms.

In the first study of Wallsten, results showed that there exist a strong correlation between competition and both of per capita access and cost decrease .Effective regulation has been found necessary to accompany privatization so that the latter becomes fruitful. Privatization without effective, independent regulatory reform has proven to be unhelpful. The second study of Wallsten revealed that exclusivity periods lead to a reduction in investment incentives; thereby reducing the growth of number of main lines by about 40%, whereas sales prices have been found to be doubled as a result of granting exclusivity periods.

A study conducted by Boylaud and Nicoletti investigated the impacts of privatization and liberalization on productivity, prices and quality of cellular and long-distance telephony service over the time period extending from 1991 to 1997 in 23 OECD countries. It was found that competition causes productivity and quality enhancements as well as lower prices in telecom services .Nevertheless, no clear impact of privatization could be found in this study .It should be noted that this study utilized factor analysis and a database on market structure and regulation.

D'Souza and Megginson (2000) studied performance changes due to privatization in 17 national telecom firms, which were privatized during the time period from 1981 to 1994 through share offerings. Results revealed a significant increase due to privatization in: output, profitability, capital expenditure, operating efficiency, number of lines and salary per employee. Leverage has been found to decline considerably with an insignificant decline in employment.

Methodology

The following is a brief overview of privatization telecom firms in Arab countries which was taken as sample, then explain the procedures followed in conducting this study.

Data sample:

All the information with regard to the study sample firms was gathered from annual reports through direct solicitation from privatized firms and completed from Privatization International, World Scope Disclosure, Laser Disclosure, Moody's International Manual, DataStream, the International Telecommunications Union (ITU) and the IMF's International Financial Statistics. The details for the sample taken for Arab countries are presented in the Table 1.

Table 1 Arab countries Telecoms Firms

Country	Firm name	Transaction year
Jordan	JTC	2000
Algeria	Algeria Telecom	2000
Bahrain	Batelcom	2001
Saudi Arabia	STC	1998
Egypt	Telecom Egypt	1999
Kuwait	NMTC	1999
Lebanon	Liban Telecom	2001
Mauritania	Mauritel	2000
Morocco	Marco Telecom	1999
Oman	OmanTel	1999
Qatar	Q-Tel	1998
Sudan	Sudantel	1994
Syria	Syriatel	2001
Tunisia	Tunisia Telecom	2000
Yemen	Sabafon	2001

Testing for Performance Change

Here, MNR privatization methodology is used. The same methodology was utilized by Megginson, Nash and Van Randenborgh (1994), as well as by Boubakri and Cosset (1998), and D'Souza and Megginson (1999). Taken into account is a time period of up to 7 years. The considered 7-year period includes 3 years before privatization, the year in which privatization took place and 3 years after privatization. Computed are empirical proxies for each variable and for each studied company. A performance time line reflecting operating results is then developed. Calculated are means of variables under consideration for each company for the years before privatization (-3 to -1) and the years after privatization (+1 to +3); whereas the year in which privatization took place (0) is excluded, being the reference for pre- and post-privatization periods. Then, Wilcoxon signed-rank test is utilized to examine whether the changes in each variable are significant or not. Tested is thereby the mean difference in the value of each variable before and after privatization, which can be zero or a non-zero value. Conclusions are then drawn according to the value of Z, known as the standardized test statistic, which usually follows a standard normal distribution for samples amounting to 10 or more.

Furthermore, a proportion test is employed. This test aims at determining whether $p=0.5$, where p is the proportion of companies in which there are changes in a certain direction.

Later, panel data estimation is used to determine regulatory and ownership impact on performance of companies under investigation. Test results are divided into 3 parts as presented in table 2.

- Changes pertinent to profitability, which are Net profit (ROS), Return on equity (ROE) and Return on assets (ROA).
- Changes pertinent to efficiency, which are Sales/employee number (EF1) and Number lines/number of employee (EF2)
- Changes pertinent to capital expenditures and financing due to privatization, which Capital expenditure (CAP1), capital expenditure/sales (CAP2) and Capital expenditure/assets (CAP3)
- Change pertinent to employment, which is Number of employees (EMP).

