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PRIVATISATION AND FINANCIAL PERFORMANCE IN EGYPT SINCE 1991

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ABSTRACT

This study aims to empirically examine the financial and operating performance of Egyptian privatised companies. The study compares the pre- and post-privatisation financial and operating performance of 60 companies from Egypt that have experienced privatisation through different methods during the period from 1991 and 1997. There were significant increases in the mean and median levels of profitability, operating efficiency, capital investment, output and dividends for the whole sample of companies after privatisation. There were significant decreases in the mean and median of both leverage ratios and employment levels. Further analysis was also undertaken using the three different background characteristics (i.e. size of company, type of industry and privatisation methods). No significant differences were detected in the Kruskal Wallis test analysis of privatisation methods. The Wilcoxon test, the Proportion test and the Kruskal Wallis test analyses for the company size and industry type revealed some significant results. Overall, the findings do seem to support the broad benefits of the Egyptian privatisation programme and the improvements in the financial and operating performance of the privatised companies.

Contribution/ Originality: This study is the first logical analysis of the Egyptian privatization programme and its financial and operating performance since 1991. It is one of the very few studies to have investigated the privatization phenomenon in the Middle East.

1. INTRODUCTION

Empirical studies undertaken by many researchers such as Megginson *et al.* (1994), Boubakri and Cosset (1998), D'Souza and Megginson (1999), Megginson (2010) all report strong performance improvements as a direct consequence of privatisation. Aggregated, these studies examined several thousand privatised companies from almost fifty countries and consistently reported that privatisation increases profitability, output and efficiency. Other studies, that investigated the sources of performance improvement (such as Ramamurti (1997), La Porta and Lopez-de-Silanes (1999) and Frydman *et al.* (1999) indicate that they are related to efficiency improvement, not the exploitation of market power. Previous studies also revealed that capital investment spending increases and leverage decreases following privatisation. However, evidence of privatisation-related changes in employment levels

is still inconsistent. This study, therefore, empirically investigates whether these results hold in the case of the Egyptian privatisation programme.

The rest of this paper is structured as follows: Section two introduces the theoretical framework and literature review. The research methodology, data sources, sample and procedure and techniques of analysis are presented in Section three. Section four explains the empirical analysis and test results. Section five provides the summary and concluding remarks.

2. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

In this research effort, a similar approach to that adopted by researchers such as Megginson *et al.* (1994), Macquieira and Zurita (1996), Boubakri and Cosset (1998), Frydman *et al.* (1999), D'Souza and Megginson (1999), Boubakri and Cosset (1999), Verbrugge *et al.* (2000), D'Souza and Megginson (2000), Dewenter and Malatesta (2001); Harper (2001) was used. This included the following stages:

1. First empirical proxies were calculated for every Egyptian company included in the sample (i.e. the 60 companies mentioned above) for a period of seven years (from three years before to three years after privatisation).
2. The consumer price index (CPI) values taken from the International Monetary Fund's International Financial Statistics were then computed. A similar procedure was adopted to compute the net income per employee. Real sales, sales efficiency, and net income efficiency measures for year 0 (the year of privatisation) were defined as having an index value of 1.00, with other years being expressed relative to unity in this year.
3. The mean of each variable for each company over the pre-privatisation years, −3 to −1 and post-privatisation years, +1 to +3 was then computed. The year of privatisation (year 0) was excluded from the analysis because it involved both the public and private ownership phases of the company.
4. The two tailed Wilcoxon signed-rank test was used as a method of testing for significant changes in the variables as well as a Proportion test to determine whether the proportion (P) of companies experiencing a change in a given direction was greater than what would be expected by chance; typically testing whether P = 0.5. In addition, the Kruskal Wallis test was used to detect any significant changes due to size of companies or due to the method of privatisation used.

The section below details the ratios and measurements that were used to examine changes that may have resulted from the Egyptian privatisation programme. Net income refers to net profit after tax and was adjusted for inflation by referring to the suitable consumer price index (CPI) values obtained from the IMF's International Financial Statistics. The adjusted values were normalised to equal 1.00 in the year of privatisation (year 0) so other years' figures were expressed as a fraction of net income of the year of privatisation. Sales efficiency (SALEFF), net income efficiency (NIEFF), capital expenditure to sales (CESA) and real sales (SAL) were computed similarly.

It is also worth mentioning that in the secondary data analysis the following testable predictions will be used:

1. Profitability:

Return on sales (ROS): refers to net income divided by sales.

Return on assets (ROA): refers to net income divided by total assets.

Return on equity (ROE): refers to net income divided by equity.

2. Operating efficiency:

Sales efficiency (SALEFF): refers to sales divided by number of employees.

Net income efficiency (NIEFF): refers to net income divided by number of employees.

3. Capital investment:

Capital expenditure to sales (CESA): refers to capital expenditure divided by sales.

Capital expenditure to assets (CETA): refers to capital expenditure divided by total assets.

4. Output:

Real sales (SAL): refers to sales divided by consumer price index (CPI).

5. Employment:

Total employment (EMPL): refers to number of employees.

6. Leverage:

Total debt to total assets (TDTA): refers to total debt divided by total assets.

