Performance of privatised and private firms: empirical evidence from Egypt

Bekheit, Mohamed Bahaa El Din Mohamed M. M.

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THE PERFORMANCE OF PRIVATISED AND PRIVATE FIRMS:

EMPIRICAL EVIDENCE FROM EGYPT

A thesis submitted to the University of Plymouth Business School

In partial fulfillment for the degree of

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IN ACCOUNTING AND FINANCE

By

Mohamed Bahaa El Din Mohamed M. M. Bekheit

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Dedication

To my family, especially

My wife Asser, my son Ahmed, and my daughter Engy

For their moral support

And special dedication to my supervisors:

John Pointon, Ahmed El Masry, and Mohamed Omran
THE PERFORMANCE OF PRIVATISED AND PRIVATE FIRMS:
EMPIRICAL EVIDENCE FROM EGYPT

Mohamed Bahaa El Din Mohamed M. M. Bekheit

ABSTRACT

Privatisation has been a major political and economic phenomenon over the past few decades, and researchers continue to target it for both theoretical and empirical work.

The objective of this thesis is to evaluate the Egyptian experiment concerning its privatisation programme, and to determine whether this programme has affected the performance of privatised firms. Using 15 years of data, which cover the period 1990/1991 to 2004/2005; this thesis empirically investigates three main issues. Firstly, it examines whether the performance of privatised firms improves following privatisation through comparing pre- and post-privatisation performance in terms of profitability, operating efficiency, output, leverage and level of employment. Secondly, it evaluates the performance changes of privatised Egyptian firms after matching them to control firms (private firms) based on size and industry. Thirdly, it evaluates the impact of the post-privatisation sectoral environment and the pre-privatisation experience on post-privatisation performance.

For the first two issues, several statistical techniques, such as parametric t-test, the non-parametric Wilcoxon signed-rank test, and Mann-Whitney test are performed. The results from this analysis indicate clearly that there are significant increases in both profitability and operating efficiency as well as significant declines in the leverage and employment, but there is no significant change in the output. Furthermore, the results show a significant difference in performance changes between privatised firms and private firms according to most performance measures.

As to the third issue, several multi-regressions are used to model the relationship between the post-privatisation performance (as dependent variable) and ownership structure, the performance experience of the privatised firms pre-privatisation, the performance of their counterparts from competitor firms (private firms), and firm size (as independent variables). The results from this analysis demonstrate that the ownership structure really matters and that the performance of privatised firms depends on the degree of state ownership involvement; also, through the passage of time, the competitive environment has a significant impact on most performance measures of privatised firms.

As such, this thesis represents the first study in Egypt to evaluate and compare the performance of privatised firms with the performance of their counterparts from private firms. The study contributes to the work on privatisation by comparing the performance changes of privatised firms to those of already private ones, so that the study can determine whether the post-privatisation performance matches that of the private firms.

A caveat to the finding of this thesis is that the privatised firms might need a longer period to reflect more fully the impact of the privatisation programme on some of their performance measures.
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Signed. Mohamed Bahaa

Date 11.11.2008

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## Definitions

<table>
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<tr>
<th>Term</th>
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<tbody>
<tr>
<td><strong>Asset sale (direct deal)</strong></td>
<td>Direct deal refers to the government selling its assets to private firms that take over the provision of the service for profit. In the other words, asset sale represents a method of privatisation that is used when it is not possible to carry out privatisation through any of the other methods.</td>
</tr>
<tr>
<td><strong>Contracting-out (Outsourcing)</strong></td>
<td>Contracting-out refers to the hiring of private-sector firms or non-profit organisations to provide goods or services for the government. It is common especially in such services as public works and transportation, and health and human services. Under this contract the government purchases services from a private firm; also, the government remains fully responsible for the provision of affected services and maintains control over management decisions.</td>
</tr>
<tr>
<td><strong>Denationalisation</strong></td>
<td>Denationalisation refers to the sale of assets or shares of a publicly owned enterprise to the private sector.</td>
</tr>
<tr>
<td><strong>Deregulation</strong></td>
<td>Deregulation is refers to the removal of regulations allows former public services to provide privately without public supervision. The former means termination of all types of &quot;public regulations&quot; within various sectors or industries.</td>
</tr>
<tr>
<td><strong>Earnings before Interest and Taxes (EBIT)</strong></td>
<td>The term of EBIT refers to a measure of a firm's profitability that excludes interest and income tax expenses. EBIT is very closely related to operating profit. EBIT is easier to calculate and easier to observe at divisional or sub divisional level of the firm. It can be calculated by operating revenue mines operating</td>
</tr>
</tbody>
</table>

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expenses. It represents watched closely by creditors, since it represents the amount of cash that such a firm will be able to use to pay off creditors. Also called operating profit.

**Financing contracts**

It is refers to the responsibility of the investor to provide the capital, operating, and investment expenditures unlike lessee. There are five types from these contracts, which are: (i) lease-build-operate; (ii) build-transfer-(operate); (iii) build-(own)-operate-transfer; (iv) buy-build-operate; and, finally, (v) build-own-operate.

**Joint Venture "Public Private Partnerships" (PPP)**

Joint venture is refers to partnerships of two or more companies, in which partners contract on, agree to a common business target and to share accruing profits, losses and any other risks. It applies to cooperative ventures with the private sector, usually involving infrastructure.

**Leasing Contracts**

Leasing contracts are agreements between the government and the private sector, whereby the private sector provides the government enterprise with administrative and technical expertise for a specific period of time. It is refers to transfer of management and operation of some public services.

**Management Contracts**

It refers to transfer the responsibility of managing, operating, and developing the firm to a contractor or investor from the private sector for a period of time. Under this contract, the government retains full ownership of the public enterprise. Management contracts can be used in two cases: (i) when the firm is under the process of privatisation and requires high levels of specialised experience in management; and
<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
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<tbody>
<tr>
<td>Mass privatisation</td>
<td>It refers to achieve the privatisation through mass participation of all citizens, local and foreign, including physical persons and legal entities. This model enables the sale of part or all SOEs by use of certificates as the main means of payment. Mass privatisation uses the public offer of shares method. Most of the SOEs in the world are privatised by the mass privatisation model.</td>
</tr>
<tr>
<td>Municipalisation</td>
<td>It is the transfer of corporations or other assets to municipal ownership. The transfer may be from private ownership (usually by purchase) or from other levels of government.</td>
</tr>
<tr>
<td>Nationalisation</td>
<td>Nationalisation is refers to the process of taking assets into state ownership. In general, it refers to private assets being nationalised.</td>
</tr>
<tr>
<td>Privatisation</td>
<td>It sometimes called denationalisation or disinvestment. It is an umbrella term, which encompasses all methods or policies implemented to increase the role of market forces within the national economy.</td>
</tr>
<tr>
<td>Public ownership</td>
<td>It refers to the government ownership of any asset, industry, or corporation at any level, national, regional or local. It called also government ownership or state ownership. A government owned SOEs may resemble a non-profit companies because it may not be required to generate a profit; although governments may also use profitable units, they own to support the general budget. SOE's may or may not be expected to operate in a broadly commercial manner and may or may not have to face competitive tendering.</td>
</tr>
</tbody>
</table>
Re-privatisation refers to the process of restoring to its former owners properties seized by a government, or to the process of compensating previously uncompensated former owners. Re-privatisation is often a component of larger privatisation programme.

Return on assets (ROA)

It called also "return on investment", "return on total assets (ROTA)", and "return on net assets (RONA)". ROA represents indicator of how profitable a firms is relative to its total assets and gives an idea as to how efficient management is using its assets to generate earnings. ROA is calculates as a percentage (net income / total assets). ROA is using as a comparative measure, it is best to compare it against a firm's previous ROA ratios or the ROA of a similar company. It is often referred to as the No.1 ratio in finance. The higher the ROA number, the better, because the firm is earning more money on less investment.

Return on equity (ROE)

ROE refers to a measure of a firm's profitability that exposes how much profit a firm creates with the money shareholders have invested. The ROE is useful for comparing the profitability of a company to that of other firms in the same industry. The ROE can be calculated by dividing net income by shareholder's equity; may also be calculated by dividing net income by average shareholders' equity. Average shareholders' equity is calculated by adding the shareholders' equity at the beginning of a period to the shareholders' equity at period's end and dividing the result by two. So, ROE is probably the most widely used measure of how well a company is performing for its shareholders.
Return on sales (ROS)  It referred sometimes to margin-on-sales percentage, or net margin. ROS represents a measure of a firm's profitability, equal to a fiscal year's pre-tax income divided by total sales. Although return on sales is another tool used to analyse profitability, it is perhaps a better indication of efficiency.

Socialism  Socialism is a social and economic system in which the economic means of production are owned and controlled collectively by the people. This control may be either direct, exercised through popular collectives such as workers' councils or community councils, or it may be indirect, exercised through a State.

State-Owned Enterprise (SOEs)  A state-owned enterprise is an enterprise, often a corporation, owned by a state.

Tender  The tender represents a method of privatisation of SOEs through a collection of offers, in accordance with previously published conditions. However, the tender as a method of privatisation has started to have a more and more significant position in the selection of the method for privatisation of SOEs.

Voucher  A voucher is a certificate, which is worth a certain monetary value and which may only be spent for specific reasons or on specific goods such as housing and food vouchers. The main objective of the voucher privatisation system is to expand public participation in the market-economy.
ACs Affiliate Companies.
AMF Arab Monetary Fund.
APC Absolute Performance Change.
APOSFP The Actual Percentage Owned by the State in the Privatised Firm.
BBO Buy-Build-Operate.
BOO Build-Own-Operate.
BOT, BOOT Build- (Own)-Operate-Transfer.
BT, BTO Build-Transfer- (Operate).
BV Boardman and Vining, 1989.
CA The study of Cabanda and Ariff, 2002.
CASE Cairo & Alexandria Stock Exchanges.
CBE Central Bank of Egypt.
CD The study of Claessens and Djankov, 2002.
CEEC Central and Eastern European Countries.
CEGB The UK's Central Electricity Generating Board.
CMA The Capital Market Authority.
CPI The Consumer Price Index.
CPRS Centre for Political Research and Studies.
EBIT Real Earnings before Interest and Taxes.
EMPL The Total Number of Employees.
ERSAP Economic Reform and Structural Adjustment Programme.
ESA Employee Shareholders Association.
FGHR The study of Frydman, Gray, Hessel, and Rapczynski, 1999.
FST The study of Feng, Sun, and Tong. 2004.
<table>
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<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>GDP</td>
<td>Gross Domestic Product.</td>
</tr>
<tr>
<td>GNP</td>
<td>Gross National Product.</td>
</tr>
<tr>
<td>GOE</td>
<td>Government Of Egypt.</td>
</tr>
<tr>
<td>HCs</td>
<td>Holding Companies.</td>
</tr>
<tr>
<td>IAS</td>
<td>The International Accounting Standards.</td>
</tr>
<tr>
<td>IDCS</td>
<td>The Egyptian Cabinet Information and Decision Support Centre.</td>
</tr>
<tr>
<td>IMF</td>
<td>International Monetary Fund.</td>
</tr>
<tr>
<td>INEFF</td>
<td>Income Efficiency.</td>
</tr>
<tr>
<td>IPOs</td>
<td>Initial Public Offering.</td>
</tr>
<tr>
<td>LB</td>
<td>The study of Laurin and Bozec, 2001.</td>
</tr>
<tr>
<td>LBO</td>
<td>Lease-Build-Operate.</td>
</tr>
<tr>
<td>LX</td>
<td>The study of Li and Xu, 2004.</td>
</tr>
<tr>
<td>MB</td>
<td>The study of Megginson and Boutchkova, 2000.</td>
</tr>
<tr>
<td>MCs</td>
<td>Management Contracts.</td>
</tr>
<tr>
<td>MNR</td>
<td>The study of Megginson, Nash, and Van Randenborgh, 1994.</td>
</tr>
<tr>
<td>MO</td>
<td>The study of Mubari and Oriani, 2002</td>
</tr>
<tr>
<td>MP</td>
<td>The study of Martin and Parker, 1995.</td>
</tr>
<tr>
<td>MPC</td>
<td>Ministerial Privatisation Committee.</td>
</tr>
<tr>
<td>MPE</td>
<td>The Ministry of Public Enterprise.</td>
</tr>
<tr>
<td>NEB</td>
<td>The National Enterprise Board.</td>
</tr>
<tr>
<td>NP</td>
<td>The study of Newbery and Politt, 1997.</td>
</tr>
<tr>
<td>OLS</td>
<td>Ordinary Least Squares regression.</td>
</tr>
<tr>
<td>PEO</td>
<td>The Public Enterprise Office.</td>
</tr>
<tr>
<td>PES</td>
<td>Public Enterprise Sector.</td>
</tr>
<tr>
<td>PE's</td>
<td>Private Enterprises.</td>
</tr>
<tr>
<td>PPP</td>
<td>Joint venture &quot;Public Private Partnerships&quot;</td>
</tr>
<tr>
<td>QC</td>
<td>The Quatro Committee.</td>
</tr>
<tr>
<td>ROA</td>
<td>Return on Assets. (Earnings before Interest and Taxes on Assets).</td>
</tr>
<tr>
<td>ROBF</td>
<td>Return on Borrowed Funds.</td>
</tr>
<tr>
<td>Acronym</td>
<td>Definition</td>
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<tr>
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</tr>
<tr>
<td>ROE</td>
<td>Return on Equity. (Earnings before Interest and Taxes on Equity).</td>
</tr>
<tr>
<td>ROS</td>
<td>Return on Sales. (Earnings before Interest and Taxes on Sales).</td>
</tr>
<tr>
<td>RPC</td>
<td>Relative Performance Change.</td>
</tr>
<tr>
<td>SAL</td>
<td>Real Sales.</td>
</tr>
<tr>
<td>SALEFF</td>
<td>Sales Efficiency.</td>
</tr>
<tr>
<td>SFD</td>
<td>The Egyptian Social Fund for Development.</td>
</tr>
<tr>
<td>SIPs</td>
<td>Share Issue Privatisation.</td>
</tr>
<tr>
<td>SJT</td>
<td>The study of Sun, Jia, and Tong, 2002.</td>
</tr>
<tr>
<td>SOEs</td>
<td>State-Owned Enterprises</td>
</tr>
<tr>
<td>SP</td>
<td>The study of Saal and Parker, 2003.</td>
</tr>
<tr>
<td>SPC</td>
<td>The Share Pricing Committee.</td>
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<tr>
<td>ST</td>
<td>The study of Sun and Tong, 2003.</td>
</tr>
<tr>
<td>SX</td>
<td>The study of Shirly and Xu, 2001.</td>
</tr>
<tr>
<td>TDTA</td>
<td>Total Debt to Total Assets.</td>
</tr>
<tr>
<td>TDTE</td>
<td>Total Debt to Total Equity.</td>
</tr>
<tr>
<td>TFP</td>
<td>Total Factor Productivity.</td>
</tr>
<tr>
<td>VB</td>
<td>The study of Vining and Boardman, 1992.</td>
</tr>
<tr>
<td>VOM</td>
<td>The study of Verbrugge, Owens and Megginson, 2000.</td>
</tr>
<tr>
<td>WB</td>
<td>World Bank.</td>
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<tr>
<td>WTO</td>
<td>The World Trade Organisation.</td>
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</table>
CHAPTER 1  INTRODUCTION

1.1 Overview

Since the early 1980s there has been a spread of privatisation waves and appreciation of the benefits of the private sector. More than eighty countries have undertaken privatisation initiatives and more than 6800 State-Owned Enterprises (SOEs) have been offered for divestiture since 1980 (Hinnawi and Ahmed, 1995).

Some analysts have described the privatisation as "the fashion of the 80's". Others have compared it to a marathon race (Al Effendi, 1992). Both groups yet agree that it has become a prevalent phenomenon extending from its British pioneer to China and from Mexico to Kenya. The concept of privatisation as projected in this research is defined as the expansion of the ownership base by selling some of the public sector assets, or forming some partnerships in the management of these assets, whether by its leasing to workers, or to the private sector or to foreign entities.

Theoretically, privatisation might cause firms to operate more productively because managers are subjected to the pressures of the financial markets and to the monitoring and discipline of profit-oriented investors. Additionally, the change in ownership structure of privatised firms shifts the firm's objectives and managers' incentives away from those that are imposed on them by politicians, toward those that aim to maximise efficiency, profitability, and shareholders'
wealth. Thus, the privatisation process becomes a crucial point in improving the performance of the SOEs. So, the privatisation process can be considered as one of the most important issues in any programme of economic reform.

The main objectives of privatisation are: to reduce the state's budget deficit; to make the economy more competitive; to bring workers into share ownership; to contribute to the development of the capital market; to reduce the burdens to the exchequer; and to rebalance the power between the public sector and private sector. It can be considered as an integral part of the move from a centrally planned system to a market based one in economic transition.

According to the above, privatisation is an umbrella term, it has been a part of economic life for a quarter-century now, and seems likely to remain firmly entrenched in the public policy debate for the foreseeable future.

Following the July revolution in 1952, Egypt had adopted a new economic policy based upon a centrally planned economy for nearly 22 years. But starting from 1974, a different philosophy has been adopted, which can be called an open door policy, as the Egyptian economy was on the edge of collapsing. Although this policy had a positive impact upon the Egyptian economy in the short run, Egypt faced many difficulties by the end 1980s. These difficulties were due to a sharp decrease in oil prices as well as a decrease in both Suez Canal dues and workers' remittances.

An economic reform programme became the new phenomenon within the last three decades; Egypt like most developing counties experienced the same
programme aiming at achieving a stabilisation in its economy. However, in 1991, the Egyptian government embarked upon a comprehensive economic reform and structural adjustment programme, the core of which was liberalisation and privatisation of Egypt's economy.

Over the past three decades (1975-2005), Egypt has undertaken important steps towards liberal economic reform. This reform was rightly viewed by some writers as constituting a fundamental shift from pre-1974 economic policies. Egypt has dramatically moved since the mid-1970s from a centrally planned public sector dominated economy toward a competitive market based one, in which the private sector is expected to continue to play an important role. Egypt launched a privatisation programme in 1991 as a part of its economic reform programme. The first step in Egypt's privatisation programme was to cut off subsidies to SOEs.

The Egyptian privatisation programme aims to reduce the size of the public sector; widening the ownership base, ending controls over investment and eliminating most tariffs on imports; reducing consumer subsidies and targeting them towards the poorest activities; encouraging private activities in all sectors and selling all manufactured goods at market prices. From the privatised firm' viewpoints, privatisation should lead to: (i) an increase in productivity; (ii) cost savings and higher quality services; (iii) improved working conditions; (iv) privatised firms becoming more flexible and competitive; and (v) helping the firm focus on those activities that represent value added. From the state viewpoints, privatisation should lead to: (i) eliminating the corruption in SOEs; (ii) transferring risk to private sectors; (iii) decreasing the burden imposed on the
state budget; thus, improving the state budget’s financial position; (iv) decreasing unemployment; at the same time, achieving more secure employment; (v) widening the ownership base; and (vi) improving the stock market.

Egypt offered 314 SOEs to be privatised in 1991. There are three approaches, which the government used to the divestment of SOEs. The first was to sell shares through the domestic stock market. The second was to sell strategic stakes of shares to anchor investors through public auction, and the third was to sell firms to employee shareholder associations. Additional to these approaches, some firms were liquidated because they were deemed economically viable. Egypt concentrated on Initial public offerings method (IPOs) to privatise its SOEs more than others methods to give a boost to it privatisation programme and to increase the activities on the stock market; in addition, to make privatisation more acceptable to public, and to enhance the image of privatisation in the eyes of the public. Only 226 were privatised by the end of 2007.

1.2 Research objectives

The aim of this thesis is to investigate the Egyptian privatisation programme and examine whether the change of ownership (from state to private ownership) improves the firm’s performance. Thus, this research is designed to achieve the following three main objectives:
1- Assessing the extent to which the privatisation programme in Egypt has been successful or not.

2- Assessing the performance of privatised firms compared with their counterparts from private sector.

3- Examining the impact of the post-privatisation environment upon the post-privatisation performance.

1.3 Importance of the study

Between 1960 and 1990, SOEs handled 75% of Egypt's economic activity under the direction of various ministries. Poor management, inefficient bureaucracy, and weak capitalisation of SOEs led to a negative effect on their efficiency and financial viability. In an effort to improve its economy, the Egyptian government embarked upon an economic reform programme, the core of which was liberalisation and privatisation of Egypt's economy.

By starting the privatisation programme, the Egyptian government aimed to expand the role of the private sector in the economy. So, the Egyptian government earmarked 314 SOEs as potential candidates for privatisation, offering attractive investment and profit opportunities. In 1991 Egypt's 314 SOEs were grouped under 27 holding companies (reduced to 14 by 2001) responsible for all the affiliates in various sectors. Egypt focused on a gradual approach in the privatisation of SOEs. A total of 161 companies were fully privatised by 2007, and another 65 were partially privatised.
Empirically, many previous studies, such as these by Megginson, Nash, and Van Randenborgh (1994), Dewenter and Malatesta (2001), Boubakri and Cosset (1998), D’Souza and Megginson (1999), and Boardman, Laurin, and Vining (2003) have examined the performance of privatised firms after privatisation or compared pre- and post-privatisation financial and operating performance of former SOEs, and they confirmed that privatisation in general leads to a significant increase in profitability, efficiency, and capital investment spending, output, and dividend payout. In addition, a significant decrease in leverage is documented, though there is no consensus as to the impact of privatisation on the level of employment. These studies focus on the impact of privatisation programmes on the performance of privatised firms as a whole without extending the analysis to the type of privatisation, either as partial or full privatisation. Instead, in this study, the researcher will test the impact of the privatisation programme on the performance indicator value changes of privatised firms, according to whether these firms experience full or partial privatisation, for all Egyptian privatised firms that were privatised through IPOs during 1991-2004, which has been neglected in the literature, and is different in both environment and time period.

However, these studies and other related with empirical works, such as by Boardman, Laurin, and Vining (2003), Saal and Parker (2003), Sun and Tong (2003), Verbrugge, Owens and Megginson (2000), and Omran (2001), are unable to determine whether these results are due to the privatisation process itself or to other factors, since they do not consider a benchmark of control firms matched to their sample firms. Boubakri and Cosset (1998) tried to test whether
some of the performance improvement might be attributed to economy wide
effects, by using market-adjusted accounting performance measures, but they
did not consider industry performance benchmarks because of data limitations.

Furthermore, most empirical studies on privatisation examine the financial and
operating performance of privatised firms without directly testing the
performance of privatised firms against private ones. In addition, the private
firms as a control group, are likely to be very focused on performance and are
direct beneficiaries of any improvement in the firm's profitability and efficiency. It
is posited in this research that comparing the performance changes of
privatised firms with those of already private ones should lead to an explanation
of the degree of the success of the Egyptian privatisation programme according
to any improvement in performance of privatised SOEs, thus supporting the
economic reform programme, which was initiated by the Egyptian government
in the early 1990s.

In this study, the researcher tests the performance changes of privatised
Egyptian firms after matching them to control firms (private firms) according to
size and industry, by using absolute and relative values of financial ratios to
solve the problem of possible different past performances between privatised
and private firms. Consequently, since privatisation took place as a response to
Egypt's new economic climate (the country adopted an economic reform
programme by late 1991), comparing pre- versus post-privatisation performance
without considering changes in economic policies would generate misleading
results; thus, the study contributes to the work on privatisation by comparing the
performance changes of privatised firms with those of already private ones.
More precisely, the study will evaluate the performance changes of newly privatised Egyptian firms after privatisation versus the performance of existing private firms of similar industry and size. In addition to this, the study examines the impact of the post-privatisation environment on post-privatisation performance by developing a model to interpret the relationships between the effect of the pre-privatisation experience, competitor environment, and firm size on post-privatisation performance.

This research focuses on the Egyptian firms that were privatised through IPOs. There are six reasons to choose the firms that were privatised through IPOs, which are: (i) these firms are registered on the Stock Exchange, thus it is easy to collect financial statement data for at least 5 years; (ii) large firms only can be privatised through IPOs rather than other privatisation methods; (iii) these firms are independent and continue to generate comparable financial and accounting reports; (iv) most other privatised firms are not registered by CASE. So, it is hard to collect information about financial statements for at least 5 years; (v) to avoid delisting bias in generating a sample, the analysis was limited to those firms that were sold via IPOs; and (vi) good quality data are available.

The objective of this research is to assess the impact of the Egyptian privatisation programme on the performance of privatised firms following privatisation. The performance of Egyptian privatised firms has been measured in terms of profitability, operating efficiency, output, leverage, and employment level. The study undertakes comparisons between the firm's performance pre- and post-privatisation. It uses a group of private firms as a control group. The study further examines the effect of ownership structure, the pre-privatisation
performance, the size of privatised firms, performance of private competitor firms on the post-privatisation performance. Strictly speaking, this research has three main purposes to achieve: firstly, examining the financial and operating performance of privatised firms following privatisation; secondly, testing the performance changes of privatised Egyptian firms after matching them to control firms (private firms) according to size and industry. This explanatory study tries to determine, through hypothesis testing, whether privatisation increases profitability, operating efficiency and output, whilst decreasing employment levels and leverage. Thirdly, the study examines the impact of both the previous state-owned environment and the current competitive environment on the current performance of the privatised firms. This study covers the era from 1994-2004, which represents nearly a decade of the Egyptian privatisation efforts.

Thus, this thesis represents the first study in Egypt to evaluate and compare the performance of privatised firms with the performance of private firms, rather than SOEs. The researcher focuses on Egypt as a country in the Middle East and North Africa region, which has been neglected in the literature. More precisely, this study contributes to the existing literature in three ways. First, the study looks at a country in the Middle East and North Africa region, a part of the world that has been neglected in the literature. Second, it evaluates the performance changes of newly privatised Egyptian firms versus the performance changes of existing private firms of similar industry and of a same size. Third, the study evaluates the combined effect of the pre-privatisation
experience and the post-privatisation competitive environment upon the post-
privatisation performance of privatised firms.

### 1.4 Research hypotheses

There are three main hypotheses to be tested, in order to achieve the objectives
shown above, which are:

1. Privatisation leads to improvement in the performance of privatised firms
   following privatisation.

2. The performance of privatised firms following privatisation is similar to
   the performance of their counterpart from the private sector.

3. There is an environmental impact on the performance of the firms after
   privatisation.

Clearly, these will be discussed in detail later (see Chapter 5).

### 1.5 Data set

The data set\(^1\) of this study was obtained from Egyptian firms that had been
privatised and have at least 2 years of both pre- and post-privatisation data.
Time was also allowed for the programme to stabilise and also reflected that
Egyptian privatisation, despite initial steps in 1991, did not actually fully start
until 1994. The total number of privatised firms in Egypt reached 226 in

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\(^1\) For more details about data set, please see: Chapter 5, page134.
December 2006. However, excluding some types of privatisation, namely, asset sales (27 firms), liquidations (53 firms), and, leases (21 firms) this left a population of only 125 firms. Excluding firms with less than 2 years of post-privatisation data, further (by one firm) reduced the sample to 124 firms. Also excluded were firms that were privatised out of an IPO (37 firms were sold to Anchor Investors and 33 firms were sold to ESA). The final sample thus consists of 54 privatised firms, of which 38 experienced full privatisation and 16 partial privatisation. In addition, it was necessary in this study to find 54 comparable private firms - based on industry and size - to serve as the control group for the privatised firms. The final sample thus consists of 108 firms: 54 privatised firms, and 54 private firms, which represent the control group.

1.6 Data collection

The data of this research will cover the period from 1990/1991 to 2004/2005, which incorporates the period prior to and after the introduction of the privatisation programme. The data will be based on annual figures because of the availability of data collection sources. For the privatised firms in the pre-privatisation period, the Public Sector Information Centre, the Egyptian Ministry of Public Enterprises, and the Egyptian Cabinet Information and Decision Support Centre were the main sources to collect these data, while the Egyptian Capital Market Authority were the main sources to collect data about the privatised firms in the post-privatisation period.
Additionally, Cairo & Alexandria Stock Market Exchanges (CASE), Kompass Egypt Financial Year Book (financial statements from 1992-1993 to 2005-2006), and the financial reports from each private firm itself were the main sources to collect data about the private firms.

1.7 Data analysis

To examine the hypotheses shown previously, statistical and econometric techniques will be used. With regard to the first hypothesis, which postulates a significant change in the performance following privatisation, the parametric t-test, the non-parametric Wilcoxon signed-rank test, and the proportion test will be used to test for the change in the values of the performance measures pre- and post-privatisation. The intention from using this analysis is to evaluate the success of the privatisation programme in Egypt, in other words, to find out whether the privatised firms witness a significant improvement after privatisation compared with pre-privatisation.

With regard to the second hypothesis, which postulates a significant change in the performance following privatisation compared with their counterparts from the private sector, the parametric t-test and the Mann-Whitney test will be used to examine whether the performance of privatised firms matches private firms. The intention from using this analysis is to determine whether all prescribed changes in privatised firms are attributed to privatisation or to other exogenous variables.
On the other hand, the data analysis to test for the third hypothesis will be based upon modelling the relationships between the size of the privatised firm, the state percentage in ownership structure, the performance of the firms pre-privatisation, and the performance of counterparts of private firms (the competitor group). For this purpose, multiple-regression will be used. The intention from using this technique is to determine the impact of both the post-privatisation sectoral environment and the pre-privatisation experience of output on post-privatisation performance.

1.8 Research outline

This research is divided into two parts. First the theoretical part, which contains three chapters, will deal with the literature review concerning the privatisation concepts, Egypt's privatisation programme, and the studies related to the performance of privatised firms. The second part will contain five chapters, which will concentrate on the Egyptian privatisation experiment, followed by conclusions and recommendations.

Chapter One: Introduction.

Chapter Two: Privatisation: A theoretical framework

This chapter will deal with the various definitions of the privatisation concept, through explaining many points of view and considering the alternative expressions for the privatisation phenomena, drawing attention to the importance and the aims of the privatisation programme whether in the
developing countries and developed countries. In addition, the chapter will
discuss the reasons behind the need for privatisation, and advocates and
opponents of privatisation. Besides these, many other aspects will be
discussed: the nine forms of privatisation, and the five methods of privatisation.
In the meantime, the process of the privatisation programme will be discussed
as well, including the advantages and disadvantages of the privatisation
programme.