We employ the Wilcoxon signed rank test (with its z statistic) as our test for significance for the change in mean values.

Table2 (Summary of financial and operating performance changes following privatization of telecommunications firms)

Financial and operating performance changes following privatization of telecommunications firms					
Variable	Variable name	Mean before	Mean after	Average mean(change)	z-statistic for difference in means
%Operating income/sales	OISALES	22.8 22.9-	27.3 27.3-	4.5 4.4-	8.239***
Return on sales (net %income/sales)	ROS	11.5 11.5	15.8 15.7	4.3 4.2	7.872***
Return on assets(net %income/equity)	ROA	5.9 6	7.3 7	1.4	4.613***
Return on equity	ROE	13.4	14.9	1.5	8.239***
Sales	NRSALES				-7.204
sales per employee Real	NRSPE	1.31		-1.31	6.983
no lines per employee Average	NALINEMP	0.007	0.006	0.001	
EMP		0.007	0.006	0.001	8.639***
%Capital expenditure/sale	CAPXSAL	29.9	31	1.1	7.927***
expenditures/total Capital %assets	CAPXASSET	14.7	14	-0.7	7.68***
Efficiency	EFE	0.8189	1.79	0.98	8.129***
EFF6	EFF6	0.82	1.09	0.27	3.79***
RC	RC	1.03	2.2	1.07	8.168***

Table (2) Wilcoxon signed rank test (with its z statistic) as our test for significance for the change in mean values. ***, **, * denote significance at the 1, 5, or 10 per cent level

To summarize, Wilcoxon and proportion tests applied to our sample of telecoms have proven significant improvements in profitability. Furthermore, the impact of privatization on employment was insignificant, showing a marginal decline. Capital expenditures increased significantly and drastically after privatization.

Fixed Effect Panel Data Analysis Approach.

Panel data estimation is the most appropriate analysis approach to estimate variances over time of the performance indicators considered in this study. According to Bortolotti, D'Souza, Fantini and Megginson (2002), this analysis approach has the capability of controlling temporal changes in the operating environment as well as individual, corporation-specific heterogeneity. Assuming that error terms are random independent variables, which are identically distributed with variance and mean zero, and treating individual, corporation-specific heterogeneity as varying over time, it was possible to use a fixed effect panel data. In our investigation, constant slope coefficients are used. The intercept changes across individual corporations. This is called a fixed effect or least square dummy variables regression model. Differences between corporations might be attributed to corporation-specific features as reported by Gujarati (2003). The term "fixed effects" comes from the fact the intercept is constant over time although it is variable over corporations. Slopes, or coefficients of regression, are also time invariant (Gujarati, 2003).

Privatization, the effect of which on financial and operating performance of 15 telecoms is investigated, is a dummy variable, which takes the value of 1 if 50% of the government ownership in a privatized corporation is sold to a private investor and takes the value of zero otherwise, impact of the independent variables on the dependent variable over time is modeled as follows:

$$Y_{it} = \alpha_i + \beta_1 X_{it} + \beta_2 Z_{it} + U_{it}$$

Where Y is the dependent variable, I refers to the i^{th} corporation, t refers to time, α_i is the individual effect, which can be broken into fixed individual effect. X is a vector of explanatory variables. Z is a corporation-specific effects variable, B_1 and B_2 are parameters and U is a random unobserved component accounting for unexpected stock, which might have an impact on the corporation performance.