Long term debt to equity (LEV2): refers to long term debt divided by equity.

7. Dividends:

Dividends to sales (DIVSAL): refers to cash dividends divided by sales.

Dividend payment (PAYOUT): refers to cash dividends divided by net income.

In addition, there are different methodological problems in evaluating the financial and operating performance of privatised companies. These problems include the following issues:

1. The availability of data that must be disclosed is much less in most countries than in the USA. These matters vary from country to country and at times even within the same country. Also, data tends to be more available in more developed countries. Therefore, developed countries are "over represented" in empirical studies compared to developing countries as is the case with Egypt (Megginson and Netter, 2001), (Shaker and Abdeldayem, 2018) and Abdeldayem and El-Sherbiney (2018).
2. There are also some problems in using accounting data (balance sheets and income statements) including the difficulty of determining the appropriate measure of operating performance, selecting suitable standards with which to compare performance and the suitable statistical tests to use ((Galal *et al.* (1994) and Abdeldayem and Sedeek (2018)).
3. The first study to use this methodology was by Megginson *et al.* (1994) Since then, several studies have employed the same methodology such as Boubakri and Cosset (1998), D'Souza and Megginson (1999) and others. However, these methodological procedures have disadvantages including:
    1. Selective bias, such as selecting a sample of Share Issue Privatisation (SIP) will be biased against any other privatisation methods,
    2. As governments usually prefer to privatise the easiest companies first, those companies sold through share issue may be among the best SOE and,
    3. examining accounting variables (such as sales and net income) or physical units (such as number of employees) requires researchers to contemplate comparing financial information achieved in different time periods and in different countries in order to observe any changes in the macro economy or industry over the seven year period during which they compare pre and post privatised performance changes.

This study, however, used this methodology to empirically test the secondary data collected from the sample privatised companies in Egypt. It took the above into consideration to avoid drawbacks.

There are several clear advantages to using this methodology. As reported by Megginson and Netter (2001) these are that:

1. Previous studies that have focused on the pioneering work of Megginson, Nash and Randenborgh's methodology are the only studies that can examine and directly compare large samples of economically significant companies, from different industries and privatised over different time periods.
2. Although, concentrating on privatised companies that have been privatised via share issue leads to a selection bias, it also generates samples that involve the largest and most important privatised companies throughout the world since more than two thirds of the $ 1 trillion of total revenue yield to governments since 1977 was through SIPs.

This study involved not only SIPs but also all privatisation techniques that had been used by the government in Egypt to privatise companies. In addition, this study was not confined to only using this methodology, but resorted to collecting and analysing primary data using a controlled questionnaire as well as undertaking semi-structured interviews to supplement this methodology, overcome drawbacks and obtain greater clarification of some of the issues in the Egyptian privatisation programme. As a result, the triangulation of methods and data that this study used enriched the data and allowed for any gaps to be filled as well as overcome any weakness that might have occured through any of the methods. Therefore, this study was able to cross-examine information and enhance the validity and reliability of the data in the Egyptian privatisation programme.

3. METHODOLOGY

In this research effort, the secondary data collection was undertaken by determining which companies had been privatised from 1991 to 1997. Therefore, 1997 was used as the cut-off point. The total number of privatised companies in Egypt was 185 companies. By excluding some types of privatisation such as companies under liquidation (32 companies) as well as leased companies and production units (twenty companies), 133 companies remained. By excluding the 67 companies that had experienced privatisation post 1997, a total of 66 companies remained. Out of these, 31 companies were sold as a majority through the Stock Market, nine companies were sold to Anchor investors (AI), twelve companies sold to employee share holder associations (ESA's), six companies sold 40% through the stock market (SM), six companies sold less than 50% through the stock market and two companies sold as production assets. Since data for two companies sold as production assets, and for four companies sold to anchor investors were not available, the final sample consisted of 60 companies: 31 majority, twelve ESA's, six 40% (SM), six less than 50% (SM), and five sold to anchor investors (AI).

The main sources of secondary data were obtained from governmental organisations such as the Public Sector Information Centre, Ministry of Public Enterprise (MPE), and Public Enterprise Office (PEO) for the pre-privatisation data, while the Stock Market Authority (SMA) in Egypt was the main source for post- privatisation data. Requests were also sent to these companies for their privatisation sales prospectuses as well as their pre- and post-privatisation annual reports and accounts to cover a period of six years (i.e. three years prior and three years after privatisation).

3.1. Background Characteristics

In the analysis that follows, the 60 companies that were privatised between 1991 and 1997 mentioned above were analysed in terms of certain background characteristics such as (1) size (measured by the number of employees), (2) type of industry and (3) the type of privatisation methods.

1. Size

Table 1 below presents a summary of the total number of staff employed by the companies that were privatised.

Table-1. Analysis showing the size of the privatised companies by No. of Employees.