Chapter Three: The Egyptian economic development and privatisation
programme

This chapter consists of two parts, the first part will deal with the history of the
Egyptian economy (Public Sector Background) from 1952 till 2007 in three
stages; the first stage is from 1952 to 1970 "a command economy era"; the
second stage from 1970 to 1981 "open door era"; and the third stage from 1981
till now "economic reform programme era". The reason behind that is to show
the development of Egyptian economic history and to indicate why it was
necessary for Egypt to adopt its privatisation programme by late 1990. The
second part of this chapter will explain the history of Egyptian privatisation
programme. The chapter will illustrate the methods of Egyptian SOEs' privatisation, objectives of Egyptian privatisation programme, and why the
performance of SOEs has been weak. In the meantime, the main impediments
for the Egyptian privatisation process will be discussed as well. Besides these,
supporters and opponents of the Egyptian privatisation programme will be
discussed. The chapter, finally, will provide the achievements of the Egyptian
privatisation programme until 2007.
Chapter Four: Literature review

This chapter will summarise and discuss the recent theoretical and empirical works concerning the impact of privatisation on the firm performance through explaining many studies related to the impact of ownership structures on the firm's performance, the studies which evaluate the performance of firms pre- and post-privatisation, and the studies that compare the performance of privatised firms with SOEs. Besides these, many other studies will be presented, such as the studies that are associated with evaluating the performance of firms' post-privatisation versus the performance of private firms. Finally, the chapter will provide the recent studies that are related to the impact of ownership structures, pre-privatisation experience, and / or the competitive environment on the post-privatisation performance.

Chapter Five: Research methodology

This chapter will explain the methodology of the research and the statistical analysis techniques that will be used in order to test the impact of the privatisation programme on the performance of privatised firms. This chapter will deal with the data of this research and the formulation of the hypotheses, which should be examined in order to achieve the research objectives. The statistical and econometric techniques shown in this chapter will be used to test the research hypotheses. The parametric t-test, the non-parametric Wilcoxon signed-rank test, and the proportion test will be used to examine the change in the performance indicators pre- and post-privatisation. In addition, the parametric t-test and the Mann-Whitney test will be used to test whether the
performance of privatised firms matches private firms. Multiple-regression will be used to test for the impact of the post-privatisation sectoral environment and the pre-privatisation output on post-privatisation performance.

Chapter Six: Descriptive statistics and comparative analysis of pre- and post-privatisation performance

The chapter will attempt to meet the first objective of this research. This chapter will be divided into two parts. Part One will concentrate upon the descriptive statistics. This part contains two sections; the first section will cover the descriptive statistics for privatised firms; while the descriptive statistics for private firms will be shown in the second section. Part Two will present the comparative analysis of pre- and post-privatisation performance. The statistical analysis of change in performance is presented for the privatised SOEs pre- and post- the privatisation.

Chapter Seven: A comparative analysis of the performance of privatised and private firms

The chapter will attempt to meet the second objective of this research by comparing the changes in the performance indicators in privatised firms with the changes in the performance indicators in the private firms (control group) to decide whether the privatisation programme was the cause of these changes. The study, in this chapter employs the Mann-Whitney test to find out whether the performance changes in privatised firms are different from those of private firms. This comparison is undertaken based on both absolute and relative
performance change methods. This chapter presents the results of the comparison between the performance in Egypt of privatised firms (test group), that experienced full or partial privatisation between 1991 and 2004 through IPOs, and counterparts from private firms (control group).

Chapter Eight: The combined impact of the pre-privatisation experience and post-privatisation environment upon the post-privatisation performance

The chapter will attempt to meet the third objective of this research, by investigating the combined impact of the post-privatisation sectoral environment (the performance of private firms) and the pre-privatisation output (the performance of SOEs) on post-privatisation performance (the performance of privatised firms following privatisation) through three stages. The first stage will be to examine the effect of the new environment upon the performance of privatised firms through three years of both pre- and post-privatisation. The second stage will test the impact of the new environment on the performance of privatised firm in the third year after privatisation. The third stage will test the impact of the new environment on the performance of privatised firm in the final year of the study period (year 2004) to show the effect of competition with the passage of time on post-privatisation performance.

Chapter Nine: Reflective discussion on the impact of privatisation on performance

This chapter will discuss the results of the empirical study. The chapter consists of three main parts: Part One will provide a reflective discussion on the
implications of the results that related to the performance of privatised firms pre-versus post-privatisation, to decide whether the privatisation programme was the cause in the performance improvement of privatised firms or not. Part Two will present a reflective discussion on the empirical results that related to the performance of privatised firms post-privatisation versus private firms as control group, to decide whether the privatisation programme is the reason of these results or not. Part Three will discuss the impact of time on the performance through a reflective discussion on the impact of the pre-privatisation experience and post-privatisation environments upon the post-privatisation performance through three stages.

Chapter Ten: Conclusion and recommendations for future research

The chapter will summarise the findings in this thesis. This chapter mainly concentrates upon the findings from the empirical part of this research. Additionally, recommendations will be made regarding the potential direction for further research studies arising from the conclusions derived from this thesis.
CHAPTER 2 PRIVATISATION: A THEORETICAL FRAMEWORK

2.1 Introduction

“One of the most disputed questions both in political science and in practical statesmanship at this particular period relates to the proper limits of the function and agency of government. At other times it has been a subject of controversy how government should be constituted and according to what principles and rules they should exercise their authority; but it is now almost equally a question to what departments of human affairs that authority should extend” John Stewart Mill (1848) (see: Hartwell, 1989, p.119).

Privatisation programmes have been undertaken in many countries across the world, and can be categorised into three major groups. The first group comprises privatisation programmes conducted by transition economies in Central and Eastern Europe after 1989 in the process of instituting a market economy; the second comprises privatisation programmes carried out in developing countries under the influence of international financial institutions, such as the World Bank (WB) and International Monetary Fund (IMF); the third group comprises privatisation programmes carried out by developed countries' governments, the most comprehensive probably being those of New Zealand and the United Kingdom in the 1980s and 1990s.
Privatisation, sometimes called denationalisation or disinvestment, is the process of transferring property from public ownership\(^2\) to private ownership and / or transferring the management of a service or activity from the government to the private sector. The reverse process is nationalisation\(^3\) or municipalisation\(^4\).

The rest of this chapter is organised as follows. Section two explains the concept of privatisation. The reasons of the need for privatisation, and advocates and opponents of privatisation are discussed in section three. Section four presents the mains objectives of privatisation. The forms of privatisation are explained in section five. Section six provides the methods of privatisation. The benefits of privatisation are illustrated in section seven. Section eight provides the disadvantages of privatisation programme. The summary chapter is set out in section nine.

In the following sub-sections, the study explains the meaning of privatisation, then, explores the models and methods of privatisation, including advantages and disadvantages for each model or method. Furthermore, the study shows the objectives of a privatisation programme. Following that, the study provides the advantages and disadvantages for implementing privatisation programmes.

\(^2\) Public ownership called also government ownership or state ownership refers to government ownership of any asset, industry, or corporation at any level, national, regional or local. A government owned State-Owned Enterprise may resemble a non profit company because it may not be required to generate a profit; although governments may also use profitable units, they own to support the general budget. SOE’s may or may not be expected to operate in a broadly commercial manner and may or may not have to face competitive tendering.

\(^3\) Nationalisation is the process of taking assets into state ownership. In general, it refers to private assets being nationalized.

\(^4\) Municipalisation is the transfer of corporations or other assets to municipal ownership. The transfer may be from private ownership (usually by purchase) or from other levels of government.
2.2 Definition of privatisation

Privatisation can be defined as: "the deliberate sale by a government of the State Owned Enterprises (SOEs) to the private sector or the sale of SOE's assets to private economic sectors" (Megginson and Netter, 2001).

The definition of privatisation varies from one author to another. Letwin (1988) defined the privatisation as the transfer of SOEs to the private sector; Plane (1997), and Mclindon (1996) explain that privatisation means, in general, the process of transferring the SOEs to the private sectors through the sale of all or some of the government assets to the private sectors; Beesley and Littlechild (1989) define privatisation as the sale of at least 50% of the shares to private shareholders; Lutfi (2006) defines privatisation as a tool to broaden the base of ownership of public enterprise sector firms and private sector. Farinós and Jose (2007) concluded that privatisation means not only the transfer of SOE's equity or assets to private sectors, but also the change in the style of management from a socialist style to capitalist style or to open market style.

Privatisation of SOEs represents one of the most important tasks within the general framework of the economic transition process. Successful privatisation leads towards increase of productivity, creation of stable enterprises, reductions in unemployment, improvement of working conditions and more secure employment. There are six steps, as shown in Figure 2-1, to the success of the privatised SOEs.
Figure 2-1 Steps to the success of the privatisation process

1. Establishment of a more favourable investment climate
   Step one of the privatisation process is to establish a new investment climate to meet the fast change in economic and legal environment. This climate must lead to improved legislation efficacy and ensure transparency of the entire process.

2. Resolve the issues of ownership structure and debts
   The government must define and determine appropriate mechanisms that will ensure the resolution of issues of ownership structure and debts, especially for those enterprises that are of significant value for the country, and where interest was expressed by strategic investors.

3. Creation of social funds for redundant labour
   Step three of the privatisation process is to establish social funds for workers, who lose their jobs during the process of privatisation. Thus, investors will feel more comfortable and the responsibility to cover the duties towards unemployed workers should be taken over by the government.

4. Complete the restructuring of strategic enterprises in the Infrastructure sector
   Step four of the privatisation process is to determine the privatisation method for privatisation of the state-owned capital in the infrastructure-service sector.

5. Participation of local and foreign experts and advisors
   Participation of experts, from local or external, should lead to an increase in the possibility of successful privatisation, partly because of involvement of skilled staff and partly because of greater transparency.

6. Greater and more professional involvement of unions and workers
   Workers must be play a main active role through unions or organisation itself, by using appropriate methods. Unions and workers should play a more active role in the process of privatisation, using one of the appropriate methods.

According to the above, the term privatisation refers to: (1) reducing local government activities by involving the participation of the private sectors; (2) reducing local government ownership, when SOEs are divested to unregulated private sectors; and (3) reducing local government ownership, when local government agencies are commercialised. So, privatisation is the process of transferring the ownership and/or management of SOEs, projects, and services to the private sector, relying on market mechanisms and competition, through a number of methods including contracts for managing, operating, leasing, financing, or selling all or part of the government’s assets to the private sector.
After discussing the concept of privatisation, it can be argued that privatisation covers a broad range of methods and models, including contracting out for services, voucher programmes, and the sale of public assets to the private sector. However, the real issue is not so much public against private, but it is monopoly against competition. A main issue for the privatisation concept is related to the introduction of competition that leads to cost reduction, customer satisfaction, quality improvement, and efficiency increase.

2.3 Privatisation objectives

An important stage in the process of implementing any privatisation programme is the determination of the privatisation goal(s). Privatisation has several objectives, which can be divided into five categories, which are: efficiency and economic development goal-orientations; to widen the ownership base; political aims; social aims; and financial goals, as shown in Figure 2-2.

Figure 2-2 Privatisation objectives
2.3.1 Widening the ownership base

The promotion of wider share ownership among both employees and the general public has been a major objective of the privatisation programme. Privatisation can be an effective means to expand the participation of people in the ownership of productive assets in public firms, by using the method of public subscription in the privatisation process, which is considered the most important privatisation method to develop the local capital market. Furthermore, some governments widen the ownership structure including giving a certain percentage to the enterprises' employees, in an effort to improve its performance (Williams and Nguyen, 2005). There are three main steps to achieve this objective, which are: first, to encourage participation of a large number of people to participate in various types of activities transferred to the private sector by using the privatisation method of subscription; second, to implement clear and transparent procedures to apply to all privatisation activities; and third, by utilising all media types, to promote the objectives of privatisation and the benefits of private sector participation for the national economy (Vickers and Yarrow, 1988).

2.3.2 Economic goals

2.3.2.1 Improving efficiency

The overall economic goals can be considered to be to improve the efficiency of the national economy, and to enhance its competitive ability, to meet the challenges of local and international competition. Efficiency and economic
development are the most popular goals that most governments try to achieve, whose objective leads to creating a competitive environment between the economic units in different aspects (Perioutti and Guncy, 1993). In other words, the competitive environment should direct the investments to the optimal alternatives, based on market forces.

2.3.2.2 Provide services to general public and investors, in a timely and cost-efficient manner

Privatised firms, that have a monopolistic position, may increase prices and reduce in the quality of their services, because some enterprises would have received government subsidies before being privatised. This is a very important issue, and thus there must be established an independent agency to deal with social, regulatory, and supervisory aspects to protect the interests of consumers, such as the provision, quality, and cost of services.

2.3.3 Financial goals

The main financial goals are, arguably, to rationalise public expenditure and reduce the burden on the government budget, by giving the private sector opportunities to finance, operate, and maintain certain services that it is able to provide. A privatisation programme is expected to decrease the burden imposed on the state budget, so improving the state budget’s financial position, and that is for many reasons, such as (i) by privatisation of SOEs the government stops giving subsidies to the SOEs, (ii) there will be no need for such subsidies paid by the government for those SOEs facing losses to help
them recover, especially to account for the losses carried forward, and (iii) there will be no need to allocate part of the state-budget to increase the capital expenditure for those projects.

2.3.4 Social goals

2.3.4.1 Increasing employment opportunities

Developing the nation's human resources is a basic factor of national development. In addition, it needs to increase employment opportunities, optimise the use of the national work force, and ensure the continued equitable increase of individual income. Any privatisation programme should improve the work-force by developing appropriate regulations and incentives, to encourage the private sectors' involvement in economic activities.

A privatisation programme can also be developed to deal with excess labour, through three main keys which are: first, to take steps to ensure that the privatisation process includes the firms recently engaged in new direct investments to help absorb the national workforce; second, to increase the national workforce, and to provide opportunities for training the national workforce to meet growth requirements; and third, to ensure a fair treatment for excess employment, resulting from transferring activities to the private sector.

2.3.4.2 Encouraging participation

Mainstream social goals in this context can be considered as encouraging private sector investment and effective participation in the national economy,
and increasing its share of local production to achieve growth in the national
economy. The private sector can efficiently direct capital investments towards
more profitable and commercially sustainable sectors. In order to expand
private sector participation, privatisation must adopt the management methods
used in the private sector, based on commercial principles. There are three
policies to achieve this objective, which are: first, to privatise those SOEs that
are appropriate for private sector participation and encouraging competition;
second, to ensure that privatisation increases self-sustainable direct
investment; and third, to manage fully or partially privatised firms on a
commercial basis.

2.3.5 Political goals

Privatisation aims to support domestic and foreign capital to invest locally. It
also helps develop the capital market, create new mechanisms for mobilising
capital and attracting national capital outside the country. In addition,
privatisation aims to eliminate corruption that may adversely affect the public
sector and stop the fraudulent (non value-added) activities that are made by
government officials and by politicians (Hendy, 1995). There are two main keys
to achieve this objective, which are: (i) to facilitate the participation of foreign
investments in the ownership of projects and various types of privatised
productive activities, in accordance with the applicable rules; and (ii) to
continuously develop the financial market to provide opportunities for additional
domestic and foreign investments and to mobilise additional channels to induce
savings.
According to the above discussion, the argument here concludes that there are many objectives that can be achieved through a privatisation programme, such as: to ensure economic development of the country by transfer to a market economy; to enable access to international capital and goods markets; to increase efficiency and cost-effectiveness through the introduction of modern management methods; to increase productivity by the introduction of modern technology; to enable free market development, which should lead towards decreasing price levels; to ensure inflow of fresh capital through domestic and foreign investments; and to enable the state to service its accumulated debts towards citizens.

2.4 Why privatisation?

Privatisation programmes became a central part of the economic and political reforms in Central and Eastern European Countries (CEEC) initiated in the late eighties. Boutchkova and Megginson (2000) demonstrate that privatisation is associated with an increase in sales, income and productivity of the firm and at the same time reducing the size of the employment as a result of privatisation. Firms privatised for less than 2 years have labour productivity growth similar to that of SOEs. In contrast, firms privatised for 3 or more years significantly outperform SOEs. In the next sections, the study explains the reasons for the need for privatisation, after that, the study lists the opinions of the opponents of privatisation and advocates of privatisation.
2.4.1 The reasons for the need for privatisation

There are many reasons to explain the need to privatise. These reasons can be summarised as follows:

1. There should follow greater eradication of corruption in SOEs and the government.

2. There are expected to be cost savings in both infrastructure improvements and day-to-day operations.

3. There are transfers of financial, operational and quality risks to the private sector.

4. Privatisation of SOEs should help the use of the latest techniques and best management practices that lead to successful projects.

5. There should be greater opportunities for professional growth and development for employees.

6. Privatisation of SOEs makes projects more flexible and helps to provide solutions to financing problems.

2.4.2 Opponents of privatisation and advocates of privatisation

The following table explains the different viewpoints between supporters and opponents of privatisation.

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5 For more details, please see: Bjorvatn and Tina, 2005.
### Table 2-1 Advocates and Opponents of privatisation

<table>
<thead>
<tr>
<th>Advocates of privatisation</th>
<th>Opponents of privatisation</th>
</tr>
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<tbody>
<tr>
<td>• Private firms make a profit by persuading consumers to buy their products and not the products of their competitors. In addition, private firms need to serve exactly the needs of their clients; and the more their clients are willing to pay, the better they serve the needs (Varouj, Ying, and Jiaping, 2005).</td>
<td>• Private firms do not have any goal other than to maximise profit. In a democratic system, each person gets one equal vote; but in the market system, people &quot;vote&quot; with their money, so those with more money they get more &quot;votes&quot;. Critics of privatisation see that a private firm will serve the needs of those who are able to pay, as opposed to the needs of the majority.</td>
</tr>
<tr>
<td>• The government may seek to run a firm for social goals rather than business ones.</td>
<td>• Profits from successful enterprises end up in private pockets instead of being available for the common good.</td>
</tr>
<tr>
<td>• Nationalised industries can be prone to interference from politicians for political reasons.</td>
<td>• Privatisation will not result in true competition, if a natural monopoly exists.</td>
</tr>
<tr>
<td>• Privatisation leads to improvement in the performance of privatised firms, have stopped or postponed the government from improving the firms under its supervision, because of the political sensitivity, even if these firms make profits.</td>
<td>• If a government-owned firm providing an essential service (such as transportation or education) to all citizens is privatised, its new owner(s) could stop providing this service to those who are too poor to pay, or to regions where this service is unprofitable.</td>
</tr>
<tr>
<td>• The government may only be interested in improving a firm in cases when the performance of the firm becomes politically sensitive.</td>
<td>• The public does not have any control or oversight of private firms.</td>
</tr>
<tr>
<td>• Supporters of privatisation see that privately-held firms can more easily raise capital in the financial markets than publicly-owned ones.</td>
<td>• National industries are usually guaranteed against bankruptcy(^6) by the state. They can borrow money at a lower interest rate to reflect the lower risk of loan-default to the lender. This does not apply to the private sector.</td>
</tr>
</tbody>
</table>

Nevertheless, there are many disadvantages of privatisation\(^7\), such as: a lack of control over the private firm by the public government; there is no incentive for a

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\(^6\) Bankruptcy is a legally declared inability or impairment of ability of an individual or organization to pay its creditors.

\(^7\) There are five pitfalls, which may hold back the success of a privatisation program, please see page 43.
privatised firm to make capital investment; privatisation will not result in true competition, if a natural monopoly exists; and there may be a negative impact in the short term, but the benefits of a privatisation programme would mark a very positive development in developing countries and they would seem to have a greater impact on the firms after privatisation.

2.5 Privatisation forms

Privatisation forms consist of a number of tools that a government can adopt to privatise its SOEs. These forms include: deregulation and decontrol, contracting out, vouchers, management contracts, joint ventures, private infrastructure development and operation, asset sale or long-term lease and financing contracts. Each form has its own consequences, regulations, and factors that contribute to its success or failure of privatisation. Generally, more than one form is used to achieve the targeted objectives. Therefore, it is important to choose the form of privatisation in accordance with the specified objectives, where it is the best means to be achieved, as explained next.

2.5.1 Deregulation and decontrol

According to the concepts of deregulation and decontrol, privatisation includes all practices that aim at reducing the role and scope of the public sector and, at the same time, increase those of the private sector in the national economy. As such, deregulation and decontrol represent two important policies to strengthen the free market economy. Deregulation means that the removal of regulations allows former public services to provide privately without public supervision. The
former means termination of all types of "public regulations" within various sectors or industries (Aktan, 2003).

### 2.5.2 Asset sale (direct deal)

Asset sale, with a direct deal, is one privatisation-form. It means that the government sells its assets to private firms that take over the provision of the service for profit. This form of privatisation represents rotating physical capital into financial capital. In other words, a direct deal represents a method of privatisation that is used when it is not possible to carry out privatisation through any of the other methods (Hanke, 1985). Under an asset sale form, there are many techniques of asset sale, such as a government selling the asset to a private sector, and then leasing it back. Another asset sale technique is the employee buyout. Asset sale has three benefits, which are: first, it allows greater flexibility during negotiations; second, it is faster than other methods in implementing the privatisation programme; and third and finally, direct negotiations make it easier to evaluate whether the buyer is willing to commit to the promises made.

### 2.5.3 Vouchers

Voucher privatisation is a privatisation method where citizens are given vouchers that represent potential shares in SOEs. It is a method of mass privatisation of state-owned assets used in the early-to-mid 1990s in the transition economies of Central and Eastern Europe. Voucher privatisation

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8 A transition economy is an economy which is changing from a planned economy to a free market.
guarantees that a maximum number of citizens will be able to participate in the privatisation process, and that a large volume of state property will pass into private ownership very quickly.

The main objective of the voucher privatisation system is to expand public participation in the market economy. In voucher privatisation, vouchers are distributed to the population for free or a nominal fee. It can be used for privatisation of industrial enterprises, housing, agricultural enterprises and land. Also, it can be used for the purchase of shares in selected enterprises. The nature and types of vouchers used have varied from country to country. In some countries, vouchers were tradable. Other countries created physical vouchers. In addition, some vouchers were dominated with a specific monetary value, while others were denominated in points, in part as a means to prevent the vouchers from increasing the money supply and inflation (Bridge, 1977).

Opponents of voucher privatisation (e.g. Ellerman, 1998) argue that: it has failed to raise significant revenue for the state (as opposed to selling firms to the highest bidder); it did not create the means for the introduction of new capital, management and technology into privatise firms; and, finally, it has created opportunities for "insider privatisation," whereby old enterprise managers could increase control over the majority of shares in their firm.

2.5.4 Joint venture “public private partnerships” (PPP)

Joint venture is a partnership of two or more companies, in which partners contractually agree to a common business target and to share accruing profits, losses and any other risks. A partnership can be established between two or
more private firms, or between a private enterprise and a public enterprise, the result from which is called a *private sector joint venture agreement*, and sometime called a *public and private joint venture agreement*, or simply a "*mixed enterprise*". Both types of joint venture agreement can be made within the country or at an international level. Joint venture can be use in many fields such as: product development, general trade, technology development, consultancy services, training, oil, gas and mineral exploration, international marketing, construction and so on. Thus, the industrial joint venture is the most common type of partnership.

### 2.5.5 Contracting-out

Contracting-out is also called "outsourcing". It is the hiring of private sector firms or non-profit organisations to provide goods or services for the government. Under contracting-out, the government purchases services from a private firm, and also the government competitively contracts with a private organisation, for profit or non-profit, to provide a service or part of a service. In addition, a government-entity remains fully responsible for the provision of affected services and maintains control over management decisions, while another entity operates the function or performs the service.

Contracting-out is common, especially in such services as public works and transportation, public safety services, and health and human services. Savas

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9 A local joint venture is a partnership of two or more firms operating inside a country. An international joint venture exists when a local public and / or private firm is involved in a business partnership with a foreign public and / or private firm.

10 For more information about joint venture please, see Jafri, 1987.
(1987) explains that governments, both central government and local government, contracting-out for a wide variety of services, grounds, maintenance, computer centres, microfilming, photography, printing, transportation and so on.

Contracting-out has three advantages. First, it is efficient and effective, because it fosters and initiates competition and reduces dependence on a government monopoly. Second, it can help to limit the size of government at least in terms of the number of employees. Third, it is more flexible in terms of responding to the needs of citizens (Aktan, 2003). By contrast, the contracting-out has several defects, such as: (i) corruption may be widespread in the process, awarding contracts to the individuals or private firms; laying off public employees; and (ii) a limit to the flexibility of government in response to emergencies, because contractors are accountable to default and may go bankrupt in their activities.

2.5.6 Management contracts

The management contract has become very popular in many developing countries in the last two decades. It means that the responsibility of managing, operating, and developing the firm (which is under the process of privatisation) is transferred to a contractor or investor from the private sector for a period of time and an amount of money to be agreed upon. The rationale for this is that public economic enterprises and public facilities are said to be managed less effectively. The management contract is common in such areas as the hotel industry, hospitals, subway-operations, and so on (Shirley and Lixin, 2001).

Management contracts can be used in two cases: the first case is when the
firm is under the process of privatisation and requires high levels of specialised experience in management, operation, and marketing; and the second case is when the government has a large investment in the project's assets, and it prefers to keep the assets rather than sell theirs, thus, ownership of the assets is not transferred to the private sector.

There is a group of benefits from management contracts, from the owner's viewpoint, which are: (i) it provides managerial and technical expertise; (ii) it provides access to new markets and international financing; and (iii) technology transfer which includes training and transfer of management and corporate skills. Also, it has many advantages, from a manager's perspective, such as: it provides a means of establishing new markets; there is an agreed income flow via management fees; and there is compensation for service, usually with no equity risk (see, for example, Abdel-Khaliq and Hana, 2002; Ramsey, 1998 and Abdel-Shahid, 2002).

On the contrary, a management contract can have four drawbacks: 1- the management fee is generally payable, regardless of profitability; 2- there is dependence on the owner's financial strength; 3- there is a loss of day-to-day operational control; and finally, 4- they are time-consuming and complex to structure properly (Hegstad and Newport, 1987, p 22).

2.5.7 Leasing contracts

Leasing contracts are agreements between the government and the private sector, whereby the latter provides the government enterprise with
administrative and technical expertise for a specific period of time, in exchange for an agreed-upon financial remuneration.

Under the leasing contracts, the private sector investor leases and uses the assets or facilities owned by the government, and the contract determines the amount of the condition to be paid to the government as well as the responsibilities of each party towards the other. Thus, a leasing contract means a transfer of management and operation of some public services (Bjorvatn and Tina, 2005).

2.5.8 Financing contracts

Financing contracts represent a more advanced form of privatisation compared to previous forms. It means that the investor assumes responsibility for providing the capital, operating, and investment expenditures unlike a lessee. In addition, financing contracts are generally considered better than leasing contracts, but implementation is more complicated due to the large amount of financing needed for expansionary obligations (Shirley and Lixin, 2001).

Financing contracts have five types of contracts, which are: lease-build-operate (LBO); build-transfer-operate (BT, BTO); build-own-operate-transfer (BOT, BOOT); buy-build-operate (BBO); and, finally, build-own-operate (BOO).

2.5.9 Private infrastructure development and operation

According to this form, the private sector constructs finances and operates public infrastructure, such as roads and airports, then recovers the costs of infrastructure through user-charges. Several techniques are used for privately
building and operating infrastructure which are BOT\textsuperscript{11}, BTO\textsuperscript{12}, and BOO\textsuperscript{13} (Abdel-Shahid, 2002).

2.6 Privatisation methods

Privatisations methods contain all ways that a government can used to privatise SOEs. These methods include: mass privatisation, direct sale to the private sector through public subscription, sale to a principal investor; public offer of shares, tender, small-scale privatisation by auction, and offering the enterprise for sale to its employees. This study will explain the concepts of these methods in the following sections.

2.6.1 Mass privatisation method

Mass privatisation means that the privatisation can be achieved through mass participation of all citizens, local and foreign equally, including physical persons and legal entities. Most of the SOEs in the world are privatised by the mass privatisation model by using the public offer of shares method. This model enables the sale of part or all SOEs by use of certificates, as the main means of payment. The main advantage of this model is that it enables a relatively fast and simple transformation of SOEs into private sectors (Saul, John, Giovanni, and Jamrs, 2004). There are three disadvantages of this model. First, this

\footnotesize{\textsuperscript{11} The Build-Operate-Transfer (BOT) model means the private sector designs, finances, builds, and operates the facility over the life of the contract. At the end of this period, ownership reverts to the government.}

\footnotesize{\textsuperscript{12} Under the Build-Transfer-Operate (BTO) model, the private sector completes the infrastructure project, and the project transfers to the government.}

\footnotesize{\textsuperscript{13} According to the Build-Own-Operate (BOO) model, the private sector keeps permanent ownership and operates the facility according to contract.}
method in practice has led to a transformation of capital only and does nothing to launch new investments necessary for the successful business of enterprises in local or international markets. Second, this model defines the same concept to all enterprises, which has led towards a frontal (non-selective) implementation of the process of privatisation. Third, mass privatisation does not enable maximum efficiency in the distribution of state-owned capital, which is caused by a widespread use of certificates or vouchers as the main means of payment (Grosfeld and Iraj 2003).

2.6.2 Direct sale to the private sector through the stock market\textsuperscript{14}

A direct sale to the private sector through public subscription, as a method of privatisation, is suitable for the privatisation of SOEs in two cases: first, the enterprises are characterised by stability, continuity of activities, and commercial feasibility in the long-term; second, SOEs can become commercially feasible in the short-run. Either the full entity or part of its shares are sold to the private sectors by offering them (100% or more than 51%) for public subscription. The success of the direct sale method, to the private sector through public offer of shares, depends on a number of factors, including:

- a large amount of financial and administrative information on the activities of the entity which must be available;
- existence of an active capital market;
- the need to have a reasonable amount of liquidity.

\textsuperscript{14} For more details, see: Wahish, 2006 and Butler, 1988.
2.6.3 Sale to anchor investor

Sale to a principal investor means that the government sells SOEs to a principal investor, who is capable of providing the required financing, management efficiency and technology for production and marketing development. This method has the advantages of ensuring the direct availability of the required financing as well as the financial and administrative expertise needed for technical and administrative development. Sale to a principal investor has three disadvantages: first, it deprives small investors of opportunities for investment. Second, it does not expand the ownership base; and third, it increases the possibilities of creating problems related to the work force (Abdel Shahid, 2002).

2.6.4 Tender

The tender represents a method of privatisation of state capital through a collection of offers, in accordance with previously published conditions. However, the tender as a method of privatisation has started to have a more and more significant position in the selection of the method for privatisation of state capital. The main advantage of a tender as a method to create private company is that it provides the inflow of capital. Generally, the main disadvantage of this model is that it leaves room for abuse due to the lack of transparency.

2.6.5 Small-scale privatisation by auction

Most developed countries have used an auction, as a privatisation method, to privatise small SOEs, or some of the physical assets as equipment. Auction is
the method of privatisation, where auctioneers determine the price through public bidding. In general, there are two types of auction: common auction and special auction.

There are three advantages of auction as a privatisation method. First, it gives priority to the bidder, who offers the highest price. Second, it ensures the highest level of transparency; and third, an auction ensures an inflow of capital, because the buyer must pay a significant amount in cash (Aknazarova, 2007).

On the contrary, auction has several defects, such as: it ignores other important factors of the offer, for example, employment plans, future investments, and work methods.

In addition to the above methods, there are a number of other methods and tools, such as offering the enterprise for sale to its employees or allocating a part of its shares for sale to its employees at market prices. These methods are usually used to privatise enterprises with low profitability or productivity, in order to encourage employees to improve their performance of the enterprise. Another mechanism is a debt-swap, whereby the debts are valued and converted into shares in the name of the creditors.