For studies investigating the impacts of numerous variables on performance (such as: privatization, liquidity, log real sales, real GDP), eight models can be formulated as follows in order to show the real impacts of the study variables on the dependent variables.

$$\begin{aligned} \text{ROS} &= \alpha_i + \beta_1 \text{PRIVD}_{it} + \beta_2 \text{LIQ}_{it} + \beta_3 \text{LogSal}_{it} + \beta_4 \text{RGDG}_{it} + U_{it} \dots \dots \text{Model 1} \\ \text{ROE} &= \alpha_i + \beta_1 \text{PRIVD}_{it} + \beta_2 \text{LIQ}_{it} + \beta_3 \text{LogSal}_{it} + \beta_4 \text{RGPG}_{it} + U_{it} \dots \dots \text{Model 2} \\ \text{ROA} &= \alpha_i + \beta_1 \text{PRIVD}_{it} + \beta_2 \text{LIQ}_{it} + \beta_3 \text{LogSal}_{it} + \beta_4 \text{RGPG}_{it} + U_{it} \dots \dots \text{Model 3} \\ \text{EF1} &= \alpha_i + \beta_1 \text{PRIVD}_{it} + \beta_2 \text{LIQ}_{it} + \beta_3 \text{LogSal}_{it} + \beta_4 \text{RGPG}_{it} + U_{it} \dots \dots \text{Model 4} \\ \text{EF2} &= \alpha_i + \beta_1 \text{PRIVD}_{it} + \beta_2 \text{LIQ}_{it} + \beta_3 \text{LogSal}_{it} + \beta_4 \text{RGPG}_{it} + U_{it} \dots \dots \text{Model 5} \\ \text{EMP} &= \alpha_i + \beta_1 \text{PRIVD}_{it} + \beta_2 \text{LIQ}_{it} + \beta_3 \text{LogSal}_{it} + \beta_4 \text{RGPG}_{it} + U_{it} \dots \dots \text{Model 6} \\ \text{CAP1} &= \alpha_i + \beta_1 \text{PRIVD}_{it} + \beta_2 \text{LIQ}_{it} + \beta_3 \text{LogSal}_{it} + \beta_4 \text{RGPG}_{it} + U_{it} \dots \dots \text{Model 7} \\ \text{CAP2} &= \alpha_i + \beta_1 \text{PRIVD}_{it} + \beta_2 \text{LIQ}_{it} + \beta_3 \text{LogSal}_{it} + \beta_4 \text{RGPG}_{it} + U_{it} \dots \dots \text{Model 8} \\ \text{CAP3} &= \alpha_i + \beta_1 \text{PRIVD}_{it} + \beta_2 \text{LIQ}_{it} + \beta_3 \text{LogSal}_{it} + \beta_4 \text{RGPG}_{it} + U_{it} \dots \dots \text{Model 9} \end{aligned}$$

In the above mentioned models, Y is the dependent variable, I is the corporation, t is time, α_i is the individual effect, which can be broken into fixed individual effects. PRIVD refers to privatization dummy variable, LIQ: liquidity, Log Sal: log real sales; PGDPG: real gross domestic product; U error term and β_1 to β_4 : parameters.

Dependent Variable

A-Turnover ratio (profitability)

Measures of profitability and factors explaining net profit used in previous literature included net income to sales in addition to return on equity using net income to equity ratio. Robinson, Munter and Grant (2003) used return on assets turnover ratio, indicating the extent to which long-term assets are used in order to produce sales.

B - Turnover ratio (operating efficiency)

Previous studies used net income/employees and net sales/employees. This study used fixed assets turnover ratio, measured by sales to fixed assets, indicates the extent to which long-term assets are being used to produce sales (Robinson, Munter and Grant 2003). In the same context (Gibson, 1989) wrote that sales to fixed assets ratio measures the firm's ability to make productive use of its property, plant, and equipment through the generation of sales dollars. So, the more efficiently assets are used the higher a firm's profits

C -Turnover ratio (financial)

Previous studies as Garvey, Gerald T. and Gordon Hanka, 1999 used capital expenditure ratios as capital expenditure to sales, and capital expenditure to assets, in order to measure the financial performance. Financing is also an important issue, which acquires its importance from the need to finance growth in capital expenditure

In order to address the question how privatized firms finance this growth, the mix of internal and external financing sources is examined through measuring cash flow from operations to total assets, cash flow from operations to total sources of funding and funds from financing to total sources of funding.