No. of Employees	No.	%
Less than 1000	9	15.0
Between 1000-1999	10	16.7
Between 2000-2999	8	13.3
Between 3000-3999	6	10
Between 4000-4999	4	6.6
Between 5000-5999	12	20
More than 6000	11	18.4
Total	**60**	**100**

Table 1 reveals that, nine companies (15.0%) involved in this stage of the research employed less than 1000 employees. Eighteen companies (30%) employed between 1000 and 3000 employees. There are 22 companies (36.6%) that employed between 3000 and 6000 employees. In addition, eleven companies (18.4%) employed over 6000 employees.

Consequently, due to the diversity in size of the privatised companies in the sample, and more importantly, to facilitate statistical analysis, the 60 companies were categorised as small (up to 2500 employees), medium (between 2500 and 5000 employees) and large (over 5000 employees). This categorisation resulted in nineteen companies being classified as small, eighteen as medium and 23 as large.

2. Type of Industry

Table 2 below shows that as many as ten companies (16.7%) included in this stage of the study were in the land and maritime transport sector. Nine companies (15%) were in the retail trade sector. In addition, seven (11.7%) were in tourism, six (6.6%) were in food industries, six (6.6%) were in chemical industries, five were in metallurgical and mining industries, five were (8.4%) in spinning and weaving, four were (6.6%) in engineering industries, four were (6.6%) in pharmaceutical and four were (6.6%) in construction.

Table-2. Analysis showing the 60 companies classified according to the type of industry.

Type of industry	Frequency	Per cent
Spinning and weaving	5	8.4
Retail Trade	9	15
Engineering Industries	4	6.6
Metallurgical and Mining Industries	5	8.4
Chemical Industries	6	10
Pharmaceutical	4	6.6
Food Industries	6	10
Construction	4	6.6
Tourism	7	11.7
Land and Maritime Transport	10	16.7
Total	**60**	**100**

Therefore, due to the diversity in the type of industries in the sample and to facilitate statistical analysis, the 60 companies were categorised into two groups (i.e. industrial companies and non-industrial companies). This classification resulted in 34 companies being categorised as industrial and 26 as non-industrial.

3. Privatisation Methods

There are several methods of privatisation that were adopted by the Egyptian government in privatising State Owned Enterprises (SOEs). Since different privatisation techniques were expected to have different levels of impact on company performance, in the discussion that follows, the data from each privatisation method was analysed separately to identify any differences due to the privatisation method.

Table-3. Analysis showing the 60 companies classified according to the method of privatisation used.

Privatisation Methods	No. of companies	%
1- Majority through Stock Market	31	51.6
2- Sold to Anchor Investor (AI)	5	8.4
3- Sold to Employee shareholder association (ESA's)	12	20
4- Companies sold 40% (Stock Market)	6	10
5- Companies sold less than 50% (Stock Market)	6	10
Total	60	100

It can be seen from Table 3 that as many as 31 companies (51.6%) included in this stage of the research were privatised by selling the majority through the stock market (IPO). Twelve companies (20%) were sold to employee shareholder associations (ESA's), six (10%) were sold 40% through the stock market, six (10%) were sold less than 50% through the stock market and five (8.4%) were sold to anchor investors (AI).

4. ANALYSIS AND EMPIRICAL FINDINGS

This section discusses the sample of privatised companies (i.e. 60 companies) and offers an analysis according to the background characteristics (i.e. size of company, type of industry and privatisation methods).

The data from each privatised method was analysed separately to identify any differences due to the privatisation methods. The sample of 60 companies was classified as: 31 that were companies sold as a majority through the stock market, twelve companies that were sold to employee shareholder associations (ESA's), six companies sold 40% through the stock market, six companies were sold less than 50% through the stock market and five companies sold to anchor investors.

Surprisingly, the analysis revealed no significant differences as measured by the Kruskal Wallis test, therefore, the results were not further reported on. However, the analysis of the company size and industry type produced some significant results when using the Wilcoxon signed rank test, the Proportion test and the Kruskal Wallis test. Therefore, in the sections that follow, the empirical results will be presented and discussed for the sample of all privatised companies as well as for the two sub-samples of company size and industry type. The sample results are presented in Table 4, and the sub-sample results are presented in Table 5 and Table 6 respectively.

1. Change in Profitability

It is well documented that when companies move from public to private ownership their profitability is expected to rise. Privatisation transfers both control rights and cash flow rights to the new managers who will become more interested in profits and efficiency than the politicians who were previously in control (Boycko *et al.*, 1996; Boubakri and Cosset, 1998). Profitability was therefore measured using three distinct ratios i.e. Return on sales (ROS), Return on assets (ROA) and Return on equity (ROE).

The profitability ratios were computed using net income as the profit measure in the numerator of all three ratios. As per Table 4 profitability increased significantly after privatisation according to ROS and ROE for the sample of 60 companies. The mean (median) increase in ROS after privatisation was 5.0 percentage points (4.0 points) from nine to 14 per cent of sales, and 63 per cent of all companies experienced an increase in profitability after privatisation. The Wilcoxon and Proportion tests revealed that ROS and ROE increased significantly (at the one per cent and five per cent levels respectively) after privatisation, while the changes in ROA were too insignificant according to both the Wilcoxon and the Proportion tests. This result supported the findings of most other empirical studies such as Megginson *et al.* (1994), Macquieira and Zurita (1996), Boubakri and Cosset (1998) and D'Souza and Megginson (1999) and Ismail (2018) but, contrasted with Harper (2001).