To complete the picture of privatisation, the study will discuss in the remaining of this chapter the advantages and disadvantages of privatisation, and finally some pitfalls resulting from not adopting a correct application of the concept of privatisation.

15 In a common auction, the starting price increases gradually until the final bid is made with the highest price.
16 In a special auction, the seller gradually lowers the price until he gets the first bid.
2.7 Benefits of privatisation

Privatisation can help the government, in the long run, to reform its economic activities, because its privatisation programmes should lead to economic development through an increase in its productivity, an improvement in its efficiency, better access to international markets, and through the introduction of new technologies and working methods.

Privatisation serves two primary purposes as a management tool. First, at a strategic level, it helps an organisation focus on those work activities that represent its core knowledge, skill, or value-added offering. Second, at a tactical and planned level, privatisation is a means of reducing costs by ensuring that work activities are performed by the most productive, cost-effective means (Willner, 2003).

Privatisation is a means used to achieve the important objectives of removing the department from those activities that are not inherently governmental functions or core business lines, improving the management of remaining activities, reducing the costs of doing business, and shifting greater performance and financial risk to the private sector (Buxton, 1992). In addition, privatisation ensures that privatised firms will be more efficient than the public ones because the profit motive will lead to the substantial elimination of current bureaucracy in the economic system.

Although most employees may lose their jobs - up to about 30 per cent of the workforce, the benefits of privatisation may provide evidence to their being more
important than these losses: first, the majority of labour reductions can be obtained through attrition or early retirement incentives; and second; this just shows the level of waste in the current system (Annual privatisation report, 2005).

2.8 Privatisation disadvantages

Generally, in the short term, the privatisation process usually has negative effects on the employment and culture of people, such as an increase in unemployment, insecurity and social tensions. In addition to that, the common expectations from the process of privatisation are typically unrealistically high because there is common opinion, of which privatisation should resolve all or at least most of the problems in its economic and social activities (El Rashidy, 1996). These opinions are based on unrealistic expectations, because privatisation is only one of the methods to resolve problems of an economic reform programme.

In addition to the above, there are many pitfalls, which may hold back the success of a privatisation plan. In the following section, the study explains these pitfalls.

*The first pitfall* of a defective privatisation concept is that, as a rule, there is a common opinion that governments have used privatisation to repay accumulated debts towards its people. This might not have been such a problem, if the certificates or vouchers given to the people in exchange for their claims had not been devalued.
The second pitfall is that the governments may not have the bureaucratic tools necessary to adjust to a market economy. This was an important problem in post-communist Russia. Although Britain has a market economy, it was faced with this problem after it had privatised some utilities in the Thatcher-era.

The third pitfall referring to the partial privatisation case is that there is no incentive for a privatised firm to make capital investment, because there are no completely transferred property rights to the newly private firm. The privatised rail track-leasing firm in the UK is a good example of this pitfall (Sutter and William, 2006).

The fourth pitfall, in monopoly cases, can occur when the monopolist firm joins the private sector, and so their consumers may be in a worse-off situation. An example for this case is rail privatisation in the UK, in which government intervention became necessary to insure that the privatisation programme had been successful.

As final pitfall, there have been government indecisiveness to undertake more resolute measures to speed up the process of privatisation, and a public mistrust in the transparency of the process (Fact spider 2005, internet).

2.9 Summary

As the brief discussions in this chapter have shown, there is no single definition of privatisation, but for the purposes of this study, privatisation refers to reducing local government activities by involving the participation of the private
sectors and reducing local government ownership. Also, refers to a restriction in the government's role and functions and aims to put forward some methods or policies in order to strengthen free market economy.

The main objective of any privatisation programme is widening the ownership base. So, this chapter explained the four categories of privatisation objectives, which are: financial goals, social goals, political goals, and economic goals. Beside these objectives, the chapter concluded six steps to ensure a successful privatisation programme.

Within this context, privatisation includes many forms: which are vouchers, management contract, leasing contract, contracting out, deregulation and decontrol, joint venture, private infrastructure development and operation, and financing contracts. As well as this, the study explained all methods that a government can use to privatise SOEs, such as mass privatisation, direct sale, sale to a principal investor, public offer of shares, tender, small-scale privatisation by auction, and offering the enterprise for sale to its employees. The study believes that there is no one form for privatisation and each form serves a particular objective, and the government's goal of privatisation should determine the method of privatisation.

In this chapter, the study has tried to clarify an overview of privatisation. In the next chapter, the study will explore the Egyptian economic development from 1952 to 2007, concentrating on development of the SOEs, and then it will explore the history of privatisation in Egypt.
CHAPTER 3  THE EGYPTIAN ECONOMIC DEVELOPMENT AND PRIVATISATION PROGRAMME

3.1 Introduction

The economic reform programme has become the new phenomenon of the last two decades. Most socialist and communist economies followed the capitalist approach by implementing economic reform programmes in order to save their economies from collapse. Egypt, like most developing countries, also experimented with the same programme aiming at achieving economic stabilisation.

In this chapter, the study will highlight the most important events in the recent history of the Egypt, especially the difficulties that had faced the Egyptian economy in the last era, which necessarily led to implementing the economic reform programme and implementing the privatisation programme as one of the main key elements of the economic reform programme.

This chapter consists of two sections: the first one shows the history of the Egyptian economy from 1952 until 2007; concentrating on the role of public sector in the Egyptian economy. The second section explains the history of privatisation in Egypt, privatisation prerequisites in Egypt, supporters and opponents of the Egyptian privatisation programme, why the performance of
SOEs was weak, objectives of the Egyptian privatisation programme, methods of privatisation, and finally the achievement of the Egyptian privatisation programme until 2007.

3.2 The history of the Egyptian economy (public sector background)

The Egyptian economic policy adopted in the early 1950s was aimed to encourage private capital to develop the national economy, but following the failure of this policy, the government instead adopted a central role in the task of developing and modernising its economy. For up to 20 years and by the mid-1970s, the economy was inefficient under state ownership; consequently, Egypt started to replace the centrally planned model with a market economy through the two main operations of liberalising the economy and privatisation.

In this section, the study reviews the most important economic events in Egypt, through three eras essentially; first there is a command oriented economic era (from 1952 to 1970); second, an open door policy era (from 1970 to 1981); the third era represent the period from 1981 until 2007, which represent the Egyptian economic reforms; and finally the study describes the most important features of the Egyptian economy after 1997.

3.2.1 The first era from 1952 to 1970 (communist economic era)

The recent history of Egypt began after the revolution in July 1952 in many areas: political, social, legal and economic. The basic idea of the revolution in economic terms was the nationalization of all major industrial, financial and commercial businesses, whether foreign or domestic, to become the
establishment of a vast state sector to act as the strategic motor of development (Mahjoub, 1990).

At the time of the 1952 revolution, Egypt presented the familiar picture of a dual economy, having a small modern sector developed within a tradition-bound society. A rapidly expanding population was pressing hard on limited agricultural resources. During this time, there were severe problems of poverty, illiteracy, unequal distribution of income and wealth, disease, political corruption, and unemployment. The revolution was both a national revolution and the Egyptianising of the economy, by attempting to eliminate foreign influence. A main objective was the diversion of private investment from land into industry (Mabro, 1974). Subsidiary objectives were to encourage investment in industry and the establishment of industrial enterprises, and to expand the base of public ownership.

1960 saw the nationalisation of the Misr Group, which controlled 40% of all bank deposits. In addition to that, 227 industrial and commercial companies were controlled by the local or state sector, and the National Bank was considered the foundation of the new (capitalist) road to development. On the ninth anniversary of the revolution, Egyptian government announced Nationalisation Laws 117 and 118, which were instrumental in creating a public sector¹⁷ that made the state an integral part of production (Zaalouk, 1989).

¹⁷ In economic terms, Egypt's public enterprises if anything were less efficient than those of the other state run and dominated economies. The abundant data about the highly overstuffed and low labour productivity in Egypt's public enterprises reflected only part of the problem (O'Brien, 1966). While the private enterprises were receiving the lion's share of investment in the productive sectors of the economy, the return on the capital was gradually decreasing and by 1989 reached a low of 5.9%, while the average interest rate was 14%. At the same time, the government's continued policy and regulations aimed at protecting the public sector resulted in the country's low economic growth by late 1980s (World Development Report, 1995).
In July 1961, in a major policy shift, socialism was applied to all economic activity, placing it under state ownership or government control. It can be mentioned that the Egyptian government had decided that industrialisation and the improvement in the standard of living can only be achieved through central planning and direct government ownership and control of virtually the entire system of production and foreign trade.

In 1962, the Egyptian government provided a "Charter of National Action"\textsuperscript{18} as the official version of the revolution. The Charter announced that Egypt was on the track on the principles of technical socialism (Hopwood, 1982). The implementation of the 1962 National Charter gave the state the power to nationalise any company that was owned jointly with the private sector. In the second half of the year 1963, state ownership had extended to all public functions, transport, construction, larger industries, department stores and hotels. Following that, the government had managed by the end of 1964 to nationalise all large companies that had been owned by private individuals (Shaker, 1971). By then, Egypt's state capitalism consisted of the public sector; joint projects between the state and the private sector; the cooperative sector; and institutions to organise production in agriculture, trade and crafts.

According to the above, the early economic policy for the revolutionary regime was to encourage private capital to develop the national economy. As a result of

\textsuperscript{18} The National Charter defined the roles of the private and public sectors. It kept internal trade in the hands of the private sector with the stipulation that 25\% of it would go to the public sector within eight years. In addition, the Charter limited private ownership to land, buildings, construction and light industry. Finally, the Charter recognized citizens' rights to social welfare such as education, health care, employment, minimum wage, and social insurance for the elderly (Khalid, 1980).
the failure of private capital (domestic and foreign) in attaining the national economy development required the state to become a critical factor in the economic life of the society to achieve the tasks of developing and modernising the national economy. The major step in the nationalisation programme in Egypt was of the Suez Canal Company in 1956 (Oweiss, 1989). By the end of 1957, the state announced that the "cooperative socialist democracy" is the way to achieve development for the national economy. Furthermore, the largely private enterprise system, which had existed before 1952, was systematically transformed into a state-owned enterprise. In fact, this was achieved through nationalisation of foreign assets as well as mainly local-owned businesses (banks, insurance companies and large enterprises which had been nationalised). In addition, the Egyptian government embarked on a new economic policy of a centrally planned economy.

3.2.2 The second era from 1970 to 1981 (open door policy)

After the Egyptian victory in the October 1973 war, the Egyptian government faced some difficulties to enhance its economic development for several reasons: the depletion of the bulk of foreign exchange reserves from the war in Yemen; the loss of the most important foreign exchange resources after the 1967 war, which were the Suez Canal revenues and oil earnings (Abdel-Fatah, 1997); the rapid increase in government subsidy; the significant increase in military expenditure after the 1967 defeat; and the lack of efficiency and profitability of public enterprises (Lloyds Bank, 1986).
According to these difficulties, the government launched a new economic strategy (an "open door" economic development programme) which was aimed at accelerating the economic growth as well as modernising the Egyptian economy.

The open door policy era witnessed the development and integration of national capitalism in the international capital markets. This new policy was meant to decentralise decision-making in the public sector, remove government constraints on the private sector, and attract foreign private capital by liberalising financial and trade regulations (Abdel-Allah, and Brown, 1988).

As a result, most public-sector industries developed rapidly during the 1973–1979 period. The implications of the implementation of the open door policy in 1980s can be summarised as follows: 1- establishing a parallel market for foreign exchange; 2- reducing exchange restrictions; 3- reforming banking laws; 4- decentralising the making of economic decisions; and 5- increasing private sector participation in the economy in order to compete with the public sector (Fadil, 1980).

3.2.3 The third era from 1981 until now

In late 1970s, the public sector was responsible for economic development (around 75% of total economic activities). In the five-year plan, 1982-87, the government allocated 76.5% of the total funds to the public sector. In the next five-year plan, 1988-92, investment allocation for the public sector dropped to 62% and to 42% in the 1992–1996 plan. The government's aim in that was to
encourage the private sector to invest more capital in different projects (Abdel Shahid, 2002).

The Egyptian economy had benefited significantly from the open door policy in terms of the rate of growth, although dependent on foreign aid (Road, 1997). By the mid 1986, the Egyptian government experienced financial difficulties, when foreign exchange income began to drop, especially after the oil prices fell down. In 1987, Egyptian foreign exchange income was seriously affected, because of the decline in several important sources such as Suez Canal revenues, oil and workers' remittances (McDogall, 1988).

By the beginning of 1990, it became obvious that the Egyptian economy could not face the needs of its society without external aids. The external debt was around $ 49 billion and represented 150% of GDP; the negative real interest rate was around 6%; the budget deficit was around 20% of GDP; reserves were just over three weeks of imports, and, finally, financial difficulties resulted from Iraq's invasion of Kuwait in the late 1990s, affecting remittances from Egyptians working in the Gulf, reduced revenues of the Suez Canal and tourism (Omran, 2002 and Road, 1997).

As a result, the foreign debt put Egypt in the front rank of third world debtor countries as its debt ratio to the gross domestic product (GDP) was one of the highest among all developing countries (Omran, 2002). In addition to that, government expenditures had increased more than its revenues, and the SOEs had to borrow heavily from local banks to finance their deficit (Lloyds Bank 1986).
In the light of the above, Egypt was obliged to turn to the International Monetary Fund (IMF) for help, in turn, resulting in another round of negotiations, which concluded in an economic reform programme by the end of 1990. The characteristics of this programme were; 1- to reduce the size of the public sector through privatisation; 2- to end controls over investment and eliminate most tariffs on imports; 3- to sell manufactures at market prices; 4- to raise energy and transport prices to realistic levels; 5- to reduce consumer subsidies and target them towards the poorest group; and 6- to deregulate private investment and encourage private sector activity in all sectors, including financial services\(^{19}\).

Despite the economic jolt to the Egyptian economy, as a result of Iraq's invasion of Kuwait (Gulf war in 1990), it achieved a significant improvement in economic results. It led to an increase in external financial support- bilateral as well as multilateral. Aid from the Gulf States flowed in for the first time since the 1970s, combined with writing off long-term debt to Gulf States (around US $ 7 billion). In addition, the United States wrote off a substantial amount of its military debt (US $ 6.7 billion), while the Paris Club Agreement, reached with the other major official creditors (17 main creditor governments), provided 50% relief, as follows: US$ 3 billion in 1991, representing the first phase at 15%; US$ 3 billion in 1993, representing the second phase at 15%; US$ 4 billion in 1996, representing the third and final phase at 20% (Central Bank of Egypt 1992; and Road 1997).

\(^{19}\) For more information about that, see Ash, (1993), Youssef, (1996) and Road, (1997).
In addition to that, from late 1990, IMF asked Egypt to be quick in implementing the economic reform programme using shock therapy approach, but the Egyptian government preferred a more gradual approach (gradualism) in order to reduce any side-effect and thus avoid negative impacts on the living standard of its society. As a result of the implementation of the reform programme, the Egyptian economy experienced significant improvement as seen from the following Table 3-1.

Table 3-1 Some economic indicators before and after the Economic Reform Programme

<table>
<thead>
<tr>
<th>Description</th>
<th>Before 1990/1</th>
<th>After the economic reform programme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total external debt (of US$)</td>
<td>49.2 billion</td>
<td>26.6 billion</td>
</tr>
<tr>
<td>Total external debt as a percentage of GDP</td>
<td>151%</td>
<td>37.7%</td>
</tr>
<tr>
<td>Real interest rate</td>
<td>(6%)</td>
<td>5%</td>
</tr>
<tr>
<td>Inflation rate</td>
<td>23.6%</td>
<td>4.1%</td>
</tr>
<tr>
<td>Total foreign reserve (of US$)</td>
<td>3.6 billions</td>
<td>21.8 billions</td>
</tr>
<tr>
<td>Real GDP growth rate</td>
<td>3.6</td>
<td>5.7</td>
</tr>
<tr>
<td>Budget deficit as a percentage of GDP</td>
<td>18.2%</td>
<td>0.06%</td>
</tr>
</tbody>
</table>

Source: Central Bank of Egypt (CBE) and the Egyptian Cabinet Information and Decision Support Centre (IDCS); (various issues from 1992-2007).

As seen from this table, the Egyptian external debt was decreased from US $ 49.2 billion in 1990/91 to only US $ 26.6 billion in 1997/98, which means a rate of decrease of 45.7%. In fact, this significant improvement can be due to debt forgiveness from the Gulf States (US$ 7 billion, which equals a 14.23% reduction in the public debt), United States (US$ 6.7 billion, which equals a 13.62% reduction in the public debt). It can also be due to the agreement with the IMF and the WB, which allowed Egypt to negotiate with 17 main creditors via the Paris Club and acquire debt forgiveness as well (US $ 8.9 billion, which equals an 18% reduction in the public debt).

20 For more graphs about the economic indicators before and after the economic reform program, please see the Appendix 3-1.
In terms of total external debt as a percentage of GDP, it is noticeable from the Table 3-1 that the debt ratio as a percentage of GDP had decreased significantly from 151 % in 90/91 to only 37.7 % in 1997/98, which represents 75% as an improvement in the debt situation in Egypt. This significant improvement may be due to the decrease in total external debt, as stated above, as well as to the acceleration of GDP growth in Egypt after adopting its economic reform programme.

In terms of real interest rates\(^{21}\), since the inflation rate of Egypt was higher than nominal interest rates, this caused negative real rates of interest. As can be seen from the previous table, the real interest rates in Egypt prior to the economic reform programme were negative (-6%). But with the introduction of this programme, Egypt linked the interest rates to the inflation rate in order to avoid a similar development (Omran, 2002). In the 1990s, Egypt depended on raising interest rates and eliminating the ceilings on interest rates, making them dependent on the market. Thus, the gap between nominal interest rates and the inflation rate has become narrow. With the continued decline in the rate of inflation through 1991/98, the real interest rates became positive at 5% in 1997/98 compared with a negative interest rate of -6% in 1990/91. This was a major change in real interest rates, helping financial institutions, in particular banks, to attract more savings and investment. On the other hand, the inflation rate\(^{22}\) fell during the period 1990/98 by 82.65% as the rate of inflation declined sharply from 23.6 per cent in 90/91 to only 4.1 per cent in 1997/98.

\(^{21}\) The real rates of interest should be positive in order to encourage people to save.

\(^{22}\) The inflation rate is one of the main problems in the Egyptian economy, especially as it was hyperinflation in Egypt at this time.
In terms of the real GDP growth rate, the real GDP growth rate declined during the first two years of the economic reform programme to 1.9 % and 2.5 %, respectively, because of tight monetary and fiscal policy. Indeed, the real GDP growth rate has grown steadily since 1993, reaching 5% in 1997/98 (CBE and IDCs, 1998). Egyptian’s foreign reserve has increased more than five times from only US$ 3.6 billion in 1990/91 to US$ 21.8 billion in 1997/98, indicating a huge foreign reserve compared to the situation in 1990. In addition, there has been a significant decrease in the budget deficit over the period from 1990/91 to 1997/98. The overall deficit as a per cent of GDP has declined sharply from about 18.2 % in 1990/91 to only 0.06 % in 1997/98 which represents 67% as the degree of improvement in the government budget.

The Egyptian economic reform programme was initially successful but it has been slow over the period 1998-2003. This is due to economic reasons, such as a shortage in liquidity as a result to increase in investment spending by government on larger projects (such as capital expenditure on the draft Toshka), the foreign currency crisis, and the overall negative performance of the Egyptian stock market. In addition, September events in the United States, terrorist attacks at Luxor, and political tension in the peace process in the Middle East had a negative impact on the economic development during this period.

However, in 2004, a new cabinet had been appointed and the Egyptian reform programme was accelerated. The Egyptian economic reform programme was more successful in the recent period (2007); as seen from Table 3-1, the real GDP growth in the year 2007 recorded 7.1% with average annual inflation
standing at 8.5% compared with the situation in the year 1990 (23.6%). In addition, the budget deficit reached 7.5 % of GDP in 2007. The government tried to reduce the budget deficit through increasing revenues, such as Suez Canal and oil revenues, and reducing expenditures, such as reducing current expenditure and reducing the new investment expenditure. Egyptian's foreign reserve has increased more than ten times, as it changed from only US$ 3.6 billion in 1990/91 to US$ 28.6 billion in 2006/2007.

3.3 The history of privatisation in Egypt

Due to the poor situation of the Egyptian economy and the control of the public sector (which represent about 75% of total economic activities) at the beginning of the 1990s, as already mentioned above, Egypt was obliged to turn to the International Monetary Fund for assistance; at the same time, the IMF imposed conditions on Egypt to reduce the public sector through privatisation and to reduce grants and subsidies directed at this sector.

The Egyptian government started its privatisation programme during the 1990s (Omran, 2001). The first stage in the privatisation process started in May 1991, and it was to cut off subsidies to SOEs and was followed by removing the subsidies from direct ministerial control (Field, 1995). The three hundred and fourteen SOEs were grouped in 1991 under twenty-seven holding companies (reduced to fourteen holding firms after that) responsible for all sub-firms (affiliates) in a particular sector. After the initial privatisation boom in the late 1990s, the process stagnated. The government still keeps control over big and
important enterprises and has been only willing to give up ownership rights to smaller companies.

According to that discussed in section 3-2, the reduction in size of the public sector through privatisation has been an important part of the Egyptian economic reform programme. This is now the special responsibility of the minister for the public enterprise sector and the public enterprise office\textsuperscript{23}. The following sections list several issues related to the privatisation programme in Egypt, namely: privatisation prerequisites in Egypt, why the performance of SOEs has been weak, supporters and opponents of the Egyptian privatisation programme, objectives of the Egyptian privatisation programme, methods of Egyptian SOEs' privatisation and, finally, achievements of the Egyptian privatisation programme until 2007.

3.4 Privatisation prerequisites in Egypt

Privatisation requires the strengthening and expansion of the market at the expense of the state and increasing the exposure of the public sector to market forces. The implementation of the Egyptian privatisation programme requires five conditions, which are shown in Figure 3-1. The following section explains briefly these prerequisites.

\textsuperscript{23} Appendix 3-2 shows the ministries and the bodies responsible for the privatisation programmes in Egypt.
3.4.1 Create a competitive environment

In most cases, SOEs work under a monopoly condition. Thus, there was no competition and no motive for improvement. In addition to that, there was no performance appraisal when the firm worked under SOEs, and there was no punishment in the case of lower performance. So, by exposing the SOEs to the market forces, they are expected to improve.

Since the mid-1970s, the Egyptian government aimed to create a competitive environment by implementing an open door policy and issued anti-monopoly law; in addition, it granted to the private sector the opportunity to participate in heavy projects (Vandewalle, 1994). Furthermore, in the 1990s, the government introduced a unified tax law and double taxation preventions.
3.4.2 Liberate the exchange rate system

A competitive environment is necessary in the exchange rate system. A competitive environment must be applicable to interest rates, and tax treatment, as well as all other aspects of the activities in economic life. To liberate the exchange rate system is the cornerstone to implementing any privatisation programme, because it lends to fair treatment between all the activities in economic life.

3.4.3 Set a pricing policy

The privatisation programme aims to achieve efficiency. To achieve that, setting a policy for pricing is a must. An effective pricing policy can help in the process of directing investments to the best routes. There are many methods to set a pricing policy; the best way for pricing is to leave this process to the market forces' mechanism.

3.4.4 Develop a new legal system

The legal environment must be prepared for any privatisation programme, thus, the SOEs in Egypt, for example, are working under law 203 and many other laws. To achieve environmental privatisation, these laws must be changed and enacted (Hendy 1995). Furthermore, the speed of the court decision-making must be faster, the ownership laws must be changed- changes in the ownership structure- and the process of profit distribution must be well defined.
3.4.5 Set an employment and recruitment policy

The employment policy represents the main source of inefficient procedures in SOEs. In the SOE, the employment policy is based on permanent contracts. It means that there is no room to fire any employees with low performance, thus, the cost of labour is transferred from variable to fixed cost, which means that SOEs are stuck with their employees, regardless of their performance, just to achieve social aims. In other words, to implement the privatisation programme requires another employment and recruitment policy.

Based on the foregoing, the privatisation of the Egyptian public sector requires strengthening and broadening the base of the market and increasing the exposure of the public sector to market forces; also, it requires a reduction in the role of the SOEs through the liberalisation of trade, abolition of the nationalisation of SOEs, and help to the private sector to attract new investment to different areas of work.

3.5 Why has the performance of SOEs been weak?

Agency theory explains the reasons of poor performance of SOEs. The main idea of agency theory is that goal conflict exists, when parties with different goals engage in a business (Jensen and Meckling, 1976). An agent is one, who is contracted to perform some activities on behalf of a principal, and receives a benefit for his services. On the other hand, the principal benefits from the agent's efforts, but the benefits are restricted to the extent to which the agent works efficiently and effectively to achieve the principal's goal(s). On the other
hand, the agent may have another goal. The conflict between the interest of the principal and the interest of the agent requires the principal to have some methods that would ensure that the agent does not pursue his own goals at the principal's expense. For the SOEs, the public at large is the principal, and the managers of the SOEs are the agents (Al-Mossawer, 1994).

A number of research studies (see Ausseenegg, and Ranko, 2002, Grigorian, 2000, and Castianas and Helfat, 1991) have shown that a firm's performance improves when ownership interests and managerial interests merge. Green (1994) concluded that merging the managerial and ownership interests would help build a culture around collective ownership, facilitating co-operation and goal achievement. However, privatising the SOEs is not a guarantee that the agency cost will be solved. Sometimes even after being privatised, the government (or any other public authority) still has a significant influence, especially in cases of partial privatisation. This would, of course, reduce the effectiveness of the privatisation role in reducing the agency cost.

3.6 Supporters and opponents of the Egyptian privatisation programme

Supporters of the privatisation programme believe that privatisation is the main key to bring about economic development as a result of failure of the public sector in this regard. In addition, losses have been perpetrated by the majority of public sector companies, and so they have continued to claim support.
Also, the performances of SOEs were weak, which led to a huge deficit in the budgets of these companies. Furthermore, state intervention in the appointment of graduates under the name of 'manpower' led to increased human capacity, idle within those institutions.

On the contrary, opponents of the privatisation programme envisage that the programme will not achieve the purposes required for two reasons, which are: 1- the capitalist bureaucratic sector wants to maintain its economic power base, the public sector; and 2- private capital (local and international) has been reluctant to engage in production, essentially limiting itself to services or light industry and construction activities, where profits are high and risks low. Furthermore, privatisation will make the poor poorer and the rich richer and this is due to the richest 20% of the Egyptian people having about 70% of agricultural land, while the poorest 20% of the farmers control only 5% (World Bank, Egypt, 1991).

3.7 Objectives of Egyptian privatisation programme

Egypt has looked up to the privatisation programme, as a main key to its economic reform programme, because of the failure of the public sector to improve economic development.

One of the chief goals of privatisation in Egypt is to improve efficiency through asset utilisation and labour productivity (Mohi-Eldin, 1996). Another objective of the Egyptian privatisation programme is to achieve wider share ownership or popular capitalism, by selling large amounts of state enterprises to private
owners (Hassan, 2001). Furthermore, privatisation produces continuing cash benefits to the Treasury in terms of: increased tax payments made by the privatised companies as their profitability increases; interest savings made by the government on the debt foregone as a result of selling equity and dividends from residual shareholding; and sale proceeds from privatisation, which can be used to reduce the government’s deficit by reducing its debt (Jones, 1991).

According to the above, the study concludes that the Egyptian privatisation programme aims at: using privatisation to reduce the size of the public sector; ending controls over investment and eliminating most tariffs on imports; reducing consumer subsidies and targeting them towards the poorest activities; encouraging private activities in all sectors and selling all manufactured goods at market prices.

3.8 Methods of Egyptian SOE’s privatisation

The Egyptian government employed the public offerings method, by the Cairo and Alexandria Stock Exchange, in privatising their SOEs in order to make privatisation more acceptable to the public, give a boost to its privatisation programme, increase the activity on the stock market, and enhance the image of privatisation in the eyes of the public and change their reluctant behaviour towards it. Thus, this thesis demonstrates that the main method of privatisation adopted by the Egyptian government was Initial Public Offerings (IPOs) via the stock market.
The Egyptian government launched several approaches to divestment of SOEs as seen in Chart 3-1. **The first** was to sell shares through the domestic stock market. **The second** was to sell strategic stakes of shares to anchor investors through public auction. **The third** was to sell firms to shareholders association (ESA). Other methods were: liquidating of some companies because they were not deemed economically viable (McKinney, 1996), asset sales, and leasing.

![Chart 3-1 Total sales values by Egyptian privatisation methods](image)

(Source: Egyptian Ministry of Public Enterprise Sector, 2006).

The number and value of the Egyptian privatised firms, classified by years and method of sale, is explained in Table 3-2.
## Table 3-2 The number and value of the Egyptian privatised firms

<table>
<thead>
<tr>
<th>Year</th>
<th>Anchor Investor</th>
<th>Fully Privatisation</th>
<th>Partially Privatisation</th>
<th>Yearly Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Investor IPO ESA Liquidation IPO Asset Sales Leases Number Value</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1990</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>1 n. a.</td>
</tr>
<tr>
<td>1991</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>3 n. a.</td>
</tr>
<tr>
<td>1992</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>1 n. a.</td>
</tr>
<tr>
<td>1993</td>
<td>-</td>
<td>6</td>
<td>-</td>
<td>6 n. a.</td>
</tr>
<tr>
<td>1994</td>
<td>3</td>
<td>7</td>
<td>2</td>
<td>13 664</td>
</tr>
<tr>
<td>1995</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>12 1216</td>
</tr>
<tr>
<td>1996</td>
<td>3</td>
<td>14</td>
<td>1</td>
<td>25 2792</td>
</tr>
<tr>
<td>1997</td>
<td>3</td>
<td>14</td>
<td>3</td>
<td>27 3148</td>
</tr>
<tr>
<td>1998</td>
<td>2</td>
<td>8</td>
<td>12</td>
<td>32 2358</td>
</tr>
<tr>
<td>1999</td>
<td>9</td>
<td>5</td>
<td>7</td>
<td>31 2785</td>
</tr>
<tr>
<td>2000</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>25 2476</td>
</tr>
<tr>
<td>2001</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>11 1075</td>
</tr>
<tr>
<td>2002</td>
<td>-</td>
<td>2</td>
<td>1</td>
<td>6 51</td>
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<tr>
<td>2003</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>9 114</td>
</tr>
<tr>
<td>2004</td>
<td>3</td>
<td>-</td>
<td>11</td>
<td>14 928</td>
</tr>
<tr>
<td>2005</td>
<td>2</td>
<td>-</td>
<td>5</td>
<td>8 205</td>
</tr>
<tr>
<td>2006</td>
<td>3</td>
<td>-</td>
<td>4</td>
<td>7 185</td>
</tr>
<tr>
<td>Total</td>
<td>37</td>
<td>38</td>
<td>33</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>17 27 21</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>226 17997</td>
</tr>
<tr>
<td>(%)</td>
<td>16.3%</td>
<td>16.8%</td>
<td>14.6%</td>
<td>23.5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7.5%</td>
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<td></td>
<td></td>
<td>12%</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td>9.3%</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>


As seen from Table 3-2, Egypt's privatisation programme, which actually started in 1994, had a slow beginning. However, in 1996, a new cabinet was appointed and the privatisation programme was accelerated. When the new cabinet began to publicise its programme to privatise Egypt's SOEs, the programme attracted international interest.