D -Employment number of employees before

Independent variables.

A-Real GDP Growth

It measures economic development, that increase the size of demand. It is calculated by subtracting the real GDP of the previous year from that of the current year and then dividing the result by the real GDP of the previous year. Increased demand pushes corporations to elevate their investment in new technologies and use more creativity and innovation in order to increase their competitiveness and meet the increasing demand of their customers. Economic development results in attracting both domestic and foreign capital owners to invest in existing enterprises or establish new projects to maximize profits. Using real GDP enables to control the effect of economic growth on the performance of corporations being newly privatized. Larger market size raises competitiveness, results in price-cost reduction and leads to elevate the survival probability for foreign-owned enterprises as reported by Jaumotte (2004), Campbell and Hopenhayn (2003) and Fasvely Greenaway and Yu (2007).

B-Firm Size

Firm size can be determined through using different measures, such as: sales, employment, assets and capitalization. There is no agreement on the relationship between firm size and performance. However, large firms are usually capable of organizing their activities more efficiently, as reported by Majumdar (1997), as a result of possessing more ability to use economics of scale scope. Mathur and Keynon (1998) revealed that firm size can have a positive impact on the firm's performance. Larger companies have also access to cheaper finance. On the contrary, some literature came to the conclusion. That larger firm size can negatively affect performance, since the sustainment of considerable financial performance becomes more difficult as the firm size becomes larger. Create solutions to problems or lower costs through improving service delivery (New York State Procurement Bulletin, 1996). Thus it is anticipated that strategic, partnership leads to an enhancement in the corporation's performance.

C-Liquidity ratio

Liquidity is an essential determinant of performance. It affects the firm's opportunities to obtain the necessary cash for continuous expenses. Corporations having good liquidity are more likely to receive loans for short-term investment financing. Liquidity grants the corporation more opportunities when negotiating with lending institutions in order to obtain loans at preferential interest rates, as shown by Kallberg and Parkinson (1993) as well as by Rees (1995). Current ratio, measured by current assets to current liabilities determines the ability of a corporation to meet its obligations at the short term, as reported by O'regan (2001) and Fridlob and Schleifer (2003).

D-Privatization Factor

The privatization dummy variable is considered to equal 1 if the selling government sells 50% or more of its ownership in the enterprise being privatized and to equal 0 otherwise. Here, there arises a debatable question pertinent to when an enterprise is considered privatized. Dewenter and Malatesta (1998) consider date of privatization as being the month in which trading with the corporation's shares at the public stock exchange starts. Another approach is adopted by Anderson et al. (1997) considering a corporation privatized when more than one third of its shares have been transferred to private ownership. The respect to its present study, a corporation is considered privatized when the government has sold at least 50% of its ownership to private investors. This will enable us to obtain a relatively accurate impact of privatization on financial and operating performance of privatized telecoms under investigation.

Regressions results

In this study, four independent variables; namely, Privatization Dummy Variable, Liquidity, Real Gross Domestic Product Growth (RGDPG) and Log Sales are used. This problem is dealt with by estimating the regression models with and without both alternatives; fixed effect models and random effect model. Both fixed and random effect models were estimated. Fixed effect models have a constant slope but varying intercepts. Although no significant temporal effects exist, there are significant differences among many firms in this type of model. On the contrary, in random, effect models, intercepts are random where the random outcome is a function of a mean value plus a random error (Manez, Rochina and Sanchis, 2004). The Hausman specification test is used to determine whether the fixed effect model or the random effect model should be preferred. The research question here is whether there is a significant correlation between the unobserved (unit of observation) specific random effects and the explanatory variables. If such a correlation exists, fixed effect model is the consistent one. If there is no such a correlation, the random effect model is the consistent one (Manez, Rochina and Sanchez, 2004). The study used Rversion 3.2.1 software to test our models.