Table 5 presents the analysis by size of company. Table 5 shows that profitability increased following privatisation according to the ROS figures in large, medium and small companies. However, the Kruskal Wallis test revealed that medium-sized companies experienced greater profitability gains than large or small sized companies

and that this result is significant at the 1 per cent level (P-value = .003). The analysis of industry types is presented in Table 6.

As per Table 6 that profitability increased according to ROS for the industrial companies (34 companies) and the non-industrial companies (26 companies). The mean (median) increase for industrial companies after privatisation was 1.0 percentage point (two points) from ten to eleven per cent of sales and 77 per cent of all companies experienced increases in profitability after privatisation. The Wilcoxon and Proportion tests show that the increase in profitability for industrial companies is significant at the 5 per cent level, while, the increase in profitability for non-industrial companies is insignificant.

2. Change in Operating Efficiency

It is expected that following privatisation, companies should employ both their human and material resources more efficiently. This is particularly due to greater attention being paid to profit objectives and a reduction in government subsidies (Kikeri *et al.* (1992), Boycko *et al.* (1996) and Boubakri and Cosset (1998)). In order to measure operating efficiency, two ratios were employed, namely the inflation-adjusted sales per employee (SALEFF) and the net income per employee (NIEFF). Both SALEFF and NIEFF showed significant median increases after privatisation for the entire sample Table 4. Sales per employee (SALEFF) rose from an average (median) 186 per cent (177 per cent) of the year 0 value (year of privatisation) during the −3 to −1 year pre-privatisation period to 274 per cent (233 per cent) of year 0 output in the post-privatisation period (+1 to +3). Net income per employee (NIEFF) also increased from a mean (median) 80 per cent (76 per cent) of year 0 levels before privatisation to 163 per cent (151 per cent) afterwards, an increase of 83 (74) percentage points. SALEFF and NIEFF increased in 85 and 76 per cent of all cases, both significant at the 1 per cent and 5 per cent levels respectively. Obviously, this result represented very clear post-privatisation efficiency gains. This result corroborated the findings of some previous empirical studies such as Megginson *et al.* (1994), Macquieira and Zurita (1996), Boubakri and Cosset (1998) and D'Souza and Megginson (1999) and Harper (2000).

Table 5 shows the analysis by company size. As per Table 5 all of the sub samples (large, medium and small companies) showed efficiency improvements after privatisation. However, the Kruskal Wallis test revealed that large companies experienced greater efficiency gains than medium or small companies and this result was significant at the 5 per cent level (P-value = 0.043). When the industry type analysis was undertaken, as can be seen from Table 6 in sales efficiency, increases occured following privatisation for both industrial companies (31 companies) and non-industrial companies (25 companies). The Wilcoxon and Proportion tests revealed that the increases in efficiency according to SALEFF for both industrial and non-industrial companies were significant at the 1 per cent and 10 per cent levels respectively.

Table-4. Results for the whole Sample of privatised companies.

Variables	N	Mean Before (Median)	Mean After (Median)	Mean Change (Median)	Z-Statistics for Difference in Medians (After-Before)	Percentage of Companies that changed as predicted	Z-Statistics for Significance of Proportion change
PROFITABILITY:							
Return on sales (ROS)	60	0.0981	0.1497	0.0516	1.883***	63.3	2.141***
		-0.0873	-0.1234	-0.0401			
Return on assets (ROA)	59	0.0522	0.0857	0.0335	4.621	72.8	3.718
		-0.0419	-0.0632	-0.0213			
Return on equity (ROE)	59	0.2418	0.2827	0.0409	2.779**	64.4	2.168**
		-0.187	-0.2014	-0.0144			
EFFICIENCY:							
Sales efficiency (SALLEF)	52	1.868	2.7421	0.8741	3.491***	84.6	3.112***
		-1.773	-2.3311	-0.0558			
Net income efficiency (NIEFF)	51	0.8015	1.6316	0.8301	1.499**	76.4	1.139**
		-0.7633	-1.5121	-0.7488			
Capital INVESTMENT:							
Capital expenditures to sales (CESA)	59	0.1144	0.1165	0.0021	3.013*	54.2	3.960*
		-0.101	-0.1023	-0.0013			
Capital expenditures to total assets (CETA)	59	0.0458	0.0471	0.0013	1.11	55.9	1.983
		-0.0317	-0.0455	-0.0138			
OUTPUT:							
Real sales (SAL)	56	0.4682	1.884	1.4212	3.589***	61.4	3.617***
		-0.4791	-1.9103	-1.4312			

Table-4. Continued.