To increase the stock supply on Egypt's capital market, the government concentrated on fully privatisation rather than partially privatisation; consequently, the value of privatised firms accelerated significantly until mid-1998. At that time, the privatisation programme was delayed for many economic reasons, including a shortage in liquidity, a foreign currency crisis, and an overall negative performance of the Egyptian stock market.

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24 Millions of Egyptian pounds (rate 1 L.E. = 0.175 US$ as of December 2006).

25 Full privatisation means selling 51 per cent or more of an SOE's shares to the private sector, while partial privatisation refers to selling less than 50 per cent.
3.9 Achievements of the Egyptian privatisation programme until 2007

By starting the privatisation programme, the Egyptian government aimed to expand the role of the private sector in the economy. So, the Egyptian government earmarked 314 SOEs as potential candidates for privatisation, offering attractive investment and profit opportunities.

As seen from the Table 3-2, only full privatisation of 3 companies took place between 1991-1996; namely Coca Cola, Pepsi, and El Nasr Boilers, through a direct negotiations technique with strategic investors. In addition, batches ranging from 5% to 20% of the shares of various SOEs were sold in the Cairo and Alexandria Stock Exchanges, and others were sold by majority to their employees. Companies, which were offered via the stock market during the 1991-1996 period, were the more profitable and successful ones. They were offered by the government at a discount, and in several cases the offerings were oversubscribed by several times.

Furthermore, in 1996, a new Cabinet was appointed. The new Cabinet began to spread the message regarding Egypt's privatisation of SOEs, and attracted international interest. To increase the supply of stocks on the exchange for the first time since starting the privatisation programme, the government sold more than 51% of its stakes in SOEs; thus, the value of privatised firms has accelerated significantly. As a result of rapid development of capital market systems, the privatisation programme became more accelerated during this time.
Privatisation faced difficulties in the late 1990s which led to a reduction in the number of privatised firms in this period. One of the most important of those difficulties was the South East Asian crisis that hit first Thailand in July 1997, spreading later to the economies of Indonesia, Malaysia, and Korea, then to several other parts of the world, including Russia and Brazil. The impact of this crisis in Egypt was obvious in terms of a sharp decline in stock prices. The second difficulty was the terrorists' attack that took place in Luxor (Upper Egypt) in November 1998 which had a negative impact on the Egyptian economy. Thus, these difficulties had negative effects on investment in Egypt and the capital inflows to Egypt. These were in addition to the sharp decline in the net demand from foreigners on Egyptian shares, whose prices fell sharply. Thus, by the end of the 90s, some of the public offerings of privatised companies failed to be completely subscribed, reflecting weak market conditions.

To face these difficulties, the Ministerial Privatisation Committee (MPC) announced, in mid 1998, the adoption of more market-oriented approaches to privatisation. This approach to pricing ensured the continued success of the privatisation programme. It should be mentioned that the majority of the privatised companies through 1999-2001 were sold to strategic investors rather than offered as IPO's due to either the restructuring required to make them viable or the reduced appetite of investors.

The privatised firms were diversified over a number of sectors, including agriculture, real estate and construction, food and beverages, milling, retail, cement, chemicals and fertilizers, engineering, pharmaceuticals, and tourism.
In recent times, the scope of privatisation has been widened to include infrastructure because the private sector is the lead in all huge projects, such as new ports, electricity distribution, power generation and telecommunication. Also, the programme allowed for the private sector involvement in certain sectors, such as construction, telecommunications and transportation to take the form of acquisition or Build-Operate-Transfer (BOT) (Abdel Shahid, 2002).

In the light of the above, it seems that the privatisation programme has been slow over the period 1998-2003. This is due to various reasons, such as global markets, which have been treacherous since 1997 and worsened after the US September events, political tension in the Middle East peace process, overvaluation of SOEs, weak promoters, lack of bank-financing, lengthy selling procedures, lack of sufficient information from the holding companies (HCs) to potential buyers and, finally, the prevailing recession in the Egyptian economy.

The next stage of the privatisation programme, starting in 2002 included the marketing of mega-issues, which comprised electric utilities, telecom, financial services, and textiles, as well as oil and gas companies. The most important and expected deals, that will assure investors that privatisation is back on track, is the selling of 10% to the public and 30% of the state owned Telecom Egypt to a strategic investor, as well as the offering of 20% of Greater Cairo and Canal Electricity Companies to the public. The most important SOEs that were privatised during 2004-2006 through IPOs included Alexandria Mineral Oils (AMOC) (20%), Nasr City Housing and Reconstruction (30%), Sidi Kerir Petrochemicals (20%), Telecom Egypt (20%), the Suez Iron and Steel (40%), Mit Ghamr Company for Spinning and Weaving (100%), the company
Shibin el-Kom Spinning and Weaving (100%), Farta for paper and cardboard (100%) and ASEC Cement (100%). In addition to that, there was a sale-deal of Omar Effendi at 100% to a single investor at the end of 2006. (Full details about the privatised Egyptian firms by the end of 2004 according to Egyptian privatisation methods are shown in appendix 3-3). Figure 3-2 shows the achievements of the Egyptian privatisation programme by using the different methods of privatisation.

**Figure 3-2 Achievements of the Egyptian privatisation programme**

3.10 The main impediments for the Egyptian privatisation process

The Egyptian privatisation programme has suffered from four basic obstacles, which are: (1) the problem of financial restructuring; (2) unemployment

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concerns; (3) the excessive power of holding companies; and (4) the limited role of the securities market.

3.10.1 The problem of financial restructuring

One of the privatisation aims is raising funds to improve the financial structure and reduce the debt burden of the loss-making firms. The majority of SOEs have short and long term debt on their balance sheet in excess of their ability to adequately service the interest and repay the principal outstanding. Debt restructuring is crucial to the privatisation process, because private investors will not be willing to invest in SOEs, which cannot adequately meet debt obligations.

3.10.2 Unemployment concerns

The 1.3 million public enterprise employees are the most significant political obstacle to the privatisation process (Qandil, 1998). Workers find the public sector job secure compared to the private sector, especially with the high rate of unemployment till 2007. From 1990 to 1993, there was a decrease in the number of employees by approximately 29,000 workers. Although this decline is not large, represent 2%, it causes alarm as regard to future of employment in Egypt, given the continued increase of the labour force by more than 2% per annum, accompanied with a hesitant progress in the private sector, and its low profile in generating employment, despite various incentives currently provided to this sector.

There are some recommendations to the Egyptian government to solve the problem of workers, who became redundant in privatised firms following privatisation (for more details, see Chapter 10 Section 10-3).
3.10.3 The excessive power of Holding Companies

The holding companies’ general assembly and board of directors have the upper hand in initiating and deciding the sale of affiliated firms, and they bear part of the responsibility for the slow implementation of the privatisation programme. In addition, there is a conflict of interest arising from the fact that it is more beneficial for them to continue with the status quo, as they may have a less secure prospect, if the privatisation process is completed.

3.10.4 The limited role of the securities market

Although there are joint benefits for the privatisation programme and the securities market, the Egyptian government was trapped for a while in supply leading or demand following problems. However, during 1995 there was a general decline in the share price, which led to the belief that privatisation should be slowed down, to avoid further deterioration of the stock market. After 1996, the government decided to offer shares to the public and employees. Furthermore, small investors were attracted by capital gains, while large investors were encouraged to speculate on the stock market; hence, the activity of the stock market rose after that.

3.11 Summary

Before 1952, the private sector made about 76% of the total investment in the economy. After the revolution of 1952, the Egyptian government began to play a more active role in the economy through projects directly affecting the development of the national economy. In 1956, the government through
application of Law 258 began nationalisation of the private companies. The main idea of public projects was introduced through Law 20 of 1957, which introduced the principles to establish SOEs. One of the projects’ missions was to monopolise the establishment of public economic projects, and to prepare plans for using the state’s funds for economic activities. The public sector very quickly established its dominance in the economy and for the next three decades was making between 80-90% of the investment in the economy.

After the war in 1973, the Egyptian government introduced a policy of open door in order to remove the restrictions imposed by the government on the private sector, and to attract foreign private capital-liberalisation of the financial system and trade, and to reduce reliance on the public sector. In the past, SOEs were to create as many employment opportunities as possible. Poor management and weak capitalization of SOEs lead to a negative effect on their efficiency and financial viability. SOEs can be considered a major contributor to the government budget deficit. Egypt was obliged to turn to the International Monetary Fund for assistance. At this time, IMF imposed conditions on Egypt to reduce the public sector through privatisation, and to reduce grants and subsidies directed towards this sector.

In an effort to improve its economy, Egypt launched a privatisation programme in 1991 as a part of its economic reform programme. Egypt has taken the privatisation programme as one of the most important methods of reducing the size of the public sector. Thus, privatisation has been an important part of the Egyptian economic reform programme.
Egypt focused on a gradual approach in the privatisation of SOEs. The Egyptian government offered 314 companies for privatisation. A total of 161 companies were fully privatised by 2007, and another 65 were partially privatised. The government employed several different privatisation methods: 25% of SOEs were privatised through shares offered on the stock market (IPO), 15% of SOEs were privatised through sale to the Employee Shareholders Association (ESA), 21% of SOEs were privatised by the means of liquidation and asset sales, and finally 39% of SOEs were privatised through the sales to anchor investors.

In the next chapter, there will be an explanation of the most important studies on the evaluation of the privatisation programme at the macro-level; after that, this thesis will review the main previous studies associated with the assessment the Egyptian privatisation programme.
CHAPTER 4  LITERATURE REVIEW

4.1 Introduction

A comprehensive academic work has been undertaken to evaluate the performance of the privatised SOEs and the different implications of the privatisation process. Numerous academic papers deal with performance indicators at many levels: a firm level, a single country level, and international level, in developing and developed countries. Recent studies are concerned with evaluating the impact of a privatisation programme on firms' performance.

In Chapter Two, the study sets out the related literature pertaining to the concept of privatisation; the models and methods of privatisation, including advantages and disadvantages of each method, in addition to objectives of privatisation, and concluded that privatisation refers to the provision of publicly funded services and activities by non-governmental entities. One way of analysing privatisation is to consider two separate but related dimensions: first, the change in the degree of market competition; and second, the role of the public sector vis-à-vis other sectors. The study suggests that there is no one acceptable form for privatisation and each form serves a particular objective; and the government's goal of privatisation is the only way to determine the method of privatisation.

In Chapter Three, the study described the literature review of Egypt's economic development from 1952 till 2007 in three stages; also, it reviewed the literature of privatisation in Egypt; and concluded that:
1. Public sector companies have handled most of Egypt's economic activity under the direction of the various ministries since the 1960s. Furthermore, the poor management and weak capitalisation of SOEs led to a negative effect on their efficiency and financial viability, thus SOEs can be considered a major contributor to the government budget deficit;

2. As a result of the failure of the public sector to improve economic development, Egypt launched a privatisation programme in 1991 as one of the most important methods of reducing the size of the public sector and to improve firm efficiency. Egypt focused on a gradual approach in the privatisation of SOEs.

The rest of this chapter is organised to provide the most recent studies that related to the hypotheses of this thesis, as follows. Section two shows the studies, which evaluate the performance of firms pre- and post-privatisation. The studies that are associated with evaluating the performance of firms post-privatisation with the performance of private firms are described in Section three. Section four demonstrates the recent studies that related to the impact of ownership structures, pre-privatisation experience, and competitive environment on the post-privatisation performance. Section five concludes with the summary of the chapter.
4.2 Evaluating the performance of privatised firms pre- versus-post-privatisation

4.2.1 Summaries the studies related to the performance of privatised firms pre- versus- post-privatisation

Megginson, Nash, and Van Randenborgh (MNR, 1994) investigated the performance change of 61 firms from 18 countries and 32 different industries that privatised during 1961-89. MNR compared 3-year average post-privatisation financial and operating performance ratios to the 3-year pre-privatisation ratios. They tested the significance of median changes in post-versus pre-privatisation data. Also, MNR employed binomial tests for the percentage of firms changing as predicted. MNR documented economically and statistically significant post-privatisation increases in real sales, operating efficiency, profitability, capital investment spending, and dividend payments, as well as significant decreases in leverage. In addition to the above, they found that there is no evidence of employment reduction after privatisation, the median level of employment actually increases (at 10% level), but there are significant changes in firm managers. The MNR study stressed that the privatisation process improves firm performance.

Dewenter and Malatesta (DMa, 2001) investigated the impact of privatisation on the firm's performance. DMa examine the performance change of 63 large, high-information firms, privatised in developed countries during 1981-94. They compared pre- versus post-privatisation performance over both short-term {(-3 to -1) versus (+1 to +3)} years; and long-term {(-10 to - 1) versus (+1 to +5)}
years. Furthermore, they tested long-run stock return performance of privatised firms and compared the relative performance of a large sample (around 1,500 total firm-years) of SOEs and private firms from three separate time periods 1975, 1985, and 1995. DMa stressed a significant increase in profitability and a significant decrease in leverage and labour force over both short and long-term comparison horizons. Operating profits increased only prior to privatisation. Also, they found a significantly positive long-term (1-5 years) abnormal stock return, mostly concentrated in Hungary, Poland, and the United Kingdom. The study of DMa concluded that privatisation has a significant future impact on firm's performance, and private firms outperform SOEs.

Boardman, Laurin, and Vining (BLV, 2003) examined the performance change for nine Canadian firms privatised during 1988-95. BLV compared 3-year average post-privatisation financial and operating performance ratios with the 5-year pre-privatisation values, and computed long-run (up to 5 years) stock returns for privatised firms. They employed the MNR methodology to estimate the magnitude of privatisation related performance. BLV documented that profitability increases more than double after privatisation, while the efficiency and sales also increase significantly. Leverage and employment declined significantly, while the capital spending increases significantly. Privatised firms also significantly outperformed the Canadian stock market over all long-term holding periods.

Martin and Parker (MP, 1995) investigated the impact of privatisation on the performance of firms. MP examined profitability and efficiency before and after privatisation. They used a sample, which included eleven British firms privatised
during 1981-88. MP used return on invested capital to measure profitability, and annual growth in value added per employee-hour to measure efficiency. Also, they tried to control for business cycle effects. MP found less than half the firms performed better after being privatised. They found evidence of a "shake-out" effect upon the privatisation announcement, where several firms improve performance prior to being privatised but not after being privatised.

**Saal and Parker (SP, 2003)** examined the impact of the UK privatisation programme on the productivity and the performance of the privatised firm. SP investigated the productivity and price performance of the privatised water and sewerage companies after privatisation, and the imposition of a new regulatory regime in 1989. They analysed the joint impact of privatisation and the new economic regulatory environment on firm's performance. They measured the firm's productivity growth by total factor productivity (TFP). They found that: first, labour productivity improved significantly after privatisation; second, there was no significant evidence that productivity growth improved on privatisation; and, third and finally, after privatisation there were increases in output prices, which outstripped increased input prices, that led to significantly higher economic profits.

**Jones, Jammal, and Cokgur (JC, 1998)** investigated the performance of privatised firms in Cote d'Avoire. They analysed 81 privatised firms covering the electricity sector and other firms operating in competitive markets in the agriculture and service sectors. They concluded that the performance of privatised firms is better after privatisation than they would have had under continued state ownership. Also, the privatisation programme contributes
positively to economic welfare, with annual welfare benefits equal to 25% of pre-privatisation.

Sun and Tong (ST, 2003) analysed the performance of 634 Chinese SOEs that are listed on their Stock Exchange through the period of 1994-98. This study represented the most comprehensive analysis to date of China’s privatisation programme. ST evaluated the performance change for these firms and analysed the impact of state and private shareholding. They used the MNR methodology to evaluate the change of performance before and after privatisation, and a panel data regression test to examine whether partial or full privatisation improves firm's profitability, output, and its efficiency. ST concluded that: 1- after privatisation, there is a significant improvement in both return on sales, real sales, employee productivity, and the level of real profit; and 2- higher quality and better performance are experienced for recently privatised firms than those privatised earlier.

Boubakri and Cosset (BC, 2003) investigated the performance change pre-privatisation versus post-privatisation performance of sixteen African firms privatised through public share offering during the period 1989-96. BC used the same methodology of Megginson el al 1994. They documented a significant increase in capital investment spending by privatised firms, but they found only insignificant changes in profitability, efficiency, output, and leverage.

D'Souza and Megginson (DM, 1999) tested the success of privatisation programmes in developing economies and industrialised economies during 1990-96. The sample of study consisted of 85 firms from 13 developing
countries and 15 developed countries. DM compared 3-year average post-privatisation financial and operating performance ratios with the 3-year pre-privatisation. DM found persuasive evidence that the mean and median levels of profitability, real sales and operating efficiency increase significantly as well as there being a significant decrease in leverage and employment. Also, they found that the capital investment spending increases, but insignificantly. Furthermore, DM demonstrated that privatised firms that work in competitive industries are likely to yield solid and rapid economic benefits as long as there are no economy wide distortions that hinder competition. Thus, privatisation improves firm's performance.

Verbrugge, Owens and Megginson (VOM, 2000) analysed the performance change pre-privatisation versus post-privatisation performance for 32 banks in developed countries and 5 in developing countries during 1981 - 96. Also, they studied the offering terms and share ownership results for 65 banks fully or partially privatised through this period. VOM found that: 1- there are general significant improvements in the privatised banks in developed countries; 2- there are significant increases in the ratios of profitability, net income, and capital adequacy; as well as a significant decline in leverage; in addition, they also found important ongoing state involvement in these banks' affairs and significantly positive initial investors returns from public share offering.

Boubakri and Cosset (BC, 1998) tested the success of privatisation programmes in developing and developed countries during 1980-92. The sample of study consisted of seventy-nine firms from twenty-one developing countries and thirty-two developed countries. BC compared 3-year average
post-privatisation financial and operating performance ratios to the 3-year pre-
privatisation ratios. BC examined the significance of median changes in ratio
values in the post- versus pre-privatisation periods. Also, they employed
binomial tests for the percentage of firm's change as predicted. BC documented
economically and statistically significant post-privatisation increases in real
sales, operating efficiency, profitability, capital investment spending, and
dividend payments, as well as the significant decreases in leverage. They found
persuasive evidence that: 1- performance improvements are generally even
larger than those documented by MNR. The mean and median levels of
profitability, real sales and operating efficiency increase significantly as well as
significant decreases in leverage; and 2- capital investment spending increases-
but insignificantly, while employment declines significantly. They all observed
that there was a significant increase among newly privatised firms in the level of
capital investment spending, as measured by capital expenditure to sales, and
by capital expenditure to total assets. They also observed a significant increase
in the level of output (real sales), as measured by nominal sales divided by the
consumer price index. Thus, privatisation improves firm performance.

**Cabanda and Ariff (CA, 2002)** investigated the efficiency growth after
privatisation for four Asia Pacific countries. CA analysed the financial and
operating performance for telecommunications privatised firms in Japan,
Philippines, Malaysia, and Australia, which were fully or partially privatised over
an extended time period (more than twelve years). CA used the MNR testing
and used Data Envelopment Analysis (DEA) to measure performance changes.
They concluded that the privatised firms achieve productivity gains of around
3% to 50%; and for three of the four countries they saw a significant increase in total factor productivity (Japan, Philippines, and Australia). Also, CA found that profitability increased in two of the four countries (Malaysia, and Australia).

Omran (2001) investigated the performance changes for 69 Egyptian companies privatised during 1994-98. The sample of this study consisted of 33 Egyptian companies with majority sales, 18 Egyptian companies with partial sales, 12 Egyptian companies with sales to Employee Shareholding Associations, and 6 Egyptian companies with sales to anchor investors. He used MNR (1994) methodology. Omran found that profitability, operating efficiency, capital spending, dividends, and liquidity increase significantly after privatisation, but leverage, employment, and financial risk decline significantly.

El-Shahat (2003) compared the pre- and post-privatisation financial and operating performance of a sample of the Egyptian constructing sector. He used t-tests to measure the significance of the changes in the operating and financial indicators. He found that: 1- following the privatisation programme, there was a general increase in profitability (as measured by the earning power and return on borrowed funds ratio) and labour productivity (as measured by the labour efficiency using sales and operating income), as well as a general improvement in the financial risk (as measured by the debt ratio and the inverse times interest earned); and 2- there was a decline in the liquidity of accounts receivables after the privatisation programme, unlike the liquidity of the inventory.

Sun, Jia, and Tong (SJT, 2002) examined the performance change for 24 Malaysian firms privatised via IPOs by the end of 1997. SJT compared financial
and operating performance ratios pre- versus post-privatisation. They used the MNR methodology to estimate the magnitudes of privatisation related performance, then used panel data regression to test the sources of performance changes. SJT found privatised firms increased their absolute level of profits threefold, more than doubled real sales, and at the same time, reduced leverage. Also, stocks of privatised firms earned normal returns. Finally, institutional investors had a positive impact on privatised firm performance.

4.2.2 Discussing the studies related to the performance of privatised firms pre- versus- post-privatisation

Most empirical studies that compare pre- and post-privatisation performance indicate consistent findings regarding the impact of privatisation on firm profitability, output, efficiency, leverage, and dividend payments. They show highly significant performance improvements according to both the Wilcoxon (median) and binomial (proportion) statistical tests. Table 4-1 shows the summaries' results of these studies.

It is clear from Table 4-1 that the majority of studies have used an MNR methodology, because his methodology achieves two advantages: first, it can examine and directly compare large samples of economically significant firms from different industries, privatised in different counties, and over different time periods. Since each firm's performance is compared with its own result a few years earlier using simple, inflation-adjusted sales and income data, this methodology allows one to aggregate efficiently multinational and multi-industry results. Second, focusing on IPOs accounts avoid a selection bias; it also
Table 4.1: Summaries of empirical studies that compare the performance changes for privatised firms pre- versus post-privatisation

<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>Profitability</th>
<th>Operating Efficiency</th>
<th>Output</th>
<th>Capital investment spending</th>
<th>Leverage</th>
<th>Employment</th>
<th>Dividend payments</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>MNR, 1994</td>
<td>18 developed countries</td>
<td>increased</td>
<td>increased</td>
<td>increased</td>
<td>increased</td>
<td>decreased</td>
<td>increased</td>
<td>increased</td>
<td>Increased in productivity in private firms compared to public firms.</td>
</tr>
<tr>
<td>BC, 1998</td>
<td>21 developing &amp; 32 developed countries</td>
<td>increased</td>
<td>increased</td>
<td>increased</td>
<td>-</td>
<td>decreased</td>
<td>decreased</td>
<td>increased</td>
<td>Found mean and median for each country.</td>
</tr>
<tr>
<td>LB, 2000</td>
<td>Canadian</td>
<td>increased</td>
<td>increased</td>
<td>-</td>
<td>increased</td>
<td>-</td>
<td>decreased</td>
<td>-</td>
<td>Increased more than double in private firms compared to public firms.</td>
</tr>
<tr>
<td>DMa, 2001</td>
<td>Hungary, Poland, UK</td>
<td>increased</td>
<td>increased</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>decreased</td>
<td>-</td>
<td>Using regression tests.</td>
</tr>
<tr>
<td>BLV, 2003</td>
<td>Canadian</td>
<td>increased</td>
<td>increased</td>
<td>increased</td>
<td>increased</td>
<td>decreased</td>
<td>decreased</td>
<td>increased</td>
<td>Increased in productivity in private firms compared to public firms.</td>
</tr>
<tr>
<td>ST, 2003</td>
<td>China</td>
<td>increased</td>
<td>increased</td>
<td>increased</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Using regression tests.</td>
</tr>
<tr>
<td>Omran, 2001</td>
<td>Egypt</td>
<td>increased</td>
<td>increased</td>
<td>increased</td>
<td>increased</td>
<td>decreased</td>
<td>decreased</td>
<td>increased</td>
<td>69 firms only privatised till 1998.</td>
</tr>
<tr>
<td>Study</td>
<td>Country</td>
<td>Profitability</td>
<td>Operating Efficiency</td>
<td>Output</td>
<td>Capital investment spending</td>
<td>Leverage</td>
<td>Employment</td>
<td>Dividend payments</td>
<td>Comment</td>
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<td>--------------------------------------------------</td>
</tr>
<tr>
<td>DM, 1999</td>
<td>13 developing &amp; 15 developed countries</td>
<td>increased</td>
<td>increased</td>
<td>increased</td>
<td>increased</td>
<td>decreased</td>
<td>decreased</td>
<td>increased</td>
<td></td>
</tr>
<tr>
<td>VOM, 2000</td>
<td>32 banks in developed &amp; 5 in developing countries</td>
<td>increased</td>
<td>increased</td>
<td>-</td>
<td>decreased</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>fully or partially privatised banks</td>
</tr>
<tr>
<td>JC, 1998</td>
<td>Cote d’Avoire</td>
<td>After privatisation, the performance of privatised SOEs is better than pre-privatisation or it remained SOEs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SJT, 2002</td>
<td>Malaysia</td>
<td>increased</td>
<td>Increased</td>
<td>-</td>
<td>decreased</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>used the MNR test &amp; panel data regression</td>
</tr>
<tr>
<td>BC, 2003</td>
<td>African</td>
<td>decreased</td>
<td>decreased</td>
<td>decreased</td>
<td>Increased</td>
<td>decreased</td>
<td>decreased</td>
<td>decreased</td>
<td></td>
</tr>
<tr>
<td>El- Shahat, 2003</td>
<td>Egypt</td>
<td>increased</td>
<td>increased</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Constructing firms only that were privatised till 1998</td>
</tr>
</tbody>
</table>

86
avoids samples that encompass the largest and most politically influential privatisation. These studies agreed on positive results regarding the effectiveness of privatisation improvement in financial and operating performance of privatised firms.

By mapping the previous studies, it is clear that most empirical studies, which compare pre- versus post-privatisation performance, focus on the impact of privatisation programme on the performance of privatised firms as a whole without extending the analysis to the type of privatisation, either as partial or full privatisation. Instead, in this study, the researcher will test the impact of the privatisation programme on the performance indicator value changes of privatised firms, according to whether these firms experience full or partial privatisation for all Egyptian privatised firms that were privatised through IPOs during 1991-2004.

The objective of the comparison of the performance indicators values post-versus pre-privatisation is to test the first hypothesis of this thesis, which is that "Privatisation leads to improvement in the performance of privatised firms following privatisation" by evaluating the performance measures of privatised firms according to the type of privatisation in a developing country (Egypt) that has been neglected in the literature and is different in both environment and time period.
4.3 Evaluating the performance of privatised firms versus private firms as control group

4.3.1 Summaries the studies related to the performance of firms post-privatisation versus private firms as control group

Megginson and Bouchkova (MB, 2000) investigated the stock ownership methods in privatised firms. MB compared the number of stockholders in privatised firms in the 1999 Business Week Global 1000 and the 1999 top 200 Emerging Market lists,\textsuperscript{28} with the number of shareholders in private sector firms from the same national markets. For each privatised firm, they selected the matching private firm, according to the nearest total market value in the Business Week list. They used a sample from firms that had ownership structures, which included at least 250,000 shareholders. The final sample for this study contained 86 privatised and private firms' couples. They used the Wilcoxon signed rank test to explain if the mean number of shareholders of privatised firms is significantly higher than that of the private matching firms. They found that the privatised firms had a much larger number of shareholders, this fact being due to governments usually retaining sizable stakes in these firms, which led to a reduction in the effectiveness of privatised firms, since these stakes remained unsold to private investors. They concluded that the number of shareholders of the privatised firms is significantly higher (at level 0.01) than the number of shareholders in the matching private sample firms.

\textsuperscript{28} The Business Week "Global 1000" included 152 privatised firms ranked according to the value of firms in developed countries stock markets. The Business Week "Top 200 Emerging Market Companies ranked privatised companies according to total market capitalization, which equals $3.31 trillion (Megginson, 2005, p247).
Mubari and Oriani (MO, 2002) examined the impact of privatisation on the research and development (R&D) investments, valuation, and performance. They used Tobin's Q and a hedonic model to measure the change in ownership-related performance. The study sample included a data set of 20 western European firms privatised through public share offering during 1982-1997 and a matched control set of 20 private firms. They calculated the R&D coefficient for those firms, which equalled 7.5 for private firms versus 1.3 for the privatised firms. They indicated that: 1- newly privatised firms have lower mean values of the ratio of R&D to assets, the R&D capital in relation to assets, and Tobin's Q; and 2- the stock market values of the R&D investments of privatised firms were less than half the level of private firms. They concluded that, after privatisation, the R&D investment ratio initially declined, thus, the market valuation of privatised firms does not respond negatively to a decline in R&D spending.

Dewenter and Malatesta (DMa, 2000) investigated why profitability, labour force, and debt levels differ between SOEs and privately owned firms. DMa depended on the lists of the 500 largest international firms, as reported in Fortune magazine for 1975, 1985, and 1995, to examine these factors. They used the same approach as Boardman and Vining in 1989; in addition to this approach, they used a total of 1,369 firm-years (multi-year) and more recent data for 147 SOEs. They adjusted data according to firm size, industry and business cycles. DMa found that private firms are significantly more profitable than SOEs. Also, private firms have significantly less debt and less labour-
intensive production processes. Thus, this study stressed that private ownership is better than SOEs.

Mohieldin and Sahar (MN, 2007) examine the performance of state owned banks and compare the change in the performance public bank with the change in the performance Egyptian private bank over the period 1995-2005. They test the capital adequacy, asset quality, profitability indicators between public and private banks. This paper mainly provides guidance to policy makers regarding successful implementation of bank privatisation. They found that: (i) state owned bank still suffer from low capital adequacy, (ii) the portfolio of private banks is better quality compared to state owned banks, (iii) private banks perform better than state owned banks, and (iv) privatisation can benefit bank sector only if it contributes to improve market structure. They suggest that retaining government ownership can adversely affect bank performance.

Omran (2007) investigated the impact of privatisation and ownership structures on bank performance in Egypt. He used a sample of twelve Egyptian joint-venture banks that were fully or partially privatised during 1996-99. He examined how banks performed post-privatisation versus pre-privatisation; also, he evaluated the performance changes in privatised banks on a matched adjusted basis with private-owned banks, state-owned banks, and mix-ownership banks with-majority private ownership banks or majority state-ownership banks. In addition, he investigated the post-privatisation performance of privatised banks versus other group counterparts. He employed several fixed-effect regressions over the entire study period to capture the impact of ownership structure on bank performance for all banks, and also used majority
state-ownership banks and state-owned banks as benchmarks. He found that 1- some profitability and liquidity ratios declined significantly, whereas other performance measures, namely, asset quality, capital risk indicators, operating efficiency, and asset growth showed insignificant changes; 2- the relative performance changes of privatised banks compared with matched adjusted private-owned banks and majority private ownership banks indicated similar results; and 3- the relative performance changes of privatised banks are better than majority state-ownership banks and worse than state-ownership banks. The study of Omran provides strong evidence that banks with higher private ownership involvement are associated with a better performance.