Profitability

We measure profitability using three of the ratios employed in the univariate analysis; namely: operating income to sales (OISALES ROE), return on sales (ROS) and return on assets (ROA). The results for OISALES ROE, ROS and ROA are presented in Table (3). All three sets of estimation confirm the results of our previous empirical analysis. These results revealed that privatization is associated with enhanced profitability. The coefficient on the dummy for the post-privatization period (POSTPRIV) is always positive and almost always highly significant for all three measures. The same results appear in both fixed and random effect models.

According to the insignificant value of the Hausman test, the random effect model seems particularly suitable for estimating ROE and ROS, while the fixed effect model is more appropriate for estimating ROA, since the Hausman test has a significant value there.

A-Liquidity

The results show that the coefficients are mostly positive and insignificant on ROS, while they are positive and significant on ROE and ROA, but the results of both fixed and random effect models generally indicate that liquidity does affect the firm's profitability. This is probably due to the fact that privatized firms are not constrained in terms of access to new capital. Hence, liquidity does not affect their ability to take up privatized investments, because funds are available in the capital market.

B-Impact of Log Sales

Regression results show that the coefficients on Log Sales are positive and indicate an insignificant impact.

C-Impact of Real Gross Domestic Product Growth

Regression shows that the coefficients are always positive and insignificant for all models. A number of studies used panel data, such as : Bortolotti, D'Souza, Fantini and Megginson (2002), Okten and Arin (2006), Boubakri, Cosset and Guedhami (2005), Wei, Varela and Hassan (2003), Gupta (2005), Naceurs, Ghazouni and Omran (2007), Boubakris, Cosset and Guedhami (2004) and D'Souza, Megginson and Nash (2004). These studies also consistently found that privatization is significantly related to profitability.

Post-privatization period (years -3; years + 3). GDP is the gross domestic product. POSTPRIV is a dummy taking the value one in the post-privatization period. Liquidity and log of sales .take the value from the year (year -3, year +3) . . ***, **, * denote significance at 1, 5, or 10 100% level, respectively.

Table 3:

Results of panel data estimations: Profitability						
Independent	Module 1 ROS		Module 2 ROE		Module 3 ROA	
Variable	Coefficient		Coefficient		Coefficient	Coefficient
	Fixed effects	Random effects	Fixed effects	Random effects	Fixed effects	Random effects
Privatization	2e-16 *** 43.9432	2e-16 *** 45.0419	2.2e-16 *** 16.0384	2e-16 *** 45.0446	1.010595* **	4.5243284 *** 0.1004411
Liquidity	0.4893 0.6932	0.1852 1.3302	0.004571 ** 2.8804	0.3339 0.9689	0.148585 ** 3.1936	0.0606047 .9689
Log real sales	0.6310 0.4814	0.7941 0.2613	0.589882 0.5402	0.9517 0.0607	0.153511 1.2781	0.0099125 0.1632724
Real GDP growth	0.2630 1.1236	0.7368 0.3366	0.028420 * 2.2134	0.7306 0.3449	0.016771 0.6161	0.0127046 0.0368325
R ²	0.95691	0.94784	0.78227	0.94957	0.73439	0.94957
R	0.77616	0.92151	0.63451	0.92319	0.59567	0.92319
S.E.						
F	810.614	794.942	131.137	823.815	100.919	823.815
P	2.22e-16	2.22e-16	2.22e-16	2.22e-16	2.22e-16	2.22e-16
Hausman Test		0.1241 7.2318		2.2e-16 6196.3		3751.2 2.2e-16