Variables	N	Mean Before (Median)	Mean After (Median)	Mean Change (Median)	Z-Statistics for Difference in Medians (After-Before)	Percentage of Companies that changed as predicted	Z-Statistics for Significance of Proportion change
EMPLOYMENT:							
Number of employees (EMPL)	59	34756	32769	-1987	-2.413*	79.6	3.110*
		-16801	-15379	(-1422)			
LEVERAGE:							
Total debt to total assets (TDTA)	58	0.7331	0.6763	-0.0568	1.244**	67.6	2.133*
		-0.8134	-0.6941	(-0.1193)			
Long-term debt to equity (LEV2)	53	0.5134	0.3555	-0.1579	-1.732	59.7	1.929
		-0.375	-0.1429	(-0.2321)			
DIVIDENDS:							
Dividends to sales (DIVSAL)	58	0.0566	0.0989	0.0423	2.245**	75.8	3.452*
		-0.0049	-0.0673	-0.0624			
Dividend Payout (PAYOUT)	59	0.6078	0.6567	0.0489	1.584	55.9	2.184
		-0.5137	-0.5411	-0.0274			

Note: The table presents for each empirical proxy the number of useable observations, the mean and median values of the proxy for the three-year period pre and post privatisation, the mean and median change in the proxy's value after versus before privatisation, and a test of significance of the median change (the median is presented in parenthesis). The Wilcoxon signed rank test (with its Z-statistics) was used to test for significance for the change in median values. The last two columns show the percentage of companies whose proxy value changed as predicted, and finally a test of significance of this change.
Variation in **N** is according to the data availability of privatised companies in Egypt.
***, **, *, Indicates significance at the 1, 5 and 10 percent levels respectively

Table-5. Analysis showing performance changes following privatisation analysed by size of company.

Variables	N	Mean Before (Median)	Mean After (Median)	Mean Change (Median)	Chi-square	Percentage of Companies that changed as predicted	Significance (P-value)
(1) Return on sales:							
Large companies	23	0.0139	0.0227	0.0088	3.881	72.6	0.003
		-0.0117	-0.0203	-0.0086			
Medium companies	18	0.091	0.166	0.075		69.3	
		-0.0736	-0.1146	-0.041			
Small companies	19	0.0395	0.0852	0.0457		73.9	
		-0.0271	-0.0943	-0.0672			
(2) Sales efficiency:							
Large companies	21	1.2359	2.3946	1.1587	4.859	81.3	0.043
		-1.0362	-1.867	-0.8308			
Medium companies	17	0.8358	1.4657	0.6299		77.4	
		-0.7473	-1.3761	-0.6288			
Small companies	19	0.759	0.9434	0.1844		75.2	
		-0.6311	-0.8837	-0.2526			
(3) Capital expenditure to sales:	20	0.1672	0.5573	0.3901	1.932	69.7	0
Large companies		-0.1761	-0.5319	-0.3558			
	17	0.2648	0.3768	0.112		83.2	
Medium companies		-0.2139	-0.3374	-0.1235			
	16	0.4926	0.6375	0.1449		81.1	
Small companies		-0.3817	-0.714	-0.3323			

Table-5. Continued.

Variables	N	Mean Before (Median)	Mean After (Median)	Mean Change (Median)	Chi-square	Percentage of Companies that changed as predicted	Significance (P-value)
(1) Real sales:							
Large companies	18	0.3722	1.4364	1.0642	6.357	77.3	0.198
		-0.3819	-1.4173	-1.0354			
Medium companies	17	0.3134	1.1288	0.8154		59.6	
		-0.321	-1.0371	-0.7161			
Small companies	18	0.2018	0.9736	0.7718		73.4	
		-0.1906	-0.8039	-0.6133			
(2) Total employment:							
Large companies	21	26040	23630	-2410	-5.165	81.3	0.011
		-17845	-15089	(-2756)			
Medium companies	16	19910	17815	-2095		72.9	
		-11673	-9886	(-1787)			
Small companies	17	14.87	12600	-2270		64.1	
		-10700	-8650	(-2050)			
(3) Total debt to total assets:							
Large companies	17	0.8197	0.3572	-0.4625	-4.463	88.2	0.083
		-0.7234	-0.3619	(-0.3615)			
Medium companies	14	0,2792	0.1822	-0.097		90.1	
		-0.2883	-0.1917	(-0.0966)			
Small companies	18	0.3537	0.3327	-0.021		77.6	
		-0.3172	-0.2917	(-0.0255)			

Table-5. Continued.

Variables	N	Mean Before (Median)	Mean After (Median)	Mean Change (Median)	Chi-square	Percentage of Companies that changed as predicted	Significance (P-value)
(1) Real sales:							
Large companies	18	0.3722	1.4364	1.0642	6.357	77.3	0.198
		-0.3819	-1.4173	-1.0354			
Medium companies	17	0.3134	1.1288	0.8154		59.6	
		-0.321	-1.0371	-0.7161			
Small companies	18	0.2018	0.9736	0.7718		73.4	
		-0.1906	-0.8039	-0.6133			
(2) Total employment:							
Large companies	21	26040	23630	-2410	-5.165	81.3	0.011
		-17845	-15089	(-2756)			
Medium companies	16	19910	17815	-2095		72.9	
		-11673	-9886	(-1787)			
Small companies	17	14.87	12600	-2270		64.1	
		-10700	-8650	(-2050)			
(3) Total debt to total assets:							
Large companies	17	0.8197	0.3572	-0.4625	-4.463	88.2	0.083
		-0.7234	-0.3619	(-0.3615)			
Medium companies	14	0,2792	0.1822	-0.097		90.1	
		-0.2883	-0.1917	(-0.0966)			
Small companies	18	0.3537	0.3327	-0.021		77.6	
		-0.3172	-0.2917	(-0.0255)			
(1) Dividends to sales:							
Large companies	22	0.2154	0.7413	0.5259	9.035	66.7	0.007
		-0.2317	-0.754	-0.5223			
Medium companies	15	0.2303	0.6066	0.3763		58.4	
		-0.2044	-0.5913	-0.3869			
Small companies	17	0.0527	0.0832	0.0305		71.3	
		-0.036	-0.0485	-0.0125			

Table-6. Analysis showing performance changes following privatisation analysed by type of industry.