Laurin and Bozec (LB, 2001) investigated the effect of privatisation on firm's performance. LB analyse productivity and profitability of two large Canadian rail carriers (one state owned and one private sector), pre- and post-privatisation of Canadian National, which privatised in 1995. They used accounting ratios from 17 years for financial statements during 1981-97 and divided it to three periods: from 1981 to 1991, which represent the state owned era; from 1992 to 1995, which represent the pre-privatisation era; and from 1995 to 1997, which represent the post-privatisation era. LB find that: 1- total productivity of Canadian SOEs is lower than for private owned firms during 1981-91(fully state owned period), but become just efficient during 1992-95 (pre-privatisation period), then exceeded it after 1995 (post-privatisation period); and 2- the employment for Canadian SOEs declined by more than 34% versus 18% for private firm.
4.3.2 Discussing the studies related to the performance of privatised firms post-privatisation versus private firms as control group

Most empirical studies, which make comparisons between the values of the performance indicators of private and privatised firms, are concentrated in developed countries and have used financial ratios as absolute values only, without using their relative values, which is necessary in solving the problem of different past performances between privatised and private firms.

In this research, the study will examine the changes in the values of the performance indicators of privatised firms after privatisation in one developing country (Egypt) that has a different culture from other studies by comparing the changes in the privatised performance with private ones, according to similar size and industry, by using absolute and relative values of financial ratios'. In addition, the study will classify the privatised firms into two categories (fully and partially privatised firms) to investigate the second hypothesis, which is that “The performance of privatised firms following privatisation is similar to the performance of their counterparts from the private sector.

Thus, this research represents the first study in Egypt to evaluate and compare the performance of privatised firms with the performance of private firms, rather than state-owned enterprises.
4.4 Empirical studies that are related to the impact of ownership structures, pre-privatisation experience, and/or competitive environment on the post-privatisation performance

4.4.1 Summaries of studies related to ownership structures and firms performance post-privatisation

Boubakri, Jean, and Omrane (BJO, 2008) examined the impact of new ownership for privatised firms on its efficiency and performance, focusing on its impact on corporate performance and governance over the period 1988-2005. The study of BJO represents comprehensive study about privatisation in 77 developing countries classified in 5 geographical areas between 1988 and 2005 (East Asia and Pacific, Latin America & Caribbean, North Africa & Middle East, South Asia, and Sub-Saharan Africa). BJO found that the developing courtiers started implementing privatisation under the supervision of international development agencies such as WB and the IMF rather than by choice. BJO conclude that (i) to ensure positive outcomes, privatising governments should implement economic reforms before privatisation, in addition, liberalization stock-market will bring technological, (ii) when privatisation follows liberalisation, it reduces the risk of reversibility of the privatisation policy, and (iii) there is need for a sound institutional environment; better investor protection to promote capital markets and attract foreign investors, (iv) concentrated private ownership is more likely to emerge in countries with low investor protection, (v) post-privatisation ownership concentration is associated with poor investor
protection, and (vi) there is a significant change in the ownership structure after privatisation, the average government stake for the sample study continues to decreases over the following 3 years to reach 21.41%.

Boubakri, Cosset, and Guedilhami (BCG, 2005) examined the roles of ownership structure and investor protection in corporate governance. The sample of study consisted of 170 firms from 26 developing countries, privatised during 1980-97. The study of BCG answered these questions: what are the ownership structure results from privatisation and how do they change subsequently? How does the level of ownership protection impact post-privatisation ownership structure? and, how are ownership structure and investor protection related to firm performance. BCG found: 1- private ownership of a privatised firm's stock tends to concentrate over time after privatisation; 2- successful privatisation requires that governments relinquish control of the privatised firms over the first three years after initial sale directly; and 3- There is a significant negative impact on the firm's performance in the case of interaction between the legal protection and concentration of ownership. The BCG study stressed that ownership concentration matters more in countries with weak legal protection.

Kocenda and Svejnar (KS, 2003) examined the effect of ownership performance in the Czech Republic. KS showed the impact of ownership types on firm's performance after privatisation. They used a data set from 2,529 to 2,949 observations on an unbalanced panel of 1,371- 1,540 medium and large Czech firms. KS examined the impact of six categories of ownerships. KS concluded that concentrated foreign ownership improves the performance of
privatised firms relative to state firms. Furthermore, domestic private ownership does not improve its performance because foreign owned firms contribute in strategic restructuring by increasing sales and profits, but domestic firms reduce their sales and labour costs without increasing their profit. Thus, ownership concentration is generally related to improving performance. This study concluded that state ownership plays an economically and socially beneficial role in transition economy.

Kwoka (2002) investigated the impact of ownership structure on the firm's performance in the U.S. He compared the performance of 147 investor-owned electric utilities with 396 utilities owned by municipalities operating in 1989. He tried to determine if there were differences in the efficiency between public and private groups. Kwoka found that: 1- public and private owned utilities were largely specialised in different activities, with owned electric utilities dominating electricity generation, where they had cost advantages related to economies of scale; 2- Municipality-owned utilities were more competitive in electricity distribution; and 3- No difference based on ownership. He stressed that any advantages of state ownership were size-dependent, and disappeared entirely for the largest publicly owned firms.

Jones and Mygind (2002) investigated the relationship between ownership and productive efficiency in Estonia. They used fixed-effects production function models to study the relationship between ownership and productive efficiency for SOEs, privatised firms and private firms. They used a random sample of 660 Estonian firms and collected data set from 1993 to 1997. They found that, relative to SOE, 1- privatisation in Estonia created a widely varied ownership
structure; 2- private ownership is 13%-22% more efficient than others; 3- all styles of private ownership are more productive, though concentrated managerial ownership had the largest effects (achieved improvement around 21%-32%); and 4- The productivity of foreign-owned firms was higher than the productivity of domestically owned firms *(21% - 32%), (0 -15%), respectively).

Grigorian (2000) analysed the relationship between the ownership types and the performance firm in the Soviet Republics. He showed the impact of privatisation on the financial and operating performance of 5300 small, medium, and large Lithuanian firms during 1995-97. He collected financial data about these firms from 1995 to 97, and used regression analysis to examine 618 firms that were still state owned in 1995; more than half of these firms were partially privatised during 1995-97. He concluded that, overall, the privatisation programme has brought significant performance improvements but there was negative bias in selecting firms as candidates for privatisation.

Villalonga (2000) investigated the effect of privatisation on the efficiency of twenty-four Spanish companies that were fully privatised during 1985-93. Villalonga examined the separate effects of ownership change, once other political and organisational factors and time period (state of business cycle) effects were accounted for. She found: 1- insignificant changes in the level and growth rate of efficiency after privatisation; 2- a significant positive effect was found for business life cycle; and 3- positive increases in efficiency improvement for capital intensity, and foreign ownership. She suggested that the government has to sell firms during recessions. She concluded that privatisation leads to a decrease in efficiency in the intermediate term (for 5 and
6 years after being privatised); conversely, in the long term it leads to improvement in efficiency (for 7-8 years). The study suggests the importance of time effects.

Earle (1998) examined the effect of ownership structure in Russia (Soviet Republics). He investigated the relation between ownership types and firm's productivity. He analysed the effect of insider ownership, outsider ownership, and state ownership on the performance of 430 firms including 86 SOEs, 299 privatised firms (partially), and 45 private firms. He used OLS regressions, and adjusted his empirical methods to explain the tendency of insiders to claim dominant ownership in the best of privatised firms. Earle showed a positive effect of private ownership, relative to state ownership, on the firm's productivity. Furthermore, outsider ownerships are significantly related to productivity improvement. He concluded that leaving insiders in controlling the firms have had a very negative long-term impact in the restructuring of Russian firms.

Claessens (1997) tested the impact of the style of ownership of mass privatisation in Czech and Slovak republic on the prices of shares of the privatised firms. The study covered 1491 firms. Using regression analysis, the results indicated that most of the shares of these firms are increased when traded in the secondary market. In addition, a majority ownership by domestic investors was associated with even higher prices and thus appears to be especially useful in changing the way firms are managed. However, the results of this study tends to be consistent with the theoretical background, which indicated that the privatisation leads to changes in the style of managing the
firms to be like those in the private sector, and this in turn, leads to more efficiency and more profitability, hence, increasing stock prices of these firms.

**Boardman and Vining (BV, 1989)** investigated the performance change of the 500 largest non-U.S. industrial firms in 1983, classified according to their ownership structure: state-owned, privately owned, and mixed (state and private) ownership firms. BV used four profitability ratios and two measures of X-efficiency. They found that state-owned and mixed firms are significantly less profitable and productive than privately owned firms; and that mixed ownership firms are not more profitable than pure state-owned firms. The study suggests that full private ownership is essential for achieving performance improvement of firms.

**Ehrlich, Gallais-Hammonno, Liu, and Lutter (1994)** tested the productivity differences between state-owned and privately owned firms. The sample of study consisted of 23 comparable international airlines of different ownership categories over the period 1973-83. They found that: 1- there is a significant link between ownership and firm specific rates of productivity growth; 2- private ownership leads to higher rates of productivity growth and declining costs in the long run; 3- the change from complete state ownership to private ownership, in the long run leads to an increase in the annual rate of productivity growth by 1.6% - 2%; at the same time, the rate of unit cost decreases by 1.7% - 1.95%; and 4- the partial change from state ownership to private ownership has little effect on long run productivity growth. Thus, they stressed that private ownership is superior.
4.4.2 Summaries of studies related to pre-privatisation experience and firms’ performance post-privatisation

Frydman, Gray, Hessel, and Rapczynski (FGHR, 1999) investigated the performance of privatised and state owned firms in the big three transition economies of central Europe. FGHR examined the impact of ownership structure on firm's performance by comparing the performance of 90 SOEs with 128 privatised Czech, Hungarian, and Polish firms.

They used the panel data regression method to separate ownership effects. They found that: 1- the privatisation process adds more than 18% points to the annual growth rate of domestic financial firms. At the same time, the privatisation process adds around 12% to the annual growth rate of firms sold to a foreign buyer; and 2- the gains from privatisation do not come at the expense of higher unemployment, since insider controlled firms are much less likely to restructure, but outsider controlled firms grow faster. FGHR concluded that privatisation works, when the firm is controlled by outside owners.

In the second study for FGHR (2000), they found that the imposition of hard budget constraints is alone enough to improve corporate performance. The sample study consisted of 216 Czech, Hungarian, and Polish firms, 67 SOEs, 93 privatised, and 56 private firms. FGHR found that privatisation lead to an increase in 10 percentage points to the revenue growth of the firm sold to outside owners. They presented important results about the threat of hard budget constraints for poorly performing SOEs, since governments are unwilling
to allow these firms to fail and thus channel additional credit to the SOEs from state controlled banks.

La Porta and López-de-Silanes (1999) tested the impact of pre-privatisation experience on the change in performance of firms after privatisation. They analysed the performance after privatisation of 218 SOEs privatised in 1992, and compared their performance with industry-matched firms. They found that: 1- there were positive effects on the output of privatised firms, which increased of around 54.3%; 2- there was an increase in the operating profitability of privatised firms around 24% compared with the operating profitability for SOEs; 3- higher product prices explained the increase of around 5% compared with SOEs; and 4- the privatised firms reduced the need for subsidies equal to 12.7% of GDP. In addition, the employment of privatised firm declined by half compared with SOEs.

Harper (2001) examined the effect of privatisation on the performance in the Czech Republic. He showed the impact of privatisation on the financial and operating performance of 174 firms privatised in the first wave, and 380 firms privatised in the second wave during 1992-94. He compared the results for privatised firms with those which remained SOEs. He used the MNR methodology and chose variables to measure changes in the performance of privatised firms and SOEs. He found that the first wave of privatisation yielded poor results; that all real sales, profitability, efficiency, and employment declined dramatically and their change was significantly. In the second wave, there were significant increases in both profitability and efficiency; but there was a decline
in employment (still a significant change; 17% in the second wave versus 41% in the first wave).

**Claessens and Djankov (CD, 2002)** compared the changes in the performance of 6,354 privatised firms and SOEs in seven transition economies during 1991-95, including all manufacturing firms that were registered as state-owned in 1991, had more than 25 employees and had full balance sheet and income statements through 1991-95. They measured the performance by sales and labour productivity. CD found that in six of the seven countries, privatised firms showed higher sales growth or a smaller decline in sales than SOEs. Also, privatised firms reduced their sales by 6.11% versus 7.42% for SOEs. CD concluded that privatisation is significantly related to increased sales and an increased productivity growth rate.

**Feng, Sun, and Tong (FST, 2004)** examined the impact of pre-privatisation experience on the change in performance of firms after privatisation. They investigated the financial and operating performance changes for 31 Singaporean firms privatised through public share offering (IPOs) during 1984-98. FST used MNR tests first, and then used regression analysis to show that output and leverage improved after privatisation. FST found that there were little positive performance changes after privatisation, because SOEs in Singapore were well managed before privatisation.

**Omran (2004)** examined the performance of 54 newly privatised Egyptian firms against a matching numbers of firms that remained SOEs. He found that: i) SOEs' performance improve significantly during the post-privatisation period,
and ii) privatised firms did not perform any better than SOEs. It is clear that privatisation does not harm the privatised firms. The study of Omran did not specify whether the performance improvement for privatised firms was due to the improvement in the economic performance of enterprises as a result of the privatisation programme in Egypt or due to these benefits of the privatised firms and SOEs (the study sample) from a general opening up of the Egyptian economy during the study period (1990 - 1998).

Galal, Jones, Tandon, and Vogelsang (GJTV, 1994) analysed the actual post-privatisation performance of twelve large firms (mostly airlines and regulated utilities in Britain, Chile, Malaysia, and Mexico) and compared them with predicted performances of these firms had they remained SOEs. GJTV used a counter-factual approach. They documented net welfare gains in eleven of twelve cases, averaging 26% of the firm's pre-privatisation sales. Also, GJTV found no cases, where workers were made significantly worse off, and three, where workers were made significantly better off.

Newbery and Pollitt (NP, 1997) tested the impact of pre-privatisation experience on the change in performance of firms after privatisation. NP examined the specific aspects of Britain's privatisation programme. They studied the cost-benefit analysis of the 1990 restructuring and privatisation of the UK's Central Electricity Generating Board (CEGB), by comparing the actual performance of the privatised firms on a counter-factual basis assuming CEGB had remained state owned. They found that there were significant post-privatisation improvements and permanent cost reductions of 5% per year. Producers and shareholders captured all this benefit and more, but consumers
and the government lost. NP concluded that restructuring and privatisation of CEGB was "worth it" but could have been implemented more efficiently, and with greater concern for the public's welfare. This study stressed that the alternative fuel purchases involved unnecessarily high costs and wealth flows out of the country.

Florio (2001), Brau and Florio (2002) investigated the impact of pre-privatisation experience on the post-privatisation performance. They tested the impact of the UK privatisation programme during 1979-97. These studies compared the actual effects generated against what they felt would have happened, if the privatised firms had remained state owned. They considered the impact on five types of agents: firms, employees, shareholders, consumers, and taxpayers. They concluded that privatisation had modest effects on efficiency of production and consumption, but had important effects on the distribution of income and wealth. They acknowledged fiscal benefits, and lower prices in most areas, and productivity growth, but asserted these would have been achieved under continued state ownership (due to extrapolation of existing trends). They summarised that, at best, the UK privatisation programme yielded benefit to British consumers with an NPV of less than one thousand pound per capita. Also, if the distributional costs are factored in, they believe the net benefits would have been negative.
4.4.3 Summaries of studies related to a competitive environment and firms' performance post-privatisation

Li and Xu (LX, 2004) investigated the impact of privatisation and competition on the telecom sector performance across 166 countries. They examined the impact of privatisation and competition on output growth, labour-shedding, total factor productivity, net work expansion, and labour productivity. Additionally, they evaluated the method of privatisation, especially, the IPO method versus the asset sale method. They used a panel data set of privatisations from 166 countries between 1981-98 and collected data on competition from 43 countries through 1990-98. They found that: 1- privatisation had a significantly positive impact on output growth, network expansion, total factor productivity, and labour productivity; 2- privatisation was related to higher labour shedding; 3- privatised firms which privatised via an IPOs promoted the development of the mobile phone market; and 4- competition led to higher employment, higher output, and faster network expansion.

Bortolotti. D'Souza, Fantini, Megginson (BDFM, 2002) investigated the performance of telecommunication sector privatised firms, by examining the financial and operating performance of 31 national telecommunications firms, fully or partially privatised by IPOs during 1981-98. They analysed the pre-privatisation versus post-privatisation performance levels of firms. BDFM used the MNR methodology and employed a control variable, namely, GDP per capita in their regression estimations to make cross-country comparisons possible; then, they ran panel data estimations to analyse performance over time focusing on ownership changes and structural changes due to regulatory
reforms occurring during 1981-98. They established a data set using balance sheet data for 7 years after privatisation, including various measures for profitability, output, efficiency, employment, and leverage. BDFM found that, after privatisation, profitability, output, efficiency, and capital investment spending increased significantly; but leverage and employment decrease significantly. BDFM concluded that the financial and operating performance of telecommunication firms improved significantly after privatisation.

Chirwa (2004) examined the effect of the privatisation programme on firms' efficiency. He analysed data from six privatised Malawian firms during 1984-91, three SOEs, and six private firms. He used panel regression analysis to examine data collected on these firms from 1970-97. Chirwa found that: 1- the privatisation programme increased the technical efficiency of privatised firms, whilst at the same time increased the efficiency of all firms (industry effects); and 2- other factors included capital intensity, multi-nationality, and structural adjustment programme impact of the technical firm's efficiency. This study suggested that competitive environments may be needed to optimise the efficiency gained from privatisation.

Otchere (2002) tested the impact of privatisation on the stock prices of competitive firms. He examined the stock price reaction of 314 industry counterparts to the privatisation announcement versus 121 firms to be privatised via IPOs. He used a data set of 29 developed and developing countries and 28 industries. He found that 1- competitors reacted negatively to privatisation announcements, losing 1.72% of their value over the third day and 1.64% in the fifth day after the announcement; 2- the reaction of
competitor firms in developing countries were stronger than in developed
countries; and 3- the reaction of rivals to a full privatisation announcement was
larger than that of a partial privatisation announcement.

Eckel, Eckel, and Singal (1997) analysed the effect of privatisation on the
performance of British Airways by testing the privatisation’s impact on airfares
and competitors’ stock prices. In particular, the impact of British Airways’
privatisation on US airlines was identified as its close competitors in
international markets. The results of this study indicated that stock prices of
British Airways’ competitors fell abnormally, and the degree of this falling
depended on the degree to which they competed with British Airways. For
instance, US competitors’ stock price fell a significant 7 per cent British Airway’
privatisation. The study concluded that when a firm is privatised, several
factors change simultaneously: the ownership changes from the state to
private hands, the firm’s objective change to profit maximisation, and change
in regulation designed to enhance competition in product markets are likely to
take place.

Vining and Boardman (VB, 1992), examined the impact of ownership
structures and the degree of competition in determining the efficiency of SOEs.
VB used the same approach as that used in their study in 1989, and used a
sample of 12 SOEs and 93 Canadian private firms to re-examine the state
versus private ownership. They argued that at low levels of competition, the
differences between public and private ownership would be insignificant, as
both types of firms would adopt similar "rent-seeking behaviour." When
competition increases, private ownership offers incentives and motivation for managers to productively adopt profit-maximising behaviour.

4.4.4 Summaries of studies related to performance and firms size

Moen (1999) examined the impact of firm size of 335 small and medium-sized Norwegian firms that participated in the competitive advantages and export motives of industrial firms. He found that (i) small firms tend to have a strong advantage with regard to products and technology, while they are weaker than larger firms with regard to marketing; (ii) the relationship between firm size and competitive advantage appears to be nonlinear. The proactive motives for exporting are more important than the incidental or reactive motives, regardless of firm size; (iii) comparing export motives by firm size shows that positive motives are more important for large firms than for small firms, and (iv) small firms have different competitive advantages from larger firms, not that they are less competitive. This result is due to the most competitive small firms being connected to international markets.

Peter and Sarah (2004) investigated the relationship between the performance of an organisation and three variables: the size of the organisation, the financial performance of the organisation, and the environmental performance of the organisation. They tested panel data in developed countries from 1987 to 1992. They concluded that a firm's performance is indeed impacted by the size of the firm, and the level of profitability of the firm.
Ram and Mayank (2002) tested the relationship between firm's size and their financial performance. They focused on two sectors, one high performing and another low performing, to determine the impact of the firm size and performance in varying financial, socio-economic conditions. They performed an analysis of 40 and 42 firms of textile mills and transportation equipment industries, respectively, over a time span of eight years, 1992-2000. They found firm size effects through capital market conditions' dimensions. Increased firm size works positively through larger and bigger investors' and bankers' mindset leading to more analysts and fund managers tracking the firm. Also, larger firms have lower costs of capital apart from higher market capitalisation. They concluded that firm size was the most important factor influencing its financial performance.

4.4.5 Discussing the studies related to the impact of ownership structures, pre-privatisation experience, and/or competitive environment on the post-privatisation performance

For studies that are related to the impact of ownership structures, it is clear that: 1- the performance of the privatised firm is improved, when new managers are brought in to manage a firm after the privatisation process, compared with situations when the original managers are retained; 2- the majority ownership by outside investors is associated with significantly greater performance improvement than with any form of insider control; and 3- private ownership is associated with better firm level-performance than with continued state ownership. Furthermore, concentrated private ownership is associated with greater performance improvement than with diffuse ownership. At the same
time, foreign ownership is associated with greater post-privatisation performance improvement than with purely domestic ownership (Megginson, 2005, p184). In addition to this, selling firms to outsiders is linked more to firm level restructuring than to insider privatisation or pre-privatisation experience as SOEs.

According to the above, the study in this thesis tries to examine the impact of new ownership structures for Egyptian privatised firms, whether they are full or partial privatisation. In other words, the question is:

"Does the ownership structure of newly privatised Egyptian firms really matter?"

For studies that are related to the impact of firm size the researcher concludes three results, which are: i) firm size was the most important factor influencing its financial performance; ii) small firms have different competitive advantages from larger firms; and iii) most competitive small firms are connected to international markets. The question here is:

"Does the size of firms impact on the performance of newly privatised Egyptian firms?"

For studies that are related to the impact of competition, three results can be conclude from these studies, which are: (i) low levels of competition, and the differences between public and private ownership would be insignificant; (ii) the reaction of competitor firms in developing countries were stronger than in developed countries; (iii) competition and privatisation are complements, in that competition increases the gains from privatisation, and vice versa. In addition,
competition led to higher employment, higher output, and faster network expansion. Also, the question now is:

"What is the role of the competitive environment on the performance of newly privatised Egyptian firms?"

In summing up, most empirical studies, which are related to the impact of ownership structures, pre-privatisation experience, and/or competitive environment on the post-privatisation performance, have tested the only one factor on the performance of privatised firms following privatisation, without combining these factors together to explain the impact of these factors on the post-privatisation performance.

In this research, the study will test all these factors together on the performance of Egyptian privatised firms, which were privatised during 1991-2004 to test the third hypothesis of this thesis, which is "There is an environmental impact on the performance of the firms after privatisation", by combining the impact of the pre-privatisation experience and post-privatisation environment upon the post-privatisation performance.

4.5 Summary

Privatisation has been a major political and economic phenomenon over the past few decades, and researchers continue to target it for both theoretical and empirical work.
Empirically, many previous studies focus on comparing pre- and post-privatisation financial and operating performance of former SOEs. Megginson, Nash, and Randenborgh, 1994; Boubakri and Cosset, 1998; and D'Souza and Megginson, 1999 confirmed that privatisation, in general, leads to a significant increase in profitability, efficiency, and capital investment spending, output, and dividend payout. In addition, a significant decrease in leverage is documented, though there is no consensus as to the impact of privatisation on the level of employment.

However, these studies and other related empirical works such as Boardman, Laurin, and Vining (2003), Saal and Parker (2003), Sun and Tong (2003), Verbrugge, Owens and Megginson (2000), and Omran (2001) are unable to determine whether these results are due to the privatisation process itself or to other factors, since they do not consider a benchmark of control firms matched to their sample firms. Boubakri and Cosset (1998) tried to test whether some of the performance might be attributed to economy-wide effects, by using market-adjusted accounting performance measures, but they did not consider industry performance benchmarks because of data limitations.

According to Megginson and Netter (2001), it is hard to compare SOEs to privately owned firms due to two methodological difficulties. The first difficulty is related to the problem of determining the appropriate set of benchmarks, especially in developing economies with a limited private sector. The second difficulty is that, generally, there are fundamental reasons why certain industries are government-owned and others are privately owned.
Despite these difficulties, some researchers have successfully compared the performance of SOEs with privately owned firms. Dewenter and Malatesta (2001) found that private firms are significantly more profitable, have less debt, and less labour-intensive than SOEs. Tian (2000) found that Chinese private firms perform at a significantly superior level to that of mixed enterprises. Vining and Boardman (1992) and Boardman and Vining (1989) noted that private firms are significantly more profitable and efficient than SOEs and mixed-ownership enterprises. Also, LaPorta and Lopez-de-Silanes (1999) documented significant improvements in privatised firms as far as output and sales efficiency were concerned, concluding that the performance of privatised firms narrows when compared with privately controlled firms.

By mapping the previous studies discussed in this chapter, it has been found that most empirical studies, related to the privatisation issue, examine the financial and operational performance of privatised firms without comparing the changes in the values of the performance indicators of privatised firms with those performance indicator values of the private ones. In this thesis, the researcher will test the performance changes of privatised Egyptian firms after matching them to control firms (private firms) based on size and industry. The originality of this comparison is to evaluate the values of these indicators according to the type of privatisation (full and partial privatisation) in Egypt as a developing country, which has a different environment form other studies and has been neglected in the literature. In addition, the study is combines the impact of the pre-privatisation experience and post-privatisation environment

29 Appendix 4-1 shows a summary of the empirical studies presented in this chapter.
Upon the post-privatisation performance. So, this study represents the first research in Egypt that evaluates and compares the performance of privatised firms with the performance of private firms.

As a last word, although privatisation issue has extensively been examined in the literature of developed countries, the issue is still under development in the developing countries and in particular Egypt. Figure 4-1 represents the conceptual framework that will be the basis for the issues examined in the empirical study for this thesis.

In the next chapter, the study will explain the research design and data methodology in two sections. Section One will show how data have been collected. Section Two will describe the methodology and statistical tests to be used in this study.
Figure 4-1 Conceptual framework for this research
CHAPTER 5        RESEARCH DESIGN AND DATA

METHODOLOGY

5.1 Introduction

The word "research" has a Latin origin meaning to know. It is a systematic and repeated process that identifies and defines the problems, within certain limits. It uses well-designed methods to collect data and analyse results.

The word "Methodology" refers to the theoretical analysis of the methods appropriate to a field of study or to the body of methods and principles particular to a branch of knowledge. Methodology includes the following concepts that relate to a particular discipline or field of inquiry: (i) a collection of theories, concepts or ideas; (ii) comparative study of different approaches; and (iii) critique of the individual methods (Creswell, 2003).

The term "research methodology", in general, refers to the strategy that will be followed in order to achieve the objectives of the study.

As seen from Chapter Four, the study concluded that most empirical studies, related to the evaluation of the performance of privatised firms, have used the MNR methodology. Furthermore, most of these studies focus on comparing pre- and post-privatisation, without directly testing the performance of privatised firms
with private ones. In this chapter the study explains the methodology to use in this research to evaluate the performance of privatised firms as compared to private firms.

The remainder of this chapter is organised as follows. The major approaches of research methodology are described in the second section. Section three articulates the objectives of study. Section four develops the main hypotheses for this study. Analysis methodology of the research and the statistical analysis techniques that will be used in order to obtain useful information about the impact of the privatisation programme on the performance of privatised firms are described in the fifth section. Sections six and seven explain the variables of the study and their measures. Section eight focuses on the data-set and the resources of data; including: the nature of research data, sources of data, the sample of privatised Egyptian firms, and the sample of Egyptian private firms. The summary chapter is set out in section nine.

5.2 Approaches of research methodology

Overall, there are two major approaches of research methodology: quantitative and qualitative. The term "quantitative research" is often used in the social sciences, which may include: the generation of models, theories and hypotheses; the development of instruments and methods for measurement; experimental control and manipulation of variables; collection of empirical data; modelling and analysis of data; and evaluation of results.
Quantitative research is appropriate for measuring both attitudes and behaviour. It is specifically designed to produce accurate and reliable measurements that permit statistical analysis, through advanced statistical techniques such as correlation, regression, cluster analysis or factor analysis, which depend on the data gained from populations that are large enough to permit such analysis (Hancick, 1998). Quantitative research is widely used in both natural sciences and social sciences, from physics and biology to sociology and journalism. It is also used as a way to examine different aspects of education.

Quantitative research can be used to predict whether or not a proposed model would act in a certain way based on an observable characteristic\(^\text{30}\). The following is a list of the main advantages of the quantitative methodology as: 1- the ability to effectively translate data into easily quantifiable charts and graphs (easily comparable data); 2- it allows the researcher to measure and control variables; and 3- the results are projectable to the population. On the other hand, there are some disadvantages of the quantitative methodology, which are: 1- the quantitative approach is weak in understanding social processes; 2- it needs a large number of samples; and 3- it is not flexible; often direction cannot be changed once data collection has started.

On the other hand, "qualitative research" is one of the two major approaches of research methodology in social sciences. It uses qualitative data which is collected from many sources, such as interviews, documents, and participant observation.

\(^{30}\) For more details about quantitative and qualitative research, please see: http://linguistics.byu.edu/faculty/henrichsen/researchmethods/RM_1_01.html
data, to understand and explain social phenomena. Qualitative research reveals areas of consensus, either positive or negative, in the patterns of response. It also determines which ideas generate a strong emotional response. Thus, it is especially useful in situations which involve the ongoing development and refinement of new ideas. Qualitative research requires a lower level of skill in both statistics and experimental design (El-Kahlout, 2001).