Table (3) , $ROS = \alpha_i + \beta_1 PRIVD_{it} + \beta_2 LIQ_{it} + \beta_3 LogSal_{it} + \beta_4 RGPG_{it} + U_{it}$ Model 1
 $ROE = \alpha_i + \beta_1 PRIVD_{it} + \beta_2 LIQ_{it} + \beta_3 LogSal_{it} + \beta_4 RGPG_{it} + U_{it}$ Model 2
 $ROA = \alpha_i + \beta_1 PRIVD_{it} + \beta_2 LIQ_{it} + \beta_3 LogSal_{it} + \beta_4 RGPG_{it} + U_{it}$ Model 3, ***, **, * denote significance at 1, 5, or 10. 100% level, respectively

Efficiency

We employ normalized real sales per employee in thousands of real US dollars in order to test for changes in efficiency after privatization. Then we control for differing levels of economic development using GDP per capita. The results of these estimations are presented in Table (4). Since the Hausman test is significant, we focus on the two fixed effect regressions. Although the POSTPRIV dummy is highly significant including only this dummy, the GDP control variable and the constant positive coefficient on GDP indicate that the output per worker increases after privatization for telecom employees in economically advanced countries more than for telecom workers in less developed countries. The reason behind this result lies probably in the effect of incorporating modern technology, which makes workers in richer countries capable of utilizing this new technology more rapidly and efficiently than their counterparts in poorer countries.

A-The Impact of Privatization on Operation efficiency

The results show that the coefficient of privatization is always positive and significant. The Hausman test indicates that the operation efficiency model appears to be particularly suitable for estimation. The positive and significant increase in operating efficiency following privatization is due to firms employing human, financial and technological resources more efficiently because of a greater stress on profit goals and a reduction in government subsidies (Kikeris, Nellis and Shirley, 1992; Boycko, Shleifer and Vishny, 1996).

Numerous studies used panel data, such as: Bortolotti, D'Souza, Fantini and Megginson (2002), Okten and Arin (2006), Boubakri, Cosset and Guedhami (2005), Wei, Varela and Hassan (2003), Gupta (2005), Naceurs, Ghazouni and Omran (2007), Boubakri, Cosset and Guedhami (2004) and D'Souza, Megginson and Nash (2004). These studies consistently found that privatization is significantly related to efficiency.

B-The Impact of Liquidity on Efficiency

The results revealed that the coefficients are mostly positive and insignificant. It is expected that liquidity will have a positive significant impact on efficiency, but the results of both fixed effect model and random effect model generally indicate that liquidity does not have any impact on efficiency. This is probably due to the fact that the privatized firms are not constrained in terms of access to new capital. Hence, liquidity does not affect their ability to take up privatized investments, because funds are available in the capital market. These results are consistent with those of numerous studies such as Cosset and Guedhami (2004) and D'Souza, Megginson (2004)

C-Impact of Log Sales on operating Efficiency

Regression results show that the coefficients on log sales are positive and insignificant. It is claimed that large firms might be more efficient in terms of production, because they could use more specialized inputs and better coordinate their resources (Halkos and Tzeremes), 2007. These results are in agreement with those of Yuk-Shing and Dic Lo (2004), who found that large enterprises registered the fastest productivity growth and improvement in technical efficiency in the period (1994-1997) in China. Also Wing (1997) found that the largest firm size (1000 workers or above) usually has the highest technical efficiency. Battese (2000) found firm size has a positive and significant effect on efficiency. Productivity levels are likely to be correlated with the size of the firm, as measured by the number of employees. Halkos and Tzeremes (2007) found that the firm size has positive impact on the firm's efficiency

Regression shows that the coefficients are always positive and insignificant for all models. The increase in operating efficiency refers to economic development which increases the demand on goods and services. It is also possible that with an expanding market, new competitors enter the market pushing the existing firms to become more efficient. However, this study finds little support to the positive impact of market expansion on efficiency. This result is inconsistent with that of Coplan and Hikino (2005) who found out that GDP growth increased Japan's textile firms' efficiency in the 1970s and 1980s, while the impact of GDP growth on efficiency was insignificant in the 1990s. D'Souza, Megginson and Nash (2001) found that (GNP per capita) has a positive and significant impact on privatized firms' efficiency, measured by net sales / employee and net income / employee.