Variables	N	Mean Before (Median)	Mean After (Median)	Mean Change (Median)	Z-Statistics for Difference in Medians (After-Before)	Percentage of Companies that changed as predicted	Z-Statistics for Significance of Proportion change
(1) Return on sales:							
Industrial companies	34	0.1085	0.1198	0.0113	2.001**	76.6	2.137**
		-0.0936	-0.117	-0.0234			
Non industrial companies	26	0.1115	0.1324	0.0209	1.341	81.9	1.017
		-0.1103	-0.1247	-0.0144			
(2) Sales efficiency:							
Industrial companies	31	0.5981	0.8755	0.2774	3.871***	64.7	5.430***
		-0.5838	-0.8178	-0.234			
Non industrial companies	25	0.2205	0.2798	0.0593	0.783*	69.2	1.009*
		-0.2201	-0.2633	-0.0432			
(3) Capital expenditures to sales:							
Industrial companies	33	0.5111	0.6091	0.098	2.491**	59.9	2.060**
		-0.508	-0.5737	-0.0657			
Non industrial companies	24	0.2781	0.4106	0.1325	3.476	61.4	2.556
		-0.2634	-0.4012	-0.1378			
(4) Real sales:							
Industrial companies	30	0.1681	0.179	0.0109	1.149***	74.6	2.109***
		-0.1604	-0.1731	-0.0127			
Non industrial companies	22	0.267	0.3214	0.0544	4.391**	77.7	3.971**
		-0.2741	-0.3273	-0.0532			

Table-6. Continued.

Variables	N	Mean Before (Median)	Mean After (Median)	Mean Change (Median)	Z-Statistics for Difference in Medians (After-Before)	Percentage of Companies that changed as predicted	Z-Statistics for Significance of Proportion change
(1) Total employment:							
Industrial companies	31	23760	21405	-2355	-2.018*	81.3	2.149*
		-16504	-15409	(-1095)			
Non industrial companies	24	18356	16975	-1381	-1.652	78.9	2.256
		-10975	-9910	(-1065)			
(2) Total debt to total assets:							
Industrial companies	29	0.7791	0.7184	-0.0607	-3.305***	66.7	4.365***
		-0.7136	-0.6945	(-0.0191)			
Non industrial companies	23	0.7658	0.761	-0.0048	-2.347	71.8	1.611
		-0.7947	-0.7225	(-0.0722)			
(3) Dividends to sales:							
Industrial companies	33	0.7177	0.7428	0.0251	3.162**	87.6	6.220**
		-0.6031	-0.6573	-0.0542			
Non industrial companies	25	0.3856	0.5656	0.18	2.790*	83.4	1.787*
		-0.0817	-0.0945	-0.0128			

***, **, *, Indicates significance at the 1, 5 and 10 percent levels respectively.

3. Change in Capital Investment Spending

Governments typically expect that the greater the concentration on efficiency, the greater the amount the privatised companies will spend on capital investment (Megginson *et al.*, 1994; Boubakri and Cosset, 1998). Privatised companies raise their capital expenditure because they have more access to both private debt and equity markets Therefore, for the purpose of this study, the investment intensity was computed by using the capital expenditure divided by the sales (CESA) ratio and capital expenditure divided by the total assets (CETA) ratio.

Table 4 showed that the CETA measure is insignificant according to both the Wilcoxon and the Proportion tests, but that the CESA measure revealed significant increases in both tests for the whole sample of 60 companies. The mean (median) increase in capital investment relative to sales is 0.21 percentage points (0.13 percentage points), rising from 11.44 per cent of sales (10.10 per cent) before privatisation to 11.65 per cent (10.23 per cent) after privatisation and 54 per cent of all companies increase CESA following privatisation. The Wilcoxon and Proportion test statistics (3.01 and 3.96) are significant at the 10 per cent level. This result supports the findings of Megginson *et al.* (1994), Macquieira and Zurita (1996), Boubakri and Cosset (1998) and D'Souza and Megginson (1999), Sentürk *et al.* (2011) and Estrin and Pelletier (2018).