However, the researcher must have the experience and conceptual framework that allow for accurate and meaningful observation and analysis of the internal operations of systems. There are four key advantages of the qualitative methodology, which are: 1-it facilitates understanding of how and why; 2-it enables the researcher to be alive to the change which occurs during the research process; 3-it is good for understanding social process; and 4-it allows interaction between group members. The disadvantages of the qualitative methodology are as follows: 1-the data collection process can be time consuming; 2-the data analysis process is difficult; 3-it is generally perceived as less readable by non-researchers; and 4-it is unreliable as predictors of the population (El-Kahlout, 2001). It can expand our list of possibilities, but they cannot be used to identify the best of the possibilities. Table 5-1 summarises the general characteristics of the qualitative and quantitative methodology.
Table 5-1 General characteristics of the qualitative and quantitative methodology

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Quantitative Methodology</th>
<th>Qualitative Methodology</th>
</tr>
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<tbody>
<tr>
<td>Approach</td>
<td>Deductive</td>
<td>Inductive</td>
</tr>
<tr>
<td>Research Focus</td>
<td>Isolates variables, uses large samples, is often anonymous to participants, and uses test and formal instruments.</td>
<td>Examines full context, interacts with participants, and collects data face to face from participants.</td>
</tr>
<tr>
<td>Purpose</td>
<td>Theory testing, prediction, and establishing facts.</td>
<td>Describing multiple realities, developing deep understanding, capturing everyday life.</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>Mainly statistical, quantitative.</td>
<td>Mainly interpretive, and descriptive.</td>
</tr>
<tr>
<td>Research Plan</td>
<td>Is developed before the study is initiated, structured, formal proposal.</td>
<td>Begins with an initial idea that evolves as the researcher learns more about participants and setting, flexible.</td>
</tr>
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</table>

Source: El- Kahlout (2001)

It is worth mentioning, in this context, that this research employs a quantitative approach to investigate the impact of privatisation on the performance of newly privatised Egyptian firms. There are two reasons to choice a quantitative approach. Firstly, quantitative data are available, and so this approach is practicable. Secondly, a quantitative approach is more objective and allows research hypotheses to be tested.

5.3 Objectives of the study

As mentioned previously, in chapter four, most empirical studies on privatisation examined the financial and operating performance of privatised firms or compared the performance of SOEs to private firms without testing the performance of
privatised firms to private firms; in this study, the researcher tests the performance changes of privatised Egyptian firms after matching them to control firms (private firms) according to size and industry. Hence, this study is not limited only to determine whether privatisation increases profitability, operating efficiency, output, and decreases employment levels, and leverage, but will also test whether the performance of privatised firms matches private firms. Furthermore, the study extends previous research by examining the impact of the post-privatisation environment on post-privatisation performance.

5.4 Research hypotheses

As one main reason to adopt the privatisation programme in Egypt was the bad situation of SOEs by beginning 1990s, poor management and weak capitalisation of SOEs led to a negative effect on their efficiency and financial viability. A more competitive environment should become a trigger for improved performance, which would suggest the following hypotheses:

Hypothesis No.1

*Privatisation leads to improvement in the performance of privatised firms following privatisation.*

To test for this hypothesis, five sub-hypotheses are to be examined as follows:
1/1 **Privatisation improves the profitability of privatised firms**

The study will test this hypothesis through four sub-hypotheses:

1/1/1 There is a significant increase in real earnings before interest and tax following privatisation.

1/1/2- There is a significant increase in the return on sales following privatisation.

1/1/3- There is a significant increase in the return on assets following privatisation.

1/1/4- There is a significant increase in the return on equity following privatisation.

1/2- **Privatisation improves the operating efficiency of privatised firms.**

The study will test this hypothesis through two sub-hypotheses:

1/2/1- There is a significant increase in sales efficiency following privatisation.

1/2/2- There is a significant increase in income efficiency following privatisation.

1/3- **Privatisation leads to an increase in outputs.**

The study will test this hypothesis through the following sub-hypothesis:

1/3/1- There is a significant increase in real sales following privatisation.

1/4- **Privatisation leads to a decrease in leverage ratios of the privatised firms.**

The study will test this hypothesis through two sub-hypotheses:
1/4/1- There is a significant decrease in the ratio of the total debt to total assets following privatisation.

1/4/2- There is a significant decrease in the ratio of the total debt to total equity following privatisation.

1/5- Privatisation leads to decrease in the employment of privatised firms.

Although there is no consensus on whether privatisation will lead to an increase or decrease in the number of employees such as Megginson (2005) who noticed that there are unclear effects of privatisation on employment, the study will examine the impact of privatisation on the level of employment.

1/5/1 - There is a significant decrease in the number of the employees following privatisation.

However, to ensure that the improvement in performance of privatised firms results from the privatisation itself, the study will test the improvement of the performance of privatised firms by comparing them to the performance of private firms, similar in size and industry.

Hypothesis No.2

The performance of privatised firms following privatisation is similar to the performance of their counterpart from the private sector.
To test for this hypothesis, five sub-hypotheses\(^{31}\) are to be examined as follows:

2/1- There is no significant difference in the profitability ratios between the privatised firms and their counterpart from private sector.

The study will test this hypothesis through four sub-hypotheses:

2/1/1- There is no significant difference in the real earnings before interest and tax between the privatised firms and their counterpart from private sector.

2/1/2- There is no significant difference in the return on sales between the privatised firms and their counterpart from private sector.

2/1/3- There is no significant difference in the return on assets between the privatised firms and their counterpart from private sector.

2/1/4- There is no significant difference in the return on equity between the privatised firms and their counterpart from private sector.

2/2- There is no significant difference in the operating efficiency ratios between the privatised firms and their counterpart from private sector.

The study will test this hypothesis through two sub-hypotheses:

2/2/1- There is no significant difference in the sales efficiency between the privatised firms and their counterpart from private sector.

\(^{31}\) Null hypotheses are chosen, because the performance is expected to be the same for privatised and private firms.
2/2/2- There is no significant difference in the income efficiency between the privatised firms and their counterpart from private sector.

2/3- There is no significant difference in the outputs between the privatised firms and their counterpart from private sector.

The study will test this hypothesis through the following sub-hypotheses:

2/3/1- There is no significant difference in the real sales between the privatised firms and their counterpart from private sector.

2/4- There is no significant difference in the leverage ratios between the privatised firms and their counterpart from private sector.

The study will test this hypothesis through two sub-hypotheses:

2/4/1- There is no significant difference in the ratio of the total debt to total assets between the privatised firms and their counterpart from private sector.

2/4/2- There is no significant difference in the ratio of the total debt to total equity between the privatised firms and their counterpart from private sector.

2/5- There is no significant different in the employment level between the privatised firms and their counterpart from private sector.

2/5/1- There is no significant difference in the number of employees between the privatised firms and their counterpart from private sector.
To test if the improvement in performance of privatised firms results from the new environment, the study will examine the impact of the new environment for the privatised firms on their performance according to four factors which are: (i) the size of the privatised firm, (ii) the state percentage in ownership structure, (iii) the performance of the firm pre-privatisation, and (iv) the performance of counterpart private firm (the competitor firm).

Hypothesis No.3

There is an environmental impact on the performance of the firms after privatisation.

To test for this hypothesis, four sub-hypotheses are to be examined as follows:

3/1- There is a significant impact of the competition on the performance of privatised firms following privatisation.

3/2- There is a significant association between the performance of pre-privatisation firms and their performance following privatisation.

3/3- There is a significant impact of the ownership structure on the performance of privatised firms following privatisation.

3/4- There is a significant impact of the size\(^{32}\) of privatised firms on their performance following privatisation.

\^{32}\text{Note that here size is being used as a control variable.}
5.5 Analysis methodology

To be comparable with the empirical results documented in other studies that test the economic impact of privatisation programmes, the study examines the same variables used in Megginson, Nash, and van Randenborgh (MNR, 1994), Boubakri and Cosset (1998), Chen, Michael, and Oliver (2005), and D'Souza and Megginson (1999). The studies that employ the MNR methodology have two main advantages. Firstly, they are the only studies that can examine and directly compare large samples of economically significant firms from different industries, privatised in different countries, and over different time periods, this methodology allow one to aggregate efficiently multinational and multi-industry results. Secondly, focusing on Share Issue Privatisation (SIPs) yield a selection bias, it also yields samples that include the largest and most political influential privatisation. SIPs account for more than two-thirds of the $1 trillion of total revenues raised by governments since 1977 (Megginson, 2001, pp.28-29).

The methodology used in this research incorporates many accounting performance measures, according to the international accounting standards (IAS), that allows for the comparison between pre- and post-privatisation performance in the first stage; then compares the change in the performance of privatised firms following privatisation (test group) with the change in the performance of private firms (control group) in the second stage by using the MNR, 1994 methodology, which will be explained in the next sub-sections.
In addition to comparing the mean and median performance measures pre-and post-privatisation in the first stage, and comparing the performance measures for privatised firms following privatisation with their counterparts from the private sector in the second stage, the study also develops regression models to explain the change in the performance from pre-privatisation to post-privatisation. The regression model allows for an examination of the impact of ownership structure, firm size, and the performance of both the privatised firm pre-privatisation and its counterparts on the performance of the privatised firm post-privatisation. The model is:

\[ Y_{i,t} = \alpha + \beta_1 \log(SIZE)_{i,t} + \beta_2 APOSPF_{i,t} + \beta_3 V_i + \beta_4 X_{i,t} + \epsilon_{i,t} \]

where:

- \( Y_{i,t} \) is the performance measurement in year \( t \) of the privatised firm \( i \) after privatisation. It is the dependent variable. The structure of the model has regard for substituting different dependent variables. The dependent variables are percentage in earnings before interest and tax / sales (ROS), earnings before interest and tax / assets (ROA), earnings before interest and tax / equity (ROE), earnings before interest and tax deflated by the consumer price index (EBIT), real sales deflated for the change in inflation (SAL), sales per employee (SALEFF), EBIT per employee (INEFF), the total number of employees (EMPL), total debt to total assets (TDTA), and total debt to total equity (TDTE); and
Log (size),, is log (size) in year , of the privatised firm after privatisation; and

APOSPE, t is the actual percentage of state ownership in year , of the privatised firm after privatisation; and

V, is the mean performance of firm over 3 year's pre-privatisation; and

X, t is the actual performance measurement in year , for the matched private firm in the control group.

5.6 Variables and their measures

This research uses financial variables to determine whether privatisation increases: (1) profitability, (2) operating efficiency, (3) output; and decreases: (4) employment levels, and (5) leverage.

Profitability is measured by four proxies: real earnings before interest and tax (EBIT), which refers to nominal EBIT deflated by the consumer price index, then normalising them to unity in the year of privatisation (year 0); return on sales (ROS); return on assets (ROA); and return on equity (ROE), which refers to earnings before interest and tax divided by sales, assets, and equity, respectively.

Operating efficiency is determined by two variables: sales efficiency (SALEFF) and income efficiency (INEFF), which refers to sales per employee and EBIT per

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33 Financial ratio analysis is a technique for trying to help interpret financial accounts. These ratios will help us to examine the firm’s performance over a number of periods by comparing the same ratios in previous years’ accounts and also the accounts of other firms operating in a similar sector.

34 Net income might be affected by several variables such as taking tax credits that do not relate to the current year's performance; also, sell some assets before or after privatisation and then reporting capital gains in income statements, leads to falsely an increase in net income. Furthermore, the effects of levels of debt in the post-privatisation period may leads falsely increase in net income. For these reasons, the study will computed the profitability ratios using profit before interest, and taxes, in order to reflect the operating income of the firm- instead of using net income.
employee, respectively. Output is proxied by real sales (SAL) that are computed using the normalisation method after adjusting sales for inflation. Employment is measured as the total number of employees (EMPL). With respect to leverage, it refers to total debt to total assets (TDTA) and total debt to total equity (TDTE). Table 5-2 presents details on each of the ten ratios used to analyse the performance of the privatised firms in the pre- and post-privatisation periods. The ten ratios are grouped under five common indicators used to examine privatised firms’ performance.

Following the MNR 1994 methodology, the researcher calculated the above specified ratios for every firm, at least, for two years before and two years after privatisation. The study then calculated means and medians of each ratio for the pre-privatisation (years -2 to -1) and post-privatisation (years +1 to +2) period. The year of privatisation (year 0) is excluded from the analysis, because it included both public and private ownership phases of the firm. Therefore, the minimum time-interval data for each firm is 5 years (from at least year -2 to year +2).

Except for real sales, sales efficiency, and net income efficiency, the researcher used nominal data for the calculation of ratios. For calculations of real sales, sales efficiency, and net income efficiency, sales and net income, data are deflated using the consumer price index (CPI) values in Egypt. For these variables, the researcher computed an index normalised to unity for year 0 (the year of privatisation). Other years (year -2, year -1, year +1, and year +2) are expressed relative to unity.
Table 5-2 The financial and operating variables used in this research

This table details the economic characteristics that the study examines for changes resulting from privatisation.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Indicator</th>
<th>Predicted Relationships**</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Profitability</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>↓ Earnings before Interest and Tax (EBIT) = Nominal EBIT (LE '000) deflated by the consumer price index, normalised to unity in the year of privatisation (year0).</td>
<td>EBITA &gt; EBITB</td>
<td></td>
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<tr>
<td>↓ Return on Sales (ROS) = Earnings before interest and tax divided by sales.</td>
<td>ROSA &gt; ROSB</td>
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<tr>
<td>↓ Return on Assets (ROA) = Earnings before interest and tax divided by total assets.</td>
<td>ROAA &gt; ROAB</td>
<td></td>
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<tr>
<td>↓ Return on Sales (ROE) = Earnings before interest and tax divided by total equity.</td>
<td>ROEA &gt; ROEB</td>
<td></td>
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<tr>
<td><strong>Operating efficiency</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>↓ Sales efficiency (SALEFF) = Sales divided by number of employees, normalised to unity in the year of privatisation (year 0).</td>
<td>SALEFFA &gt; SALEFFB</td>
<td></td>
</tr>
<tr>
<td>↓ Net income efficiency (INEFF) = Net income divided by number of employees, normalised to unity in the year of privatisation (year 0).</td>
<td>INEFFA &gt; INEFFB</td>
<td></td>
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<tr>
<td><strong>Output</strong></td>
<td></td>
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<tr>
<td>↓ Real Sales (SAL) = Nominal sales deflated by the consumer price index, normalised to unity in the year of privatisation (year 0).</td>
<td>SALA &gt; SALB</td>
<td></td>
</tr>
<tr>
<td><strong>Employment</strong></td>
<td></td>
<td></td>
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<tr>
<td>↓ Total employment (EMPL) = Total number of employees.</td>
<td>EMPLA &lt; EMPLB</td>
<td></td>
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<tr>
<td><strong>Leverage</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>↓ Long term debt to assets (TDTA) = Long term debt divided by total assets.</td>
<td>TDTAa &lt; TDTAa</td>
<td></td>
</tr>
<tr>
<td>↓ Long term debt to equity (TDTE) = Long term debt divided by total equity.</td>
<td>TDTEa &lt; TDTEa</td>
<td></td>
</tr>
</tbody>
</table>

**A= after privatisation, B= before privatisation.

The researcher uses nominal values of earnings before interest and tax to calculate ROS, ROA, and ROE ratios; they are not adjusted for inflation or normalised as in the computation of EBIT.
Before testing for the significant changes in performance, the study employed several tests; which are: standardized skewness and the standardized kurtosis to determine whether the accounting performance measures of privatised and private firms can be adequately modelled by a normal distribution.

The study expected that these variables are not normally distributed, so the non-parametric Wilcoxon signed-rank test was adopted to test for significant differences in performance based on median values. In addition, the study used the parametric t-test for significant changes in mean, but since the test for normality might be rejected for most variables, this would violate one of the important assumptions underlying the t-test.

The study depended on the non-parametric results only, given that Barber and Lyon (1996), among others, show that the non-parametric Wilcoxon test statistics are uniformly more powerful than parametric t-statistics, when data are not normally distributed. Furthermore, a proportion test is used to determine whether the proportion (p) of firms that has experienced changes in a given direction is greater than the proportion of the companies expected by chance.35

In the light of the above, it is interesting to understand what is the exact impact of privatisation on the performance of privatised firms, and to determine whether all changes in privatised firms are attributed to privatisation or to other exogenous variables. To answer this question, the study identified sub-samples of private firms

35 Typically the study tests whether, \( p = 0.50 \).
(54 private firms), according to the industry classifications and size, to serve as benchmarks for privatised firms. Thus, the study will measure the performance of the privatised firms, after privatisation, relative to the performance of already private ones. To do that, the study tested for the significant differences in performance changes between privatised firms and private ones by employing the Mann-Whitney test for the significant difference in medians. To overcome the problem of different past performance between privatised and private firms, the study used the absolute and relative performance change methods to measure the variables as the following:

(a) Absolute performance change method

To test for the significant differences in performance indicators between privatised and private firms, the study adjusts the data to ensure that such comparisons are valid. The method used calculates the absolute change in mean performance for each firm, privatised or private, as follows:

$$APC = P_{i,t} - P_{i,t-1}$$  \hspace{1cm} \text{Equation 5-1}

where:

- APC = the absolute performance change;
- $P_{i,t}$ = the mean performance in the post-privatisation period; and
- $P_{i,t-1}$ = the mean performance in the pre-privatisation period.

The same equation is applied to calculate the absolute performance change for private firms by considering year 0 for each private firm as the year of privatisation of the sample matched privatised firm, so the study has mean performance prior to the date of this year and mean performance after the date of the same year.
(b) Relative performance change method

Since absolute changes are problematic as a measure of performance when the measure of performance itself is an absolute measure, the study also calculates the post-privatisation performance relative to the pre-privatisation for each firm, privatised and private firms, as follows:

\[ RPC = \frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}} \]  

Equation 5.2

where:

\( RPC \) = the relative performance change;
\( P_{i,t} \) = the mean performance in the post-privatisation period; and
\( P_{i,t-1} \) = the mean performance in the pre-privatisation period.

The same equation is applied to calculate the relative performance change for private firms by considering year 0 for each private firm as the year of privatisation of the sample matched privatised firm.

5.7 Variables and their measures for regression model

The regression model that is used in this research tests the impact of the post-privatisation sectoral environment (\( X_{it} \)) and the pre-privatisation output (\( V_i \)) on post-privatisation performance (\( Y_{it} \)).

For the performance of the privatised firm pre-privatisation (\( V_i \)), the study calculates the average performance of each performance measurement for 3 years\(^{36}\) before privatisation (years, -3 to -1). The performance measurement of the

\(^{36}\) Three years rather than one year were chosen so that the prior performance is more typical.
privatised firm post-privatisation \((Y_i)\) calculates as the actual\(^{37}\) performance of each performance measurement for 3 years following privatisation \((+1\text{ to } +3)\). The study uses the actual performance data in the same period \((+1\text{ to } +3)\) for the private firms \((X_i's)\), which together represent the control group or competitive group. For ownership structure, the study uses the actual percentages of the ownership of the state in the privatised firm through three years after privatisation. The size of privatised firms following privatisation is measured as the log of total assets\(^{38}\) for each of the three years after privatisation.

The same methodology will be used to examine the impact of the post-privatisation sectoral environment – especially the impact of competition through the passage of time- for the third year after privatisation and for year 2004.

5.8 Data set and sources

5.8.1 The nature of research data

All data used in appraisals and research studies should be current, relevant, reliable, accurate, and conceptually correct. All data sources are not created equal. Some reference material has more value than others do. This does not mean that value equals a greater quantity of information. The actual value involves the quality of the information provided. The nature of data can be put into the two general categories of being either primary or secondary.

\(^{37}\) The actual data are more accurate than average data.

\(^{38}\) Using log of total assets is more accurate than using absolute value to avoid the discrepancies between the absolute value of total assets of privatised and private firms.
"Primary data" are information that researchers gather first hand for a specific research goal. It is reliable data because the researcher knows where it came from and what was done to it. There are many sources to gather primary data such as: interviews, direct observation, and logs (e.g. fault logs, error logs, complaint logs).

"Secondary data" are data collected for a different study, used again for a new research question. It represents information from secondary sources, may include published or unpublished work based on research that relies on primary sources of any material other than primary sources used to prepare a written work. Secondary data exists in published sources such as: research articles, industry financial statements, TV, radio, internet, magazines, newspapers, reviews, stories told by people you know, and so on. Secondary data has been pre-processed to give totals or averages and the original details are lost so you cannot verify it by replicating the methods used by the original data collectors. Finally, primary data are expensive and difficult to acquire, but they are more trustworthy. Secondary data are cheap and easy to collect, but must be treated with caution.

According to these types of data, the researcher depends only on the secondary data because the research goals can be achieved by using secondary data only. The sources of these data will be explained in the next section.

5.8.2 Sources of data

The data of privatised firms are collected from two sources, which are: (1) the Public Sector Information Centre for the privatised firms in the pre-privatisation
data; and (2) the Egyptian Capital Market Authority for the privatised firms in the post-privatisation period as well as for data about the private firms, which are listed in the stock exchange. In addition to that, key accounting data as well as annual reports are obtained from the following sources: Cairo & Alexandria Stock Market Exchanges (CASE), Kompass Egypt Financial year book\textsuperscript{39} (financial statements from 1994 to 2006), and the financial reports from each private company itself. Also, there are the annual reports and corporate announcements published in official newspapers.

5.8.3 The Study sample

Most empirical studies on privatisation examine the financial and operating performance of privatised firms without directly comparing the performance of privatised firms with private ones. In order to investigate the impact of privatisation on the performance of newly privatised Egyptian firms before and after privatisation versus the performance of the existing private firm of similar industry and size, in this study data were collected for both privatised and private firms according to size and industry as follows:

5.8.3.1 Data of privatised Egyptian firms

The Egyptian government started its privatisation programme during the 1990s. The first stage in the privatisation process started in May 1991. After the initial

\textsuperscript{39} Kompass Egypt Financial Year Books represent a rich source of financial accounting information, and display the financial statistics of privatised firms, SOEs, and private firms in Egypt in a consistent manner.
privatisation boom in the late 1990s, the process stagnated. The government still keeps control over big and important enterprises, and has been only willing to give up ownership rights to smaller firms. The number of the Egyptian privatised firms, classified by industry and method of sale, is explained in Table 5-3.

It is clear from Table 5-3 that Egypt's privatisation programme had a slow beginning; but actually fully started in 1994, as only 10-20 per cent of the shares were allowed to be sold. However, the Egyptian privatisation programme was accelerated by the new appointed cabinet in 1996. When the new cabinet began to publicise its programme to privatise Egypt's state of enterprises, the programme attracted international interest; the government sold more than 50 per cent of its stakes in SOEs in order to improve the supply of stocks on the exchange. The three hundred and fourteen SOEs were grouped in 1991 under twenty-seven holding companies (reduced to ten holding firms thereafter) responsible for all sub-firms (affiliates) in a particular sector; 72% of these firms had been privatised by the end of 2006. The Egyptian government concentrated on full privatisation (161 firms representing 72% of the privatised firms) more than partial privatisation (65 firms representing 28% of the privatised firms) to increase the stocks' supply on Egypt's capital market. So, the value of privatised firms accelerated significantly until the end of 1999.
Table 5-3 Number of privatised firms in Egypt\(^{40}\) according to the methods of privatisation

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<td><strong>Firms sold as full privatisation to:</strong></td>
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<tr>
<td>The public (through the stock market(^{41}))</td>
<td>1</td>
<td>14</td>
<td>14</td>
<td>8</td>
<td>1</td>
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<td>38</td>
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<tr>
<td>Anchor investors</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>9</td>
<td>5</td>
<td>4</td>
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<td>37</td>
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<tr>
<td>Labour unions(^{42})</td>
<td>7</td>
<td>3</td>
<td>3</td>
<td>12</td>
<td>5</td>
<td>1</td>
<td>2</td>
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<td>33</td>
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<tr>
<td>Firms sold as assets (Liquidation)</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>6</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>7</td>
<td>3</td>
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<td>11</td>
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<td><strong>Firms sold as partial privatisation to:</strong></td>
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<tr>
<td>Firms with more than 40% of its equity sold through stock market</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td></td>
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<tr>
<td>Firms with less than 40% of its equity sold through stock market</td>
<td>2</td>
<td>1</td>
<td>2</td>
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<tr>
<td>Firms sold as assets</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>3</td>
<td>1</td>
<td>6</td>
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<td>27</td>
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<tr>
<td>Partial privatisation through leases</td>
<td>1</td>
<td>6</td>
<td>10</td>
<td>1</td>
<td></td>
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<tr>
<td><strong>Total year by year</strong></td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>6</td>
<td>13</td>
<td>12</td>
<td>25</td>
<td>27</td>
<td>32</td>
<td>31</td>
<td>21</td>
<td>12</td>
<td>3</td>
<td>9</td>
<td>14</td>
<td>10</td>
<td>3</td>
<td>226</td>
</tr>
</tbody>
</table>

| %   | %   | %   | %   | %   | %   | %   | %   | %   | %   | %   | %   | %   | %   | %   | %   | %   | %   |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| .04 | .4  | .04 | 1.3 | .04 | .04 | .27 | 5.8 | 5.3 | 11  | 12  | 14  | 14  | 14  | 14  | 14  | 14  | 14  | 14  | 100  |


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\(^{40}\) The number of privatised firms classified by the method of sale, year-by-year, and according to the type of industry.

\(^{41}\) It means that the sale was through an Initial Public Offering (IPOs).

\(^{42}\) Employees shareholders association (ESA).
However, the shortage in liquidity, the foreign currency crisis, and the overall negative performance of the Egyptian Stock Market led to a delay in the implementation of the privatisation programme.

The data set for privatised firms was obtained from the Egyptian firms that had been privatised and have at least 2 years of both before and after privatisation data to allow time for the programme to stabilise. Thus, the study period will be covered from 1994 to 2004.

According to the Egyptian privatised firms, which are covered in Table 5-3, the total number of privatised firms reached 226 in December 2006. However, excluding some types of privatisation, namely, leases (21 firms); asset sales (27 firms), and liquidations (53 firms), this left a population of only 125 firms. Excluding firms with less than 2 years of post-privatisation data (approximately one firm) further reduced the sample to 124 firms. Also, excluding firms that were privatised out of an IPO\(^\text{43}\) (37 firms were sold to Anchor Investors and 33 firms were sold to the ESA). The final sample thus consists of 54 privatised firms, of which 38 fully privatisation and 16 partially privatisation.

Tables 5-4 and 5-5 show the distribution of these firms according to the type of industry, in which each firm operates and the names of these firms, respectively. The sample of privatised firms is well diversified because it displays a wide dispersion through different kinds of industries. This sample

\(^{43}\) These companies are not registered on the Stock Exchange, and therefore there is a lack of financial statement data for those companies for five years.
includes all firms that were sold to the public by flotation through a share issue; because the firms that are sold to the public remain independent and continue to generate comparable financial and accounting information. Also, the largest firms usually can only be privatised through public share issues.

Table 5-4 Classification of privatised firms (54 Firms) by industry

<table>
<thead>
<tr>
<th>Industry</th>
<th>No. of firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pharmaceutical sector</td>
<td>5</td>
</tr>
<tr>
<td>Mining sector</td>
<td>4</td>
</tr>
<tr>
<td>Construction sector</td>
<td>8</td>
</tr>
<tr>
<td>Food sector</td>
<td>11</td>
</tr>
<tr>
<td>Housing and tourism sector</td>
<td>5</td>
</tr>
<tr>
<td>Metallurgical industries sector</td>
<td>2</td>
</tr>
<tr>
<td>Cotton and international trade sector</td>
<td>2</td>
</tr>
<tr>
<td>Weaving and trade sector</td>
<td>1</td>
</tr>
<tr>
<td>Chemical industries sector</td>
<td>7</td>
</tr>
<tr>
<td>Industrial engineering sector</td>
<td>3</td>
</tr>
<tr>
<td>Maritime and inland transport sector</td>
<td>2</td>
</tr>
<tr>
<td>Electricity construction and distribution sector</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
</tr>
</tbody>
</table>


In addition, the study needs to find 54 comparable private firms, based on industry and size, to serve as the control group for the privatised firms. The final sample thus consists of 108 firms: 54 privatised firms and 54 private firms, which will be discussed in the following paragraph.

---

44 This classification is according to holding companies' classifications by the Ministry of Public Enterprises.
### Table 5-5 Classifying the privatised Egyptian firms through 1991 to 2005 as fully and partially privatisation

#### Panel A. Privatised Egyptian Firms as Fully Privatisation (sample of study):

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of Firm</th>
<th>Ownership (%)</th>
<th>1</th>
<th>14</th>
<th>27</th>
<th>71</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Amiria for Cement</td>
<td>100%</td>
<td>14</td>
<td>Nile Cotton Ginning</td>
<td>100%</td>
<td>27</td>
</tr>
<tr>
<td>2</td>
<td>Construction and Counselling Engineering</td>
<td>100%</td>
<td>15</td>
<td>El-Wadi for Agricultural Export</td>
<td>100%</td>
<td>28</td>
</tr>
<tr>
<td>3</td>
<td>Alahram Beverage</td>
<td>100%</td>
<td>16</td>
<td>Arabia Cotton Ginning</td>
<td>100%</td>
<td>29</td>
</tr>
<tr>
<td>4</td>
<td>Upper Egypt for Housing</td>
<td>100%</td>
<td>17</td>
<td>Egypt for Free Shops</td>
<td>97%</td>
<td>30</td>
</tr>
<tr>
<td>5</td>
<td>Nasr Utilities</td>
<td>100%</td>
<td>18</td>
<td>Kafr El-Zayat for Insecticides</td>
<td>90%</td>
<td>31</td>
</tr>
<tr>
<td>6</td>
<td>Alexandria Portland for Cement</td>
<td>100%</td>
<td>19</td>
<td>El Nasr Transformers ELMACO</td>
<td>90%</td>
<td>32</td>
</tr>
<tr>
<td>7</td>
<td>Portland Helwan</td>
<td>100%</td>
<td>20</td>
<td>Industrial &amp; Engineering Projects</td>
<td>90%</td>
<td>33</td>
</tr>
<tr>
<td>8</td>
<td>Telemisr</td>
<td>100%</td>
<td>21</td>
<td>Portland Torah</td>
<td>82%</td>
<td>34</td>
</tr>
<tr>
<td>9</td>
<td>IDEAL</td>
<td>100%</td>
<td>22</td>
<td>Einasr for Civil Works</td>
<td>81%</td>
<td>35</td>
</tr>
<tr>
<td>10</td>
<td>Nobaria Agricultural Engineering</td>
<td>100%</td>
<td>23</td>
<td>Giza for Contracting</td>
<td>80%</td>
<td>36</td>
</tr>
<tr>
<td>11</td>
<td>CABLAT</td>
<td>100%</td>
<td>24</td>
<td>Mahmoudia for Contracting</td>
<td>80%</td>
<td>37</td>
</tr>
<tr>
<td>12</td>
<td>Alnasr for Dehydrating Agricultural Pro.</td>
<td>100%</td>
<td>25</td>
<td>Nasr City for Housing and Development</td>
<td>75%</td>
<td>38</td>
</tr>
<tr>
<td>13</td>
<td>Cairo for Housing &amp; Development</td>
<td>100%</td>
<td>26</td>
<td>Middle East for Paper (SIMO)</td>
<td>75%</td>
<td></td>
</tr>
</tbody>
</table>

#### Panel B. Privatised Egyptian Firms as Partially Privatisation (sample of study):

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of Firm</th>
<th>Ownership (%)</th>
<th>7</th>
<th>13</th>
<th>General for Silos</th>
<th>38</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Extracted Oils</td>
<td>49%</td>
<td>7</td>
<td>Cairo Pharmaceutical</td>
<td>40%</td>
<td>13</td>
</tr>
<tr>
<td>2</td>
<td>Egyptian Financial &amp; Industrial / FIC</td>
<td>45%</td>
<td>8</td>
<td>Memphies Pharmaceutical</td>
<td>40%</td>
<td>14</td>
</tr>
<tr>
<td>3</td>
<td>Middle Egypt Mills</td>
<td>42%</td>
<td>9</td>
<td>Arabia Pharmaceutical</td>
<td>40%</td>
<td>15</td>
</tr>
<tr>
<td>4</td>
<td>Alex Mills</td>
<td>42%</td>
<td>10</td>
<td>South Cairo Mills</td>
<td>40%</td>
<td>16</td>
</tr>
<tr>
<td>5</td>
<td>North Cairo Mills</td>
<td>41%</td>
<td>11</td>
<td>Alexandria Pharmaceuticals</td>
<td>40%</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Arabia &amp; United Stevedoring</td>
<td>41%</td>
<td>12</td>
<td>Nile Pharmaceutical</td>
<td>40%</td>
<td></td>
</tr>
</tbody>
</table>
5.8.3.2 Data for Egyptian private firms

As a result of the Egyptian government continuing to control firms under the pretext of partial privatisation\(^{45}\), the researcher has classified the sample study into two categories fully and partially privatised firms. This allows investigating whether the performance changes of these firms differ from those of private firms according to the kind of privatisation.