This table reports the estimates of panel data estimations for EFF1, EFF2, of the 15 privatized TLC operators in the pre and post-privatization period (years -3; years + 3). GDP is gross domestic product. POSTPRIV is a dummy taking the value one in the post-privatization period. Liquidity and log of sales .taking value from the year (year -3, year +3). . ***, **, * denote significance at the 1, 5, or 10 per cent level, respectively.

Table 4:

Panel data estimation results of testing for changes in efficiency after privatization						
Independent	Dependent Variable					
	Module 4 EF1		Module 5 EF2		Module 6 EMP	
Variable	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
	Fixed effects	Random effects	Fixed effects	Random effects	Fixed effects	Random effects
Privatization	0.373770*** 4.2090	0.364469*** 4.2410	0.9701246*** 9.6549	0.9436951*** 9.7361	6.502604e-51*** 34.7058	6.5302e-04*** 36.0831
Liquidity	0.045411 0.7909)	0.023694 0.4476	0.0211269 0.3252	0.0684658 1.1650	5.4283e-06 0.14481	1.8759e-0 0.1702
Log real salse	0.135216 0 .9122	0.152806 1.1026	0.0936845 0.5586	0.1325563 0.8581	1.0753e-05 0.3438	1.0121e-05 0.3498
Real GDP growth	0.048927 1.4565	0.042798 1.3707	0.0057408 0.1510	0.0042451 0.1222	1.9500e-06 0.2751	2.0712e-06 0.3181
R ²	0.1183	0.10006		0.49825	0.9342	0.92221
R	0.095952	0.097282	0.43907	0.48441	0.75774	0.89659
F	4.89714	4.86441	43.0751	43.4443	518.248	518.636
P	0.00098272	0.00096135	< 2.22e-16	2.22e-16	2.22e-16	2.22e-16
Hausman Test		0.8627 (1.292)		0.5273 (3.1855)		0.5841 2.8452

Table (4), EF1 = $\alpha_i + \beta_1 PRIVD_{it} + \beta_2 LIQ_{it} + \beta_3 LogSal_{it} + \beta_4 RGPG_{it} + U_{it}$... Model 4,
 EF2 = $\alpha_i + \beta_1 PRIVD_{it} + \beta_2 LIQ_{it} + \beta_3 LogSal_{it} + \beta_4 RGPG_{it} + U_{it}$ Model 5,
 EMP = $\alpha_i + \beta_1 PRIVD_{it} + \beta_2 LIQ_{it} + \beta_3 LogSal_{it} + \beta_4 RGPG_{it} + U_{it}$ Model 6

Capital Expenditures

We estimate capital expenditures using normalized real capital expenditure (NRCE) in thousands of US dollars. Panel data estimation results, which are presented in Table 5, show that the coefficient on the dummy for the post-privatization period (POSTPRIV) is always positive and almost always highly significant for all three measures. The same results are obtained both in fixed effect and random effect models. According to the insignificant value of the Hausman test, the random effect model seems to be particularly suitable for estimation, while the fixed effect model is more appropriate for RC, since the Hausman test gives significant results there. These results are consistent with those of numerous studies, such as Dewenter and Malatesta (2000), D’Souza, Megginson and Nash (2001).

A-Liquidity

The results show that the coefficients are mostly positive and insignificant, indicating that liquidity does affect the capital expenditures. This is probably due to the fact that the privatized firms are not constrained in terms of access to new capital. Hence, liquidity does not affect their ability to take up privatized investments, because funds are available in the capital market. These result are consistent with those of Thomson and Pedersen (2000), Vivian, W, Fang Thomas, H. and Noe Sheri T. (2008).

B-Impact of Log Sales

Regression results show that the coefficients on Log Sales are positive and highly insignificant. These results are consistent with those of Naceur, S., Ghazouan, S. and Omran, M.(2007).