Table 5 presents the analysis by size of company revealing that although the CESA measure showed an increase immediately following privatisation in large, medium and small companies, the Kruskal Wallis test indicated that large companies experienced greater capital investment compared with the medium or small companies and that this result was significant at the 1 per cent level (P-value = .000). When analysis of the industry type was undertaken, Table 6 shows that capital expenditure to sales (CESA) increased following privatisation for industrial companies (33 companies), the mean (median) increased by 9.8 percentage points (6.5 percentage points) and also increased for non-industrial companies (24 companies) with the mean (median) increased by 13.2 percentage points (13.7 percentage points). The Wilcoxon and Proportion tests indicated that increases in the CESA after privatisation for industrial companies were significant at the 5 per cent level. However, increases in the CESA for non-industrial companies were insignificant according to both tests.

4. Change in Output

For many reasons (such as better incentives, increased competition and more flexible financing opportunities), governments expect that sales will increase following privatisation (Megginson *et al.*, 1994). In addition, when privatisation is correctly undertaken, it should result in improvements in efficiency and stimulate investment (Boubakri and Cosset, 1998; Roland, 2008; Dawar and Ndlovu, 2018). However, Boycko *et al.* (1996) argue that a good privatisation programme will lead to a reduction in output, since governments cannot tempt managers (through subsidies) to maintain inefficiently high output levels. Consequently, changes in output were tested by computing the average inflation-adjusted sales level for the period −3 to −1, (the pre-privatisation period) and computing it to the three year average level for the post-privatisation period, +1 to +3.

Table 4 reveals that both the Wilcoxon and Proportion tests indicated that real sales (SAL) increased following privatisation and that the change was significant at the 1 per cent level. The mean (median) increase in real sales from the average level during the three years before privatisation to the average level afterwards was 142 percentage points (143 points) and 61 per cent of all companies experienced increased real sales. Before privatisation, the sample companies had deflated sales levels that were on average (median) 46.8 per cent (47.9 per cent) of year 0 levels. By the year of privatisation, the output increased (to an index level of 100), before surging to 188.4 per cent (191.0 per cent) of year 0 levels. Both the Wilcoxon and Proportion tests were significant at the 1 per cent level.

Table 5 reveals that despite real sales (SAL) showing an increase after privatisation in large, medium and small companies, the Kruskal Wallis test indicated that large companies experienced greater output increases than the medium or small companies. However, this result was insignificant at the conventional statistical levels. Table 6

shows that real sales (SAL) increased following privatisation for both industrial companies and non-industrial companies. In addition, both the Wilcoxon and Proportion tests revealed that the increases in real sales after privatisation for industrial and non-industrial companies were significant at the 1 per cent and 5 per cent levels respectively according to both tests.

5. Change in Employment Levels

In general, governments expect that employment levels in privatised companies will drop steadily after privatisation. This prediction was used as the null hypothesis and was tested by comparing average employment levels both pre- and post-privatisation (three years before privatisation from −3 to −1 and three years after privatisation from +1 to +3). D'Souza and Megginson (1999) also used a similar approach and found that employment declined significantly following privatisation.

Table 4 highlights that both the Wilcoxon and Proportion tests revealed a significant average (median) decline in employment of 1987 employees (1422 employees) following privatisation, from 34756 (16801) to 32769 employees (15379), with 79.6 per cent of the companies experiencing declining employment levels. This result corroborates the findings of D'Souza and Megginson (1999) and Harper (2000; 2001) but contrasts with the findings of Macquieira and Zurita (1996), Boubakri and Cosset (1998) and D'Souza and Megginson (2000).

Table 5 reveals that the three groups of companies (large, medium and small companies) experienced reductions in employment after privatisation. However, the Kruskal Wallis test indicated that large companies experienced more decline in employment compared with medium or small companies. This resultwas found to be statistically significant at the 1 per cent level (P-value = 0.011). Table 6 shows that total employment decreased following privatisation for both industrial companies (31 companies) and non-industrial companies (24 companies). Both the Wilcoxon and Proportion tests revealed that the decreases in total employment for industrial companies were significant at the 10 per cent level under both tests. However, the decreases in employment for non-industrial companies were insignificant.

6. Change in Leverage

It is well documented that the transition from public ownership to private ownership will result in a decline in leverage and this is particularly due to the government's desire to remove debt guarantees which raise the cost of borrowing, and encourage companies to increase access to public equity markets (Megginson *et al.*, 1994; Boubakri and Cosset, 1998). Changes in leverage were therefore examined by observing changes in total assets to total debt (TDTA) as well as changes in long term debt to equity (LEV2). Table 4 shows that leverage decreased after privatisation according to TDTA and LEV2. The average (median) decline in TDTA was 5.6 percentage points (11.9 percentage points), and 67.6 per cent of all companies reduced their TDTA following privatisation. The Wilcoxon and Proportion tests were both significant at the 5 per cent and 10 per cent levels respectively. The average (median) decline in LEV2 was 15.7 percentage points (23.2 percentage points) but both the Wilcoxon and Proportion tests were insignificant at conventional levels. This result was consistent with what most other studies have found in particular Megginson *et al.* (1994), Macquieira and Zurita (1996), Boubakri and Cosset (1998) and Dewenter and Malatesta (2001). Table 5 also reveals that although total debt to total assets (TDTA) decreased following privatisation in large, medium and small companies, the Kruskal Wallis test revealed that large companies experienced more decline in TDTA than do the medium or small companies. This result was significant at the 10 per cent level (P-value = 0.083). Table 6 further illustrates that leverage declined after privatisation according to the TDTA for both industrial companies and non-industrial companies. Both the Wilcoxon and Proportion test statistics show that the decreases in TDTA for industrial companies were significant at the 1 per cent level. On the other hand, the decreases in TDTA for non-industrial companies were insignificant under both tests.