As previously discussed, the study needs to determine a sample of private firms, which represent a control group. The study needs to determine the control group from the private sectors to compare the performance of the privatised firms with the performance of private firms. There are five steps to determine the control group for privatised firms, which are: (i) to survey and compile all registered private firms on the Egyptian Stock Exchange, which have financial reports for at least two years after privatisation; (ii) to calculate the average total assets for each privatised and private firm; (iii) to select private firms, which represent a control group according to size and industry\(^ {46} \); (iv) to determine all the comparable private companies with the privatised ones, according to the standard size; and finally, (v) to collect the control group for privatised firms.

\(^{45}\) It means that the state of enterprises, which have been partially privatised, do not achieve the full advantage of the privatisation programme.

\(^{46}\) As for the size-matching method, size is measured as the average book value of total assets. For each privatised and private firm, the researcher has selected privatised and private firms with total assets within 70%-130% range, based on Barber and Lyon's (1996) argument that the 70%-130% size-filter yields test-statistics, that are well-specified.
The researcher will apply the previous five steps on one of the industrial sectors, which is the pharmaceuticals sector in the following sections. Table 5-6 explains how the control group in the pharmaceuticals sector is determined.

It is clearly shown from Table 5-6 that there are five privatised firms in the pharmaceuticals sector, which is included in the sample study, namely: Nile, Memphies, Arabia, Cairo, and Alexandria Pharmaceuticals. The study needs to determine a control group from private pharmaceuticals sector to compare the performance of the privatised pharmaceuticals firms with the performance of the already private ones. In the following section, the study explains the five steps, mentioned above, to determine the control group of these firms.

Table 5-6 How the control group in the pharmaceutical sector is determined

| Pharmaceutical sector | Private Firms | Aver. Total Assets | Privatised Firms | Aver. Total Assets | Size (%) privatised firms to private firms
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Amriya Phar.</td>
<td>302241</td>
<td>Nile Phar........... (P1) 293836</td>
<td>0.97 0.75 1.02 0.47 0.60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2- Aventis Phar.</td>
<td>148033</td>
<td>Memphies Phar. (P2) 225450</td>
<td>1.98 1.52 2.08 0.97 1.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3- Egyptian Int'l (Eipico)</td>
<td>794981</td>
<td>Cairo Phar.......... (P3) 307670</td>
<td>0.37 0.28 0.39 0.18 0.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4- Pfizer Egypt.</td>
<td>253104</td>
<td>Arabia Phar...... (P4) 143257</td>
<td>1.16 0.89 1.22 0.57 0.72</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5- T3A Pharm. Group.</td>
<td>149314</td>
<td>Alexandria Phar..(P5) 182064</td>
<td>1.97 1.51 2.06 0.96 1.22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6- Glaxo Wellcome Egypt.</td>
<td>766473</td>
<td>0.38 0.29 0.40 0.19 0.24</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7- Medical Union Pham.</td>
<td>388899</td>
<td>0.76 0.58 0.79 0.37 0.47</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8- Nozha Int'l Hospital.</td>
<td>20649</td>
<td>14.23 10.92 14.90 6.94 8.82</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9- Amoun Phar.</td>
<td>395859</td>
<td>0.74 0.57 0.78 0.36 0.46</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10- Cairo Tower Lab.</td>
<td>56760</td>
<td>5.18 3.97 5.42 2.52 3.21</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11- IbnSina Medical Ser.</td>
<td>18570</td>
<td>15.82 12.14 16.57 7.71 9.80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12- Cairo Scan.</td>
<td>21834</td>
<td>13.46 14.1 13.46 6.56 8.34</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

First, the researcher studied and compiled all registered private pharmaceutical firms on the stock exchange, which have financial reports for at least two years after privatisation. The study found twelve private firms in the Egyptian

47 The entries represent the average total assets of each of the five privatised firms (P1 to P5) as a percentage of each of the twelve private firms.
pharmaceuticals sector, that were registered on the stock exchange, and have financial statements for more than two years; namely: Amriya Pharmaceutical Industries, Aventis Pharmaceutical, Egyptian Int'l Pharmaceutical (Eipico), Pfizer Egypt, T3A Pharmaceutical Group, Glaxo Wellcome Egypt, Medical Union Pharmaceutical, Nozha Int'l Hospital, Amoun Pharmaceuticals, Cairo Tower Lab, IbnSina Medical Services, and Cairo Scan.

**Second**, the study calculated the average total assets for privatised firms as follows:

\[
\bar{x} = \frac{\sum x}{n}
\]

Equation 5-3

where:

- \( \bar{x} \) = average total assets for each privatised firm;
- \( \sum x \) = total assets in year 1 + total assets in year 2 + ... + total assets in year \( n \); and
- \( n \) = number of years, (at least 2 years during 1991-2004).

The same equation is applied to calculate the average assets for private firms; Table 5-6 columns two and four show the average total assets for private and privatised firms, respectively.

**Third**, the study selected private firms, which represent the control group according to size and industry as follows:

**a) According to industry:**

By applying Step1, the researcher found that each of the chosen privatised firms and private firms are working in the same industry and the same sector, where each of them is operating in the field of pharmaceuticals.
**b) According to size:**

Based on the method of Barber and Lyon (1996)\(^{48}\), if the size of the private firm represents on average assets equivalent to between 70% and 130% of the privatised firm's average assets, or vice versa, then the private firm is suitable for the comparison with the privatised firm, and represents a benchmark for the privatised firm. This relationship can be set by the following equation:

\[
\text{Size (\%) } = \frac{\text{Average total assets for privatised firm}}{\text{Average total assets for private firm}} \quad \text{Equation 5-4}
\]

As seen from Table 5-6, columns P1, P2, P3, P4, and P5 show the size percentage of the pharmaceuticals privatised and private firms. For example, column P1 explains the percentage of the Nile pharmaceutical firm size to each private firm in the pharmaceuticals sector.

**Fourth,** the study determines all the comparable private companies with the privatised ones according to the standard size. From column P1, the study found four private firms (Amriya, Pfizer Egypt, Medical Union and Amoun Pharmaceuticals firms) suitable for comparison with Nile Pharmaceutical. Pfizer Egypt and Amriya pharmaceutical as private firms are acceptable for comparison with Memphies Pharmaceutical as shown from column P2.

As well as these, Pfizer Egypt, Medical Union Pharmaceutical, Amoun Pharmaceutical, and Amriya Pharmaceutical as pharmaceuticals private firms are acceptable for comparison with Cairo Pharmaceutical, as shown from

---

\(^{48}\) Barber and Lyon's (1996) argument is that the 70-130% size filter yields test statistics that are well specified.
Two private firms are suitable for Arabia Pharmaceutical, which are: T3A Pharmaceutical Group, and Aventis Pharmaceutical, as shown in column P4. Finally, from column P5, the study found both Aventis Pharmaceutical and Pfizer Egypt are acceptable for comparison with Alexandria Pharmaceutical. Table 5-7 shows all private firms that acceptable to compare the performance of private pharmaceutical firms with privatised pharmaceutical firms.

Table 5-7 All acceptable private firms for comparison with privatised firms in the pharmaceuticals sector

<table>
<thead>
<tr>
<th>Privatised Pharmaceutical Firms</th>
<th>Size %</th>
<th>Private Pharmaceutical Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nile Pharmaceutical.</td>
<td>97%</td>
<td>✓ Amriya Pharmaceutical Industries.</td>
</tr>
<tr>
<td></td>
<td>74%</td>
<td>▪ Amoun Pharmaceuticals.</td>
</tr>
<tr>
<td></td>
<td>1.16</td>
<td>▪ Pfizer Egypt</td>
</tr>
<tr>
<td></td>
<td>0.76</td>
<td>▪ Medical Union Pharmaceutical.</td>
</tr>
<tr>
<td>Memphies Pharmaceutical.</td>
<td>75%</td>
<td>▪ Amriya Pharmaceutical Industries</td>
</tr>
<tr>
<td></td>
<td>90%</td>
<td>✓ Pfizer Egypt</td>
</tr>
<tr>
<td>Cairo Pharmaceutical.</td>
<td>102%</td>
<td>▪ Amriya Pharmaceutical Industries</td>
</tr>
<tr>
<td></td>
<td>121%</td>
<td>▪ Pfizer Egypt</td>
</tr>
<tr>
<td></td>
<td>80%</td>
<td>✓ Medical Union Pharmaceutical.</td>
</tr>
<tr>
<td></td>
<td>78%</td>
<td>▪ Amoun Pharmaceuticals.</td>
</tr>
<tr>
<td>Arabia Pharmaceutical.</td>
<td>97%</td>
<td>▪ Aventis Pharmaceutical.</td>
</tr>
<tr>
<td></td>
<td>97%</td>
<td>✓ T3A Pharmaceutical Group.</td>
</tr>
<tr>
<td>Alexandria Pharmaceutical.</td>
<td>122%</td>
<td>✓ Aventis Pharmaceutical.</td>
</tr>
<tr>
<td></td>
<td>72%</td>
<td>▪ Pfizer Egypt.</td>
</tr>
</tbody>
</table>

Fifth, the study selects the control group for privatised firms in the pharmaceuticals sector, according to the high percentage between private and privatised firm. As seen from Table 5-8, each privatised firm is matched first to a private firm within the same industry, and within the range of 80% to 122% of book value of total assets. Table 5-8 showed the final sample for private and privatised pharmaceuticals firms.
Table 5-8 Control group for privatised firms in the pharmaceuticals sector

<table>
<thead>
<tr>
<th>Privatised Firms (test group)</th>
<th>Private Firms (control group)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  ▶ Nile Pharmaceuticals.</td>
<td>▶ Amriya Pharmaceutical Industries.</td>
</tr>
<tr>
<td>2  ▶ Memphies Pharmaceutical.</td>
<td>▶ Pfizer Egypt.</td>
</tr>
<tr>
<td>3  ▶ Cairo Pharmaceutical.</td>
<td>▶ Medical Union Pharmaceutical.</td>
</tr>
</tbody>
</table>

The study follows the previously mentioned methodology in determining the control group for privatised firms in the various sectors of industry, which are shown in Table 5-9.

Thus, the study applied the similar steps to the rest of the privatised sample firms to determine the control group for each one. Table 5-9 illustrates the final sample, which resulted from this methodology\(^49\) (for more details, see Appendix 5-1).

\(^{49}\) Each privatised firm is matched first to a private firm within the same industry (sector) and then with book value of total assets within 70%—130% of the private firm. However, over 90% of privatised firms are matched within the range of 78%—125% of private firms.
Table 5-9 Privatised firms and control group for each ones\textsuperscript{50}

<table>
<thead>
<tr>
<th>Privatised Firms (test group)</th>
<th>Private Firms (control group)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Nile Pharmaceuticals.</td>
<td>Amriya Pharmaceutical Industries.</td>
</tr>
<tr>
<td>2 Memphies Pharmaceuticals.</td>
<td>Pfizer Egypt.</td>
</tr>
<tr>
<td>3 Cairo Pharmaceuticals.</td>
<td>Medical Union Pharmaceuticals.</td>
</tr>
<tr>
<td>4 Arabia Pharmaceuticals.</td>
<td>T3A Pharmaceutical Group.</td>
</tr>
<tr>
<td>5 Alexandria Pharmaceuticals.</td>
<td>Aventis Pharmaceutical.</td>
</tr>
<tr>
<td>6 Nile for Kabriet.</td>
<td>Cairo Tower Lab.</td>
</tr>
<tr>
<td>7 Upper Egypt.</td>
<td>Savola Sime Egypt (S.A.E).</td>
</tr>
<tr>
<td>8 Pacien</td>
<td>Amoun Pharmaceuticals S.A.E.</td>
</tr>
<tr>
<td>9 Misr for Chemical Industries.</td>
<td>Egyptian Intl Pharmaceutical Industries (Eipico).</td>
</tr>
<tr>
<td>10 Construction and Consulting Engineering.</td>
<td>Cairo for investment &amp; Development Estate.</td>
</tr>
<tr>
<td>12 Egypt for Free Shops.</td>
<td>Aracemco Arab Ceramic.</td>
</tr>
<tr>
<td>13 Alahram Beverage.</td>
<td>Alexandria for Real Estate Investments</td>
</tr>
<tr>
<td>14 Misr Oil &amp; Soap.</td>
<td>Savola Sime Egypt (S.A.E)</td>
</tr>
<tr>
<td>15 Shams for Housing.</td>
<td>Delta for Construction &amp; Rebuilding</td>
</tr>
<tr>
<td>16 Upper Egypt for Housing.</td>
<td>Aracemco Arab Ceramic.</td>
</tr>
<tr>
<td>18 Giza for Contracting.</td>
<td>Egyptian Engineers Arab Real Estate Investment (EDIC).</td>
</tr>
<tr>
<td>19 Mahmoudia for Contracting.</td>
<td>Mena for Touristic &amp; Real Estate Investments</td>
</tr>
<tr>
<td>20 Moukhtar Ibrahim Contracting.</td>
<td>Ezz Steel Rebars.</td>
</tr>
<tr>
<td>23 Middle and Weast Delta.</td>
<td>Cairo Poultoy.</td>
</tr>
<tr>
<td>24 Elnasr for Civil Works.</td>
<td>Aracemco Arab Ceramic.</td>
</tr>
<tr>
<td>25 ELMACO.</td>
<td>Delta for Construction &amp; Rebuilding.</td>
</tr>
<tr>
<td>26 South Cairo Mills.</td>
<td>Misr Gulf Oil Processing Migop.</td>
</tr>
<tr>
<td>27 Nasr City for Housing and Development.</td>
<td>Alexandria for Real Estate Investments.</td>
</tr>
<tr>
<td>28 Egyptian Financial &amp; Industrial / EFIC.</td>
<td>Ezz Porcelaine / Gawhara.</td>
</tr>
<tr>
<td>29 Kafr El-Zayat.</td>
<td>Cairo Tower Lab.</td>
</tr>
<tr>
<td>30 IDEAL.</td>
<td>Int'll Electronics (Ahmed Bahget).</td>
</tr>
</tbody>
</table>

\textsuperscript{50} The final sample consists of 108 firms (54 privatised firms and 54 private firms), it represent a large sample (large sample means n>30, or more than 5% from the population study).
<table>
<thead>
<tr>
<th>Privatised Firms</th>
<th>Private Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>(test group)</td>
<td>(control group)</td>
</tr>
<tr>
<td>32 Portland Torah.</td>
<td>Ezz Steel Rebars.</td>
</tr>
<tr>
<td>33 Eastern Company.</td>
<td>Suez Cement.</td>
</tr>
<tr>
<td>36 United Arab for Spinning &amp;</td>
<td>Oriental Weaver for Carpets.</td>
</tr>
<tr>
<td>Weaving.</td>
<td></td>
</tr>
<tr>
<td>37 Bisco Misr.</td>
<td>Misr Gulf Oil Processing Migop.</td>
</tr>
<tr>
<td>39 Alnasr for Dehydrating Agricultural Products.</td>
<td>Sharkeya Poultoy</td>
</tr>
<tr>
<td>40 Egyptian Starch &amp; Glucose.</td>
<td>Egyptian Macaeoni &amp; Starch Industry.</td>
</tr>
<tr>
<td>42 Middle Egypt Mills.</td>
<td>Cairo Poultoy</td>
</tr>
<tr>
<td>44 General for Silos.</td>
<td>Cairo Poultoy</td>
</tr>
<tr>
<td>45 Alex Mills.</td>
<td>Savola Sime Egypt (S.A.E).</td>
</tr>
<tr>
<td>46 Cairo for Housing &amp; Development.</td>
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<tr>
<td>47 El-Wadi for Agricultural Export.</td>
<td>Misr Gulf Oil Processing Migop</td>
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<td>48 Nobaria Agricultural Engineering.</td>
<td>EGAS.</td>
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<td>50 Middle East for Paper (SIMO).</td>
<td>Suez Bag.</td>
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<td>51 Telemisr.</td>
<td>Miraco-Carrier.</td>
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<td>53 CABLAT.</td>
<td>Int'l Electronics (Ahmed Bahget).</td>
</tr>
<tr>
<td>54 Misr Mechanical and Electrical</td>
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<tr>
<td>Projects (Khromika).</td>
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5.9 Summary

Most empirical studies on privatisation have examined the financial performance of privatised firms or compared the performance of SOEs to private firms, without testing the performance of privatised firms to private firms. In this chapter, the study discussed the methodology used to evaluate the performance of privatised firms as compared to private firms, and to examine the impact of the post-privatisation environment on post-privatisation performance.

This research employs a quantitative approach, and uses secondary data to investigate the impact of privatisation on the performance of newly privatised Egyptian firms. The data-set is obtained from Egyptian firms, that had been privatised, and have at least 2 years of both pre- and post-privatisation data. Therefore, the minimum time-interval data for each firm is 5 years (from at least year -2 to year +2). The data-set is collected from many sources, such as the Public Sector Information Centre, the Egyptian Capital Market Authority, CASE, Kompass Egypt Financial Year Book, and the financial reports from the firms themselves.

The study sample includes all privatised firms that were privatised through IPOs during 1991-2004 (38 fully privatised firms and 16 partially privatised firms). The final sample for this study consists of 108 firms: 54 privatised firms and 54 private firms. Also in this chapter, the five steps determining the private firms that represent the control group (competitor group) are shown, which are: first, to survey and compile all registered private firms on CASE; second, to calculate
the average total assets for each privatised and private firm; third, to select private firms, which represent the control group, according to size and industry; fourth, to determine all the comparable private firms with the privatised ones; and finally, to select the control group for privatised firms.

To evaluate the Egyptian privatisation programme, the study posed three main hypotheses, which are (i) privatisation leads to improvement in the performance of privatised firms following privatisation; (ii) the performance of privatised firms following privatisation is similar to the performance of their counterpart from the private sector; and (iii) there is an environmental impact on the performance of the firms after privatisation. In addition, twenty four sub-hypotheses to investigate the Egyptian privatisation programme and examine whether the change of ownership (from state to private ownership) improves the firm's performance; also, to test the effect of ownership structure, the pre-privatisation performance, the size of privatised firms, performance of private competitor firms on the post-privatisation performance.

The methodology in this research employed many performance indicators that reflect: profitability, operating efficiency, output, employment levels, and leverage. The study will use the MNR (1994) methodology to compare between pre- and post-privatisation performance by using three techniques: the parametric t-test, the non-parametric Wilcoxon signed-rank test, and the proportion test in the first stage (as seen in Chapter Six). The second stage compares the change in the performance of privatised firms post-privatisation with the change in the performance of private firms after adjusting data for industry factors that may affect the performance measures of privatised firms by
using two techniques: the parametric t-test and the non-parametric Mann-Whitney test. Also, the study will use the absolute and relative performance change methods to overcome the problem of different past performance between privatised and private firms (as seen in Chapter Seven). At the final stage, the study investigates the impact of the pre-privatisation and post-privatisation environments upon the post-privatisation performance by developing regression models to explain the change in the performance from pre-privatisation to post-privatisation (as seen in Chapter Eight).

In the next chapter, the study will present the results of the statistical analysis of changes in the performance indicators of privatised SOEs pre- and post-privatisation to find out whether these changes are significant or non-significant. After that, the financial and operational changes for privatised firms following privatisation are compared with counterparts from the control group to decide whether the privatisation programme was the cause of these changes or not.
6.1 Introduction

Privatisation programmes have been undertaken in many countries across the world. Egypt launched a privatisation programme in 1991 as one of the most important methods of reducing the size of the public sector. Hence, the privatisation programme has been an important part of the Egyptian economic reform programme.

To evaluate the Egyptian privatisation programme, the study investigates three main hypotheses: first, privatisation leads to improvement in the performance of privatised firms following privatisation; second, the performance of privatised firms following privatisation is similar to the performance of their counterpart from the private sector; and third, there is an environmental impact on the performance of the firms after privatisation.

In this chapter, the researcher presents the comparative analysis of pre- and post-privatisation performance. The statistical analysis of change in performance is presented for the privatised SOEs (test group) pre- and post-the privatisation year. After calculating the financial and operating measures, the study calculates the absolute and relative values to measure the performance of pre- and post-privatisation. Then, the researcher compares
between the financial and operating measures for the privatised firms (test group) before and after the privatisation date to reflect the changes in the performance by using appropriate statistical tests to find out whether or not these changes are significant.

After that, the financial and operating changes are compared with the financial and operating ratios in the private firms (control group) to decide whether the privatisation programme was the cause of these changes, as seen in Chapter Seven.

Furthermore, by using multiple regressions, the study examines the impact of both the previous state-owned environment and the current competitive environment on the performance of the privatised firms, as seen in Chapter Eight.

The rest of this chapter is divided into two parts. Part One presents descriptive statistics. This part is divided into two sections; the first section covers the descriptive statistics for privatised firms, while the descriptive statistics for private firms (control group) are presented in the second section. Part Two shows the comparative analysis of pre- and post-privatisation performance. This part presents the results of comparison between the pre- and post-privatisation performance of privatised firms.

In the following sub-sections, the study presents the descriptive statistics for performance measures of privatised firms and their counterparts from private firms; starting with profitability ratios, then, operating efficiency ratios, output
ratios, leverage ratios, and employment levels, respectively. Figure 6-1 shows all variables that are related to the measurements of performance.

**Figure 6-1 Performance indicators for privatised firms**

![Diagram showing various performance indicators for privatised firms]

6.2 Descriptive statistics

Descriptive statistics are used to describe the basic features of the data in the study without any effort to test a particular hypothesis. It aims to give us a clear view of raw data. The mean and median and standard deviation are the most common measurements of central tendency, and variability, respectively.

In the following sections the study presents the descriptive statistics for privatised firms in Egypt that experienced full or partial privatisation between 1991 and 2004 through IPOs. After that, the study reports on the descriptive statistics for private firms.
6.2.1 The performance measures for privatised firms pre- and post-privatisation (test group)

Table 6-1 summarises the descriptive statistics for the accounting performance indicators of partially privatised firms, fully privatised firms and the whole privatised firms in the pre- and post-privatisation period, respectively; including the mean, the median, the minimum, the maximum, the standard deviation\(^{51}\). Furthermore, the table presents the results of two measures, which are used to determine whether the performance could be adequately modelled by a normal distribution, which are: standardised skewness and the standardised kurtosis\(^{52}\). The following sections are going to illustrate the descriptive statistics for all performance indicators that mentioned before in Figure 6-1.

6.2.1.1 The profitability ratios for privatised firms pre- and post-privatisation

As shown in rows 2-4 in Table 6-1, the values of the mean and median of EBIT for partially and fully privatised firms increased after privatisation. The EBIT of pre-privatisation ranges between 20 and 213 per cent; and for post-privatisation ranges between 2 and 356 per cent. The standard deviation shows a large dispersion in values of EBIT after privatisation, which means that the values of EBIT are more spread around its average.

\(^{51}\) The standard deviation of a sample measures how the observations are spread around the mean. Large standard deviation means the data are widely spread around the mean (Kvali, Pavur, and Keeling, 2006).

\(^{52}\) Keller (2002) and Kvanli, Pavur, and Keeling (2006) argue that if the value of standardized skewness and the standardized kurtosis lie in the range of ±2, data could be adequately modelled by a normal distribution; vis-à-vis, if the value is out of the range of ±2, data are not normally distributed.
Table 6-1 Descriptive Statistics for the performance measures of privatised firms pre- and post-privatisation

<table>
<thead>
<tr>
<th>Proxies</th>
<th># of Firms</th>
<th>Means</th>
<th>Median</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Standard ( \text{deviation} )</th>
<th>Standard ( \text{kurtosis} )</th>
<th>Standard ( \text{Skewness} )</th>
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<tr>
<td></td>
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<td>Post</td>
<td>Pre</td>
<td>Post</td>
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<td>Pre</td>
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<tr>
<td>Profitability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Earnings before interest and taxes (EBIT)</td>
<td>Partial</td>
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<td>0.76</td>
<td>0.98</td>
<td>0.71</td>
<td>0.76</td>
<td>0.30</td>
<td>0.26</td>
</tr>
<tr>
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<td>0.81</td>
<td>0.20</td>
<td>0.02</td>
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<td>16</td>
<td>0.08</td>
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<td>0.06</td>
<td>0.11</td>
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<td>0.11</td>
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<td>0.09</td>
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<td>-1.28</td>
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<td>54</td>
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<td>0.13</td>
<td>0.07</td>
<td>0.10</td>
<td>-0.04</td>
<td>-1.28</td>
</tr>
<tr>
<td>Earnings before interest and taxes to assets (ROA)</td>
<td>Partial</td>
<td>16</td>
<td>0.06</td>
<td>0.08</td>
<td>0.05</td>
<td>0.07</td>
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<td>0.07</td>
<td>0.05</td>
<td>0.08</td>
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<td>Earnings before interest and taxes to equity (ROE)</td>
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<td>0.25</td>
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<td>Sales efficiency (SALEFF).</td>
<td>Partial</td>
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<td>1.13</td>
<td>0.93</td>
<td>0.55</td>
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<td>0.73</td>
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<td>0.93</td>
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## Table 6-1 Cont.

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<th># of Firms</th>
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<th>Means</th>
<th>Median</th>
<th>Median</th>
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<td>Real sales (SAL).</td>
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<td></td>
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<tr>
<td>Total debt to total assets (Lev. 1)</td>
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<td>0.20</td>
<td>0.14</td>
<td>0.20</td>
<td>0.13</td>
<td>0.01</td>
<td>0.00</td>
<td>0.37</td>
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<td>38</td>
<td>0.22</td>
<td>0.22</td>
<td>0.17</td>
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<td>0.00</td>
<td>0.00</td>
<td>0.96</td>
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<td>0.22</td>
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<td>0.21</td>
<td>0.19</td>
<td>0.16</td>
<td>0.00</td>
<td>0.00</td>
<td>0.96</td>
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<td>Total debt to total equity (Lev. 2)</td>
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<td>16</td>
<td>0.79</td>
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<td>0.78</td>
<td>0.34</td>
<td>0.03</td>
<td>0.01</td>
<td>1.70</td>
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<td>0.00</td>
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<td>0.54</td>
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<td></td>
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<tr>
<td>Total employment (EMPL.)</td>
<td>Partial</td>
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<td>4156</td>
<td>4052</td>
<td>3313</td>
<td>1157</td>
<td>1163</td>
<td>13621</td>
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<td>3170</td>
<td>3182</td>
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<tr>
<td></td>
<td>Full</td>
<td>38</td>
<td>2743</td>
<td>2161</td>
<td>1945</td>
<td>1447</td>
<td>224</td>
<td>155</td>
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<td>54</td>
<td>3309</td>
<td>2701</td>
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<td>13621</td>
<td>13133</td>
<td>2522</td>
<td>2447</td>
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</table>
Rows 6-8 in Table 6-1 illustrate that the mean value for the ROS variable has increased after privatisation for the partially and the wholly privatised firms. Meanwhile, the median had changed after privatisation for the whole privatised firms, fully, and partially privatised firms. The minimum value of the ROS is -4 per cent pre- and is -128 per cent post-privatisation; but the maximum value of ROS pre- and post-privatisation changed from 23 to 84 per cent. This means that the performance of ROS increased in some firms by around 265%. These changes do not indicate positive or negative effect on firm performance, but mean only that there are changes in the ROS variable.

As shown in rows 10-12 in Table 6-1, the value of the mean for the ROA variable had increased for the whole sample of privatised firms, whether they were partially or fully privatised. The value of the median for the ROA variable pre-privatisation is equal whether for partially or fully privatised firms, but had increased after privatisation. The ROA of pre-privatisation ranges between 0.01 and 17 per cent; and for post-privatisation ranges between -26 to 18 per cent. This means that most privatised firms have negative ROA. The standard deviation for the ROA variable following privatisation is lower than its value before privatisation, which means that the value of ROA becomes less spread around its average.

The last ratio used to measure the profitability of the privatised firm is ROE ratio, which is described in rows 14-16, in Table 6-1. The mean value of the ROE had changed for the whole sample of privatised firms, whether they are fully or partially privatised. The median values of ROE for partially privatised firms did not change following privatisation, but changed for fully privatised
firms. The standard deviation of the ROE variable pre-privatisation shows that
the partially and fully privatised firms have the same values. This presents a
large dispersion in the values of ROE after privatisation.

According to the values of standardised skewness and standardised kurtosis,
as seen in rows 2-16, all profitability ratios (apart from ROA for Partially
privatised firms and ROE for Fully privatised firms) are out of the range of ±2;
thus, these ratios, either before or after privatisation, do not tend to be normally
distributed.

6.2.1.2 Operating efficiency ratios for privatised firms pre- and post-
privatisation

As seen from Table 6-1, rows 17-19 the value of the mean of sale efficiency
(SALEFF) for fully privatised firms increased following privatisation, but did not
increase for partially privatised firms. After privatisation, the median of the
SALEFF variable declined for the whole sample of privatised firms, whether fully
or partially privatised. In addition, the SALEFF of pre-privatisation ranges
between 34 to 185 per cent and, for post-privatisation, ranges between 43 to
378 per cent. This indicates that most privatised firms have positive results
regarding SALEFF. The standard deviation shows a large dispersion in values
of SALEFF after privatisation, which means that these values are widely spread
around the mean. The same observation can be observed for income efficiency
(INEFF), which is shown in rows 21-23, in Table 6-1. The mean (median)
increased for both the partially and fully privatised firms, and the whole sample
of privatised firms after privatisation. The minimum value of the INEFF is -14 per
cent pre-privatisation and is -1463 per cent post-privatisation. The maximum value of INEFF pre- and post-privatisation changed from 250 to 1619 per cent, respectively. This means that most privatised firms have positive results regarding the performance of INEFF. These changes do not necessarily indicate a significant improvement in the performance of the firm regarding INEFF.