C-The Impact of Real Gross Domestic Product Growth

Regression shows that the coefficients are always positive and insignificant for all models. This result is consistent with that of Megginson and Netter (2001). Table (5) reports the estimates of panel data estimations for COS, COT, and RC, of the 15 privatized TLC operators in the pre and post-privatization period (years -3; years + 3). GDP is gross domestic product. POSTPRIV is a dummy taking the value one in the post-privatization period. Liquidity and log of sales .taking value from the year (year -3, year +3). . ***, **, * denote significance at the 1, 5, or 10 per cent level, respectively.

Table 5:

Panel data estimation results for capital expenditures						
	Dependent Variable					
Independents variable	Module 7 CAP1		Module 8 CAP8		Module CAP9	
	Coefficients		Coefficients		Coefficients	
	Fixed effect	Random effect	Fixed effect	Random effect	Fixed effect	Random effect
Privatization	1.046944*** 11.6038	1.040729*** 12.0236	0.77738*** 9.4032	0.758894*** 9.4032	1.225807*** 14.3910	4.5243284*** 45.0446
Liquidity	0.072576 1.2441	0.052790 1.0072	0.054507 1.0197	0.035646 0.7403	0.083494 1.516	0.06060 0.9689
Log real sales	0.112574 0.7475	0.102650 0.7448	0.0950 0.6887	0.22237 0.1756	0.26378 1.855	0.009912 0.0607
Real GDP	0.029097 0.8525	0.017877 0.5767	0.01223 0.3913	0.020366 0.715	0.04286 0.1853	0.0127-4 0.3449
R ²	0.59999	0.55686	0.47296	0.42754	0.68372	0.94957
R	0.48666	0.54139	0.38362	0.41567	0.55458	0.92319
F	54.7475	54.9769	32.7547	32.6751	78.9052	823.815
P	2.22e-16	2.22e-16	2.22e-16	2.22e-16	2.22e-16	2.22e-16
Hausman Test		1.4167 0.8413		2.7469 0.601	5923. 2.2e-16	

Table (5), $CAP1 = \alpha_i + \beta_1 PRIVD_{it} + \beta_2 LIQ_{it} + \beta_3 LogSal_{it} + \beta_4 RGPG_{it} + U_{it} \dots$ Model 7

$CAP2 = \alpha_i + \beta_1 PRIVD_{it} + \beta_2 LIQ_{it} + \beta_3 LogSal_{it} + \beta_4 RGPG_{it} + U_{it} \dots$ Model 8

$CAP3 = \alpha_i + \beta_1 PRIVD_{it} + \beta_2 LIQ_{it} + \beta_3 LogSal_{it} + \beta_4 RGPG_{it} + U_{it} \dots$ Model 9

Conclusion

This paper tests the financial and operating performance of 15 national telecommunication companies, in Arab countries, that were totally or slightly privatized through public share offering between 1998 and 2001. Using conventional pre- versus post-privatization comparisons, it was found that profitability, capital investment spending and operating efficiency increase significantly after privatization, while employment significantly declined.

These separate regulatory and ownership effects have been examined using both fixed-effect random-and panel data estimation techniques for a seven-year period around privatization. It is verified that privatization is significantly related to higher profitability, finance and efficiency. It can be concluded that operating performance and financial performance will improve significantly after privatization, but we also deduced that this improvement linked to the regularity changes implemented by the strategic partner should be significantly related to the degree of investor protection offered by a divesting government as well as to insider ownership in divested telecoms. Government can improve the performance of state-owned enterprises through privatization. It can be recommended that the Government follows the policy of partial privatization, so that the investor's share does not exceed 49% in order to prevent decision-making monopoly. The Government is also called to constantly improve regulations and policies that contribute to enhance liquidity of existing as well as new enterprises, in light of the positive impact of liquidity on operating efficiency as well as the significant positive impact of liquidity on market value. Nevertheless, much more has to be done in terms of explaining the technology evolution and progress of telecommunication industry, in order to more deeply understand the effect of privatization on the performance of this sector.

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