7. Change in Dividend Payments

Following privatisation, dividend payments should increase because private investors usually prefer to receive dividends rather than allow all new profit to be retained. Dividend payments represent a natural response to the atomised ownership structure, which follows privatisation programmes in most cases (Boubakri and Cosset, 1998). Changes in dividend payments were measured by two ratios, namely the cash dividend to sales revenue (DIVSAL) and the dividends payout (PAYOUT). Table 4 shows that dividend payment increased following privatisation according to both DIVSAL and PAYOUT. The average (median) DIVSAL increased from 5.6 per cent (0.49 per cent) of sales before privatisation to 9.8 per cent (6.7 per cent) afterwards, and the mean (median) increase in payment of 4.2 per cent (6.2 per cent) was significant at the 5 per cent and the 10 per cent levels according to the Wilcoxon and Proportion tests respectively and 56 per cent of all companies increased their DIVSAL following privatisation. Again, this result supports the findings of Megginson *et al.* (1994), Macquieira and Zurita (1996), Boubakri and Cosset (1998). Table 5 reveals that dividends to sales (DIVSAL) increased after privatisation in large, medium and small companies. The Kruskal Wallis test indicated that large companies experienced more increase in DIVSAL than the medium or small companies. This result was significant at the 1 per cent level (P-value = 0.007). Table 6 shows that dividends increased following privatisation according to DIVSAL for both industrial and non-industrial companies were significant at the 5 per cent and 10 per cent levels respectively.

5. CONCLUDING COMMENTS

This study compared the pre- and post-privatisation financial and operating performance of 60 companies from Egypt that have experienced privatisation through different methods (i.e. companies sold as a majority through the stock market, companies sold as a minority through the stock market, companies sold to employee shareholder associations and companies sold to anchor investors), during the period from 1991 and 1997. Significant increases were found in the mean and median levels of profitability, operating efficiency, capital investment, output and dividend for the whole sample of companies after privatisation.

Table-7. A comparison between the results of the current study and the results of the three main privatisation studies.

Studies	Megginson *et al.* (1994)	Boubakri and Cosset (1998)	D'Souza and Megginson (1999)	Current study
Sample	61 companies from 18 countries and 32 industries.	79 companies from 21 developing countries and 32 industries.	85 companies from 28 countries (15 industrialised and 13 non-industrialised).	60 companies from Egypt. Of these 34 are industrial and 26 non-industrial companies.
Time period	1961-1989	1980-1992	1990-1996	1991-1997
Main Findings: 1. Profitability	Increased significantly.	Increased significantly.	Increased significantly.	Increased significantly.
2. Output	Increased significantly.	Increased significantly.	Increased significantly.	Increased significantly.
3. Operating efficiency	Increased significantly.	Increased significantly.	Increased significantly.	Increased significantly.
4. Capital investment	Increased significantly.	Increased significantly.	Decreased insignificantly.	Increased significantly.
5. Employment	No evidence of employment decline.	Increased significantly.	Decreased insignificantly.	Decreased significantly.
6. Leverage	Decreased significantly.	Decreased significantly.	Decreased significantly.	Decreased significantly.
7. Dividends	Increased significantly.	Increased significantly.	Increased significantly.	Increased significantly.

Furthermore, significant decreases were found in the mean and median of both leverage ratios and employment levels. The profitability, output, operating efficiency, capital investment, dividends and leverage results highlighted in this study were similar to the results found in Megginson *et al.* (1994), Boubakri and Cosset (1998) and D'Souza and Megginson (1999). This is illustrated overleaf in Table 7. However, as far as employment is concerned, previous studies have revealed different results, such as follows: no evidence of employment reduction after privatisation (Megginson *et al.*, 1994) significant increase in employment (Boubakri and Cosset, 1998) and significant decline in employment (D'Souza and Megginson, 1999).

Further analysis was also undertaken by using the three different background characteristics (i.e. size of company, type of industry and privatisation methods). Surprisingly, no significant differences were detected from the analysis by privatisation methods as measured by the Kruskal Wallis test. On the other hand, the analyses by size of company and by type of industry revealed some significant results using the Wilcoxon test, the Proportion test and the Kruskal Wallis test.

Overall, the findings of the secondary data analysis do seem to offer authentic support for the broad benefits of the Egyptian privatisation programme and in particular for the improvements in the financial and operating performance of the privatised companies.

A helpful beginning stage for future research would be an examination that completely explores the wellsprings of execution improvement following privatization. Such an examination would endeavor to determine whether execution improvement in privatized organizations is identified with genuine proficiency improvement or due to misuse of market control? (for example, are benefit increases because of more prominent yield and efficiency, as opposed to yield cost increments? what's more, improve motivating forces and cost controls, as opposed to from discount terminating of representatives?)

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