It is also shown from Table 6-1 that the SALEFF and INEFF variables have values for standardised skewness and for standardised kurtosis out the range of ±2 (apart from SALEFF for Partially privatised firms); thus, the performance of SALEFF and INEFF, pre- and post-privatisation, do not tend to be normally distributed. Furthermore, the changes of mean and median for operating efficiency do not indicate a significant or non-significant effect on the performance without examining by using appropriate statistical tests, which will be discussed in the second part of this chapter.

6.2.1.3 The output ratios for privatised firms pre- and post-privatisation

It is clear from rows 25-27, in Table 6-1 that the mean (median) value of the real sales after privatisation is less than before privatisation for the whole sample of privatised firms, whether fully or partially privatised. The SAL pre-privatisation ranges between 36 to 225 per cent, and for post-privatisation from 31 to 281 per cent. This means that some privatised firms have positive results (typically increased by around 25%), and others achieved negative results. These changes do not necessarily indicate a clear improvement or not in the firms' performance without examining these changes in mean and median as
significant or non-significant, by using appropriate statistical tests. Also, the standardised skewness and standardised kurtosis are inside the range of $\pm 2$ for partially privatised firms, but out of the range for those fully privatised, which means that the SAL of fully privatised firms does not tend to be normally distributed.

6.2.1.4 The leverage ratios for privatised firms pre- and post-privatisation

The first ratio used to measure the leverage is total debt to total assets, which is described in Table 6-1 rows 29-31. The mean value of TDTA decreased for the partially privatised firms, but did not change for the fully privatised firms after privatisation. The median of TDTA decreased for the whole sample and for the partially privatised firms after privatisation; meanwhile the values of TDTA increased for fully privatised firms after privatisation. Rows 33-35 show that the mean (median) for the second ratio used to measure the leverage, which is total debt to total equity had decreased for the whole sample of privatised firms, whether fully or partially privatised.

The same observation can be observed for the values of minimum and maximum. The values of standardised skewness and standardised kurtosis pre- and post-privatisation for partially privatised firms lie inside the range of $\pm 2$; hence, these values tend to be normally distributed, but all values of those fully privatised do not tend to be normally distributed, because these values were out of the range of $\pm 2$. 
6.2.1.5 Employment level for privatised firms pre- and post-privatisation

Rows 37-39, in Table 6-1 present the decline in the mean value for EMPL for the whole sample of privatised firms, whether fully or partially privatised. The same result can be observed for the values of the median. The number of employees pre-privatisation ranges between 1157 and 13621, and for post-privatisation ranges between 1050 and 13133. This means that the numbers of employees in the majority privatised firms have typically declined after privatisation. This result is consistent with previous expectations of the study, which are mentioned in the previous chapter (see: Chapter Five, Table 5-2).

However, the study could not determine the validity of these expectations without using an appropriate statistical test to determine if the decline in the number of employees is significant or not. The standard deviation shows a large dispersion in values of EMPL after privatisation, which means that these values are more spread around its average. Also, all the values for partially privatised firms do not tend to be normally distributed, because the values of the standardised skewness and the standardised kurtosis for EMPL lie outside the range of ±2; vis-à-vis, most of the values of EMPL for fully privatised firms lie within the range of ±2; hence, these values tend to be normally distributed.

According to the descriptive statistics of performance indicators for privatised firms mentioned above, the study concludes two results: (i) all performance indicators change in value after privatisation. This result does not necessarily indicate a clear improvement in the performance of the privatised firm, without examining these changes in mean and median as significant or non-significant. These changes will be tested for statistical significance in the Section 6.3 of this
chapter; and (ii) most studied variables have a standardised skewness and a standardised kurtosis outside the range of ±2. It means that some data on these variables follow a normal distribution, but others do not. The study will use the parametric t-test for a normal distribution and the non-parametric Wilcoxon signed-rank test, for a non-normal distribution, to examine whether the change in these variables have a significant or non-significant impact on the performance of the privatised firm.

6.2.2 The performance measures for private firms (control group)

Table 6-2 summarises the statistics for the accounting performance measures for private firms, which represent the control group for privatised firms after the date of privatisation. Each row from 2 to 5 demonstrates the basic descriptive statistics for profitability measures. Rows 7 and 8 provide the descriptive statistics for operating efficiency measures. Also the descriptive statistics for output are illustrated in row 10. In addition, rows 12-13 and 15-16 show descriptive statistics for leverage and employees, respectively.

It is clear from Table 6-2 that the standard deviation for most variables reveals a large dispersion, especially the sales efficiency and numbers of employees; vis-à-vis, the values of ROS and ROE, which have a lower standard deviation. In addition to that, the standardised skewness and the standardised kurtosis for ROS and ROE are inside the range for a normal distribution. The other variables for measuring profitability are outside the range for a normal distribution, so the same conclusion can be observed for the variables of operating efficiency, output, leverage, and employees.
Table 6-2 Descriptive statistics of the performance measures for private firms

<table>
<thead>
<tr>
<th>Proxies</th>
<th># of firms</th>
<th>Means</th>
<th>Median</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Standard Deviation</th>
<th>Standardised Kurtosis</th>
<th>Standardised Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
<td>(7)</td>
<td>(8)</td>
</tr>
<tr>
<td>Profitability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earnings before interest and taxes (EBIT).</td>
<td>54</td>
<td>1.70</td>
<td>1.25</td>
<td>-0.11</td>
<td>8.14</td>
<td>1.55</td>
<td>5.78</td>
<td>7.04</td>
</tr>
<tr>
<td>Earnings before interest and taxes to sales (ROS).</td>
<td>54</td>
<td>0.14</td>
<td>0.11</td>
<td>-0.01</td>
<td>0.38</td>
<td>0.11</td>
<td>1.85</td>
<td>-0.29</td>
</tr>
<tr>
<td>Earnings before interest and taxes to assets (ROA).</td>
<td>54</td>
<td>0.08</td>
<td>0.06</td>
<td>-0.01</td>
<td>0.28</td>
<td>0.07</td>
<td>3.48</td>
<td>1.96</td>
</tr>
<tr>
<td>Earnings before interest and taxes to equity (ROE).</td>
<td>54</td>
<td>0.17</td>
<td>0.12</td>
<td>-0.04</td>
<td>0.54</td>
<td>0.14</td>
<td>1.96</td>
<td>-0.56</td>
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<td>Operating Efficiency</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales efficiency (SALEFF).</td>
<td>54</td>
<td>1.35</td>
<td>1.15</td>
<td>0.16</td>
<td>8.69</td>
<td>1.19</td>
<td>13.95</td>
<td>41.96</td>
</tr>
<tr>
<td>Income efficiency before interest and taxes (INEFF)</td>
<td>54</td>
<td>1.46</td>
<td>1.15</td>
<td>-0.11</td>
<td>5.97</td>
<td>1.21</td>
<td>4.56</td>
<td>3.85</td>
</tr>
<tr>
<td>Output</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Real sales (SAL).</td>
<td>54</td>
<td>1.63</td>
<td>1.26</td>
<td>0.16</td>
<td>14.30</td>
<td>1.92</td>
<td>16.88</td>
<td>55.27</td>
</tr>
<tr>
<td>Leverage</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total debt to total assets (Lev. 1)</td>
<td>54</td>
<td>0.55</td>
<td>0.51</td>
<td>0.09</td>
<td>0.91</td>
<td>0.17</td>
<td>0.00</td>
<td>0.02</td>
</tr>
<tr>
<td>Total debt to total equity (Lev. 2)</td>
<td>54</td>
<td>0.43</td>
<td>0.18</td>
<td>0.00</td>
<td>2.72</td>
<td>0.65</td>
<td>6.85</td>
<td>7.72</td>
</tr>
<tr>
<td>Employee</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total employment (EMPL).</td>
<td>54</td>
<td>903</td>
<td>726</td>
<td>28</td>
<td>2887</td>
<td>755</td>
<td>3.27</td>
<td>0.99</td>
</tr>
<tr>
<td>LOG EMPL.</td>
<td>54</td>
<td>6.35</td>
<td>6.59</td>
<td>3.33</td>
<td>7.86</td>
<td>1.05</td>
<td>-2.21</td>
<td>0.37</td>
</tr>
</tbody>
</table>
As shown in Tables 6-1 and 6-2, the study concludes that the profitability and operating efficiency changes in mean (median) values of privatised firms have lagged behind many of those of their control group. Also, the descriptive analysis shows clearly that the values of profitability and operating efficiency indicators for private firms are higher than for privatised firms. These tables show that the values of the standardised skewness and the standardised kurtosis for most of the measures exceed the range of ±2, these performance measures do not tend to be normally distributed.

After calculating the pre- and post-privatisation performance measures\(^53\) for the whole privatised firms' sample (test group), the study tests the null hypothesis that "the cross-sectional average performance changes are equal to zero for a sample of n privatised firms". Under the null hypothesis, these test statistics follow a parametric t-distribution in cases where the sample is normally distributed. Since the sample included some performance measures that are not normally distributed, the study also employs the non-parametric Wilcoxon signed-rank test to test the null hypothesis that "the median performance changes are equal to zero". The results from these tests will be provided in the next sections.

\(^{53}\) Full details about the performance measures data are shown in Appendices 6.1 for all privatised firms, 6.2 for fully privatised firms, 6.3 for partially privatised firms and 6.4 for private firms.
6.3 Comparative analysis of pre- and post-privatisation performance

In this section, the study attempts to meet the first objective of this thesis, by investigating the first hypothesis that is "privatisation leads to improvement in the performance of privatised firms following privatisation". In this section, the study presents the results of the comparison between the pre- and post-privatisation performance of privatised firms (test group) in Egypt that experienced full or partial privatisation between 1991 and 2004 through IPOs. The parametric t-test, the non-parametric Wilcoxon signed-rank test, and the proportion tests are used in this matter. The study employed a proportion test to determine whether the proportion (P) of firms experiencing changes in a given direction is greater than what would be expected by chance.

The study employed a method, similar to the matched-pairs methodology used in MNR (1994), for comparing the pre- and post-privatisation performance for the test group, that experienced full or partial privatisation.

To test the performance of privatised firms, the study calculated the mean (median) of each performance indicators (profitability, operating efficiency, output, employment levels, and leverage) at least for two years (years -2 to -1) pre-privatisation and for two years (years +1 to +2) following privatisation; then calculated the changes between pre- and post-privatisation for each indicator. Before testing for the significant changes in performance, the study employed several tests, such as standardised skewness and standardised kurtosis to determine performance-normality for privatised firms. The study tests the null
hypothesis that "the mean (median) performance change from pre- to post-
privatisation is equal to zero" by using a parametric t-test for the significant
changes in mean. Also, the non-parametric Wilcoxon signed-rank test is applied
to potentially significant changes in performance, based on median values.

It is important to note that in the case of partial privatisation, the government still
has a significant influence on firms, so it might consider social objectives in
favour of business objectives. Hence, the logic suggests that full privatisation,
which allows the sale of voting shares -possibly giving control to outside
investors- is most conducive to efficiency improvements (D'Souza and
Megginson, 2000). Therefore, the study tests for the proposition that the
performance changes of privatised firms might differ according to whether these
firms experience full or partial privatisation. The study reports the results from
these tests in Table 6-3 for the whole sample of privatised firms, Table 6-4 for
the fully privatised firms, and Table 6-5 for the partially privatised firms.
Table 6-3 Comparison of Pre- and Post-Privatisation Performance of all Privatised Firms

The study employs three techniques to test for significant performance differences between privatised and non-privatised firms. This table presents summary results of the parametric t-test and the non-parametric Wilcoxon signed-rank test for the significant changes in the mean and median values of the selected performance measures of privatised firms in the pre- and post-privatisation periods. In addition, the proportion test is employed to determine whether the proportion of firms experiencing changes in a given direction is greater than what would be expected by chance. For each performance measure, the mean and the median values for at least the two-year period pre- and post-privatisation are given. The study provides the mean (median) change for each variable after versus before privatisation, and t and z statistics with their significant level. The number of useable firms is provided along with the number of firms that experienced an increase or decrease after privatisation. This table also provides the percentage of firms that changed as predicted, with Z statistics and their p-values. For the parametric (non-parametric) test, the researcher lists the results under the null hypothesis that the mean (median) performance change = 0 versus the alternative hypothesis that the mean (median) performance change ≠ 0.

<table>
<thead>
<tr>
<th>Proxies</th>
<th>(1) No. of firms Increased (Decreased)</th>
<th>(2) Pre-Privatisation Mean (Median)</th>
<th>(3) Post-Privatisation Mean (Median)</th>
<th>(4) Change in Mean (Median)</th>
<th>(5) t-Statistic for difference in Mean (P-value)</th>
<th>(6) Wilcoxon statistic for difference in Medians (P-value)</th>
<th>(7) Z-Statistic for significance of proportion (P-value)</th>
<th>(8) Percentage of firms with changes as predicted (+/-)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profitability</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Earnings before interest and taxes (EBIT).</td>
<td>32 (14)</td>
<td>0.74 (0.625)</td>
<td>0.924 (0.815)</td>
<td>0.17 (0.274)</td>
<td>1.513 (0.138)</td>
<td>1.740 (0.081)**</td>
<td>2.01 (0.004)**</td>
<td>70% (+)</td>
</tr>
<tr>
<td>Earnings before interest and taxes to sales (ROS).</td>
<td>10 (5)</td>
<td>0.10 (0.07)</td>
<td>0.13 (0.10)</td>
<td>0.0316 (0.02)</td>
<td>1.059 (0.294)</td>
<td>3.30 (0.00097)*</td>
<td>2.911 (0.0035)*</td>
<td>74% (+)</td>
</tr>
<tr>
<td>Earnings before interest and taxes to assets (ROA).</td>
<td>18 (9)</td>
<td>0.06 (0.05)</td>
<td>0.07 (0.08)</td>
<td>0.012 (0.015)</td>
<td>1.40 (0.169)</td>
<td>1.65 (0.099)**</td>
<td>1.80 (0.0724)**</td>
<td>62% (+)</td>
</tr>
<tr>
<td>Earnings before interest and taxes to equity (ROE).</td>
<td>28 (14)</td>
<td>0.26 (0.24)</td>
<td>0.28 (0.26)</td>
<td>0.018 (0.011)</td>
<td>0.725 (0.472)</td>
<td>0.158 (0.874)</td>
<td>0.571 (0.567)</td>
<td>61% (+)</td>
</tr>
<tr>
<td>Proxies</td>
<td>No. of firms Increased (Decreased)</td>
<td>Pre-Privatisation Mean (Median)</td>
<td>Post-Privatisation Mean (Median)</td>
<td>Change in Mean (Median)</td>
<td>t-Statistic for difference in Mean (P-value)</td>
<td>Wilcoxon statistic for difference in Medians (P-value)</td>
<td>Z-Statistic for significance of proportion (P-value)</td>
<td>Percentage of firms with changes as predicted (+/-)</td>
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<tr>
<td>Operating Efficiency</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales efficiency (SALEFF).</td>
<td>21 (33)</td>
<td>1.05 (1.03)</td>
<td>1.05 (0.94)</td>
<td>0.0038</td>
<td>0.0456 (0.9637)</td>
<td>1.496 (0.1344)</td>
<td>1.062 (0.2347)</td>
<td>39% (+)</td>
</tr>
<tr>
<td>Income efficiency before interest and taxes (INEFF).</td>
<td>37 (15)</td>
<td>0.78 (0.59)</td>
<td>1.03 (0.93)</td>
<td>0.257</td>
<td>0.239 (0.477)</td>
<td>3.129 (0.0017)*</td>
<td>2.996 (0.0027)*</td>
<td>71% (+)</td>
</tr>
<tr>
<td>Output</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real sales (SAL).</td>
<td>14 (40)</td>
<td>1.10 (1.07)</td>
<td>0.86 (0.84)</td>
<td>-0.2369</td>
<td>-4.7507 (0.0000)*</td>
<td>3.4020 (0.0006)*</td>
<td>4.3567 (0.0000)</td>
<td>26% (+)</td>
</tr>
<tr>
<td>Leverage</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total debt to total assets (Lev. 1)</td>
<td>23 (31)</td>
<td>0.21 (0.19)</td>
<td>0.21 (0.16)</td>
<td>-0.0069</td>
<td>-0.2303 (0.8187)</td>
<td>0.9525 (0.3408)</td>
<td>2.8506 (0.5296)</td>
<td>57% (-)</td>
</tr>
<tr>
<td>Total debt to total equity (Lev. 2)</td>
<td>11 (38)</td>
<td>0.73 (0.42)</td>
<td>0.29 (0.10)</td>
<td>-0.4441</td>
<td>-3.46747 (0.0010)*</td>
<td>3.71429 (0.0002)*</td>
<td>3.892 (0.00009)*</td>
<td>78% (-)</td>
</tr>
<tr>
<td>Employee</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Total employment (EMPL).</td>
<td>9 (45)</td>
<td>3309 (2839)</td>
<td>2701 (1803)</td>
<td>-607.722</td>
<td>-5.07058 (0.0000)</td>
<td>5.03506 (0.0000*)</td>
<td>5.0886 (0.0000)</td>
<td>84% (-)</td>
</tr>
<tr>
<td>LOG EMPL.</td>
<td>9 (45)</td>
<td>7.79 (7.95)</td>
<td>7.51 (7.49)</td>
<td>-0.2820</td>
<td>-6.0915 (0.0000)*</td>
<td>5.13098 (0.0000)*</td>
<td>5.2911 (0.0000)</td>
<td>84% (-)</td>
</tr>
</tbody>
</table>

* *, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.
Table 6-4 Comparison of Pre-and Post-Privatisation Performance of Fully Privatised Firms

<table>
<thead>
<tr>
<th>Proxies</th>
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<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
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<tbody>
<tr>
<td></td>
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<td>No. of firms</td>
<td>Pre-Privatisation Mean (Median)</td>
<td>Post-Privatisation Mean (Median)</td>
<td>Change in Mean (Median)</td>
<td>t-Statistic for difference in Mean (P-value)</td>
<td>Wilcoxon statistic for difference in Medians (P-value)</td>
<td>Z-Statistic for significance of proportion (P-value)</td>
<td>Percentage of firms with changes as predicted (+/-)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increased (Decreased)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Profitability</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earnings before interest and taxes</td>
<td></td>
<td>22</td>
<td>0.724</td>
<td>0.883</td>
<td>0.154</td>
<td>1.11</td>
<td>1.37</td>
<td>1.44</td>
<td>71% (+)</td>
</tr>
<tr>
<td>(EBIT)</td>
<td></td>
<td>(9)</td>
<td>(0.60)</td>
<td>(0.835)</td>
<td>(0.295)</td>
<td>(0.274)</td>
<td>(0.169)</td>
<td>(0.147)</td>
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<td></td>
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</tr>
<tr>
<td>Earnings before interest and taxes to sales</td>
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<td>25</td>
<td>0.106</td>
<td>0.115</td>
<td>0.0008</td>
<td>0.017</td>
<td>1.79</td>
<td>1.348</td>
<td>66% (+)</td>
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<td>(ROS)</td>
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<td>(13)</td>
<td>(0.070)</td>
<td>(0.097)</td>
<td>(0.020)</td>
<td>(0.986)</td>
<td>(0.074)**</td>
<td>(0.1774)</td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Earnings before interest and taxes to assets</td>
<td></td>
<td>21</td>
<td>0.06</td>
<td>0.07</td>
<td>0.009</td>
<td>0.836</td>
<td>0.811</td>
<td>1.17</td>
<td>57% (+)</td>
</tr>
<tr>
<td>(ROA)</td>
<td></td>
<td>(16)</td>
<td>(0.05)</td>
<td>(0.08)</td>
<td>(0.011)</td>
<td>(0.408)</td>
<td>(0.417)</td>
<td>(0.24)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>37</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earnings before interest and taxes to equity</td>
<td></td>
<td>23</td>
<td>0.25</td>
<td>0.27</td>
<td>0.016</td>
<td>0.546</td>
<td>0.196</td>
<td>0.507</td>
<td>66% (+)</td>
</tr>
<tr>
<td>(ROE)</td>
<td></td>
<td>(12)</td>
<td>(0.232)</td>
<td>(0.261)</td>
<td>(0.016)</td>
<td>(0.589)</td>
<td>(0.843)</td>
<td>(0.617)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>35</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Operating Efficiency</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales efficiency</td>
<td></td>
<td>18</td>
<td>1.004</td>
<td>1.108</td>
<td>0.104</td>
<td>0.952</td>
<td>0.162</td>
<td>0.0870</td>
<td>47% (+)</td>
</tr>
<tr>
<td>(SALEFF)</td>
<td></td>
<td>(20)</td>
<td>(0.985)</td>
<td>(0.957)</td>
<td>(-0.083)</td>
<td>(0.346)</td>
<td>(0.8711)</td>
<td>(0.937)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income efficiency before interest and taxes</td>
<td></td>
<td>25</td>
<td>0.776</td>
<td>1.01</td>
<td>0.223</td>
<td>0.443</td>
<td>2.4334</td>
<td>2.262</td>
<td>69% (+)</td>
</tr>
<tr>
<td>(INEFF)</td>
<td></td>
<td>(11)</td>
<td>(0.560)</td>
<td>(0.913)</td>
<td>(0.235)</td>
<td>(0.660)</td>
<td>(0.01)*</td>
<td>(0.0023)*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>35</td>
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<td></td>
<td></td>
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171
<table>
<thead>
<tr>
<th>Proxies</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
<th>(9)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No. of firms</td>
<td>Pre-</td>
<td>Post-</td>
<td>Change</td>
<td>t-Statistic</td>
<td>Wilcoxon</td>
<td>Z-Statistic</td>
<td>Percentage of firms with changes as predicted (+/-)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increased</td>
<td>Privatisation</td>
<td>Privatisation</td>
<td>in difference</td>
<td>for difference</td>
<td>statistic for</td>
<td>of proportion</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Decreased)</td>
<td>Mean (Median)</td>
<td>Mean (Median)</td>
<td>Mean (Median)</td>
<td>(Mean (P-value))</td>
<td>difference in Medians (P-value)</td>
<td>significance of proportion (P-value)</td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real sales (SAL).</td>
<td></td>
<td>10</td>
<td>1.095</td>
<td>.878</td>
<td>-0.217</td>
<td>-3.576</td>
<td>2.757</td>
<td>3.451</td>
<td>26% (+)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(28)</td>
<td>(1.050)</td>
<td>(0.825)</td>
<td>(-0.245)</td>
<td>(0.0009)*</td>
<td>(0.0058)*</td>
<td>(0.00051)*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>38</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Leverage</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total debt to total assets</td>
<td></td>
<td>20</td>
<td>0.220</td>
<td>0.224</td>
<td>0.003</td>
<td>0.099</td>
<td>0.1622</td>
<td>0000</td>
<td>47% (-)</td>
</tr>
<tr>
<td>(Lev. 1)</td>
<td></td>
<td>(18)</td>
<td>(0.166)</td>
<td>(0.196)</td>
<td>(-0.017)</td>
<td>(0.9210)</td>
<td>(0.8711)</td>
<td>(0.9999)</td>
<td></td>
</tr>
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<td></td>
<td></td>
<td>38</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total debt to total equity</td>
<td></td>
<td>7</td>
<td>0.712</td>
<td>0.244</td>
<td>-0.467</td>
<td>-2.684</td>
<td>3.133</td>
<td>3.162</td>
<td>79% (-)</td>
</tr>
<tr>
<td>(Lev. 2)</td>
<td></td>
<td>(26)</td>
<td>(0.203)</td>
<td>(0.061)</td>
<td>(-0.128)</td>
<td>(0.0107)*</td>
<td>(0.0017)*</td>
<td>(0.0015)*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>33</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employee</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total employment (EMPL.)</td>
<td></td>
<td>4</td>
<td>2743</td>
<td>2161</td>
<td>-581</td>
<td>-4.531</td>
<td>4.704</td>
<td>4.583</td>
<td>89% (-)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(34)</td>
<td>(1945.0)</td>
<td>(1446)</td>
<td>(-357)</td>
<td>(0.0000)*</td>
<td>(0.0000)*</td>
<td>(0.0000)*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>38</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOG EMPL.</td>
<td></td>
<td>4</td>
<td>7.605</td>
<td>7.273</td>
<td>-0.331</td>
<td>-5.907</td>
<td>4.833</td>
<td>4.691</td>
<td>89% (-)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(34)</td>
<td>(7.57)</td>
<td>(7.24)</td>
<td>(-0.28)</td>
<td>(0.0000)*</td>
<td>(0.0000)*</td>
<td>(0.0000)*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>38</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

* , **, and *** refer to 1%, 5%, and 10% significance levels, respectively.
Table 6-5 Comparison of Pre-and Post-Privatisation Performance of Partially Privatised Firms

<table>
<thead>
<tr>
<th>Proxies</th>
<th>No. of firms</th>
<th>Pre-Privatisation Mean (Median)</th>
<th>Post-Privatisation Mean (Median)</th>
<th>Change in Mean (Median)</th>
<th>t-Statistic for difference in Mean (P-value)</th>
<th>Wilcoxon statistic for difference in Medians (P-value)</th>
<th>Z-Statistic for significance of proportion (P-value)</th>
<th>Percentage of firms with changes as predicted (+/-)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profitability</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earnings before interest and taxes (EBIT)</td>
<td>10</td>
<td>0.763 (0.712)</td>
<td>0.981 (0.765)</td>
<td>0.223 (0.135)</td>
<td>0.990 (0.384)</td>
<td>0.80 (0.423)</td>
<td>1.384 (0.165)</td>
<td>67% (+)</td>
</tr>
<tr>
<td>Earnings before interest and taxes to sales (ROS)</td>
<td>15</td>
<td>0.075 (0.063)</td>
<td>0.140 (0.112)</td>
<td>0.070 (0.067)</td>
<td>4.01265 (0.00112)*</td>
<td>3.25 (0.00115)*</td>
<td>3.231 (0.0012)*</td>
<td>94% (+)</td>
</tr>
<tr>
<td>Earnings before interest and taxes to assets (ROA)</td>
<td>16</td>
<td>0.057 (0.046)</td>
<td>0.082 (0.064)</td>
<td>0.0183 (0.022)</td>
<td>2.401 (0.029)**</td>
<td>1.75 (0.081)**</td>
<td>2.090 (0.0364)**</td>
<td>75% (+)</td>
</tr>
<tr>
<td>Operating Efficiency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales efficiency (SALEFF)</td>
<td>3</td>
<td>1.149 (1.134)</td>
<td>0.914 (0.934)</td>
<td>-0.234 (-0.06)</td>
<td>-2.72 (0.015)**</td>
<td>2.25 (0.024)**</td>
<td>2.507 (0.0123)**</td>
<td>19% (+)</td>
</tr>
<tr>
<td>Income efficiency before interest and taxes (INEFF)</td>
<td>12</td>
<td>0.774 (0.728)</td>
<td>1.03 (0.789)</td>
<td>0.256 (0.158)</td>
<td>1.182 (0.255)</td>
<td>1.75 (0.080)**</td>
<td>1.887 (0.059)**</td>
<td>75% (+)</td>
</tr>
</tbody>
</table>
Table 6.5 Cont.

<table>
<thead>
<tr>
<th>Proxies</th>
<th>No. of firms Increased (Decreased)</th>
<th>Pre-Privatisation Mean (Median)</th>
<th>Post-Privatisation Mean (Median)</th>
<th>Change in Mean (Median)</th>
<th>t-Statistic for difference in Mean (P-value)</th>
<th>Wilcoxon statistic for difference in Medians (P-value)</th>
<th>Z-Statistic for significance of proportion (P-value)</th>
<th>Percentage of firms with changes as predicted (+/-)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>3</td>
<td>1.12</td>
<td>0.83</td>
<td>-0.288</td>
<td>-3.299*</td>
<td>2.25</td>
<td>2.867</td>
<td>19% (+)</td>
</tr>
<tr>
<td>Real sales (SAL)</td>
<td>16</td>
<td>(1.73)</td>
<td>(0.845)</td>
<td>(-0.161)</td>
<td>(0.004)*</td>
<td>(0.024)**</td>
<td>(0.004)*</td>
<td></td>
</tr>
<tr>
<td>Leverage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total debt to total assets</td>
<td>5 (11)</td>
<td>0.199</td>
<td>0.141</td>
<td>-0.057</td>
<td>-2.113**</td>
<td>1.25</td>
<td>1.6283</td>
<td>69% (-)</td>
</tr>
<tr>
<td>(Lev. 1)</td>
<td>16</td>
<td>(0.198)</td>
<td>(0.128)</td>
<td>(-0.034)</td>
<td>(0.050)**</td>
<td>(0.211)</td>
<td>(0.1033)</td>
<td></td>
</tr>
<tr>
<td>Total debt to total equity</td>
<td>4 (12)</td>
<td>0.787</td>
<td>0.380</td>
<td>-0.407</td>
<td>-3.255*</td>
<td>1.75</td>
<td>2.456</td>
<td>75% (-)</td>
</tr>
<tr>
<td>(Lev. 2)</td>
<td>16</td>
<td>(0.784)</td>
<td>(0.339)</td>
<td>(-0.300)</td>
<td>(0.005)*</td>
<td>(0.080)**</td>
<td>(0.01404)**</td>
<td></td>
</tr>
<tr>
<td>Employee</td>
<td>5</td>
<td>4652</td>
<td>4156</td>
<td>-495</td>
<td>-1.724</td>
<td>1.25</td>
<td>1.783</td>
<td>69% (-)</td>
</tr>
<tr>
<td>Total employment (EMPL)</td>
<td>11 (16)</td>
<td>4052</td>
<td>3313</td>
<td>(-470)</td>
<td>(0.110)</td>
<td>(0.211)</td>
<td>(0.0744)***</td>
<td></td>
</tr>
<tr>
<td>LOG EMPL.</td>
<td>5 (11)</td>
<td>8.229</td>
<td>8.096</td>
<td>-0.133</td>
<td>-1.80</td>
<td>1.25</td>
<td>1.577</td>
<td>69% (-)</td>
</tr>
<tr>
<td>(16)</td>
<td></td>
<td>(8.15)</td>
<td>(8.1)</td>
<td>(-0.115)</td>
<td>(0.090)**</td>
<td>(0.211)</td>
<td>(0.114)</td>
<td></td>
</tr>
</tbody>
</table>

* ** and *** refer to 1%, 5%, and 10% significance levels, respectively.
6.3.1 Testing the changes in the profitability ratios pre-and post-privatisation

MNR, BC and DM collectively examine 211 privatised companies from 47 countries, and document highly significant improvements in profitability. This is in line with the theoretical expectation that transferring ownership from the public to private sector should lead to an increase in profitability, as private management would show a greater concern for profits compared to governments. To measure profitability, the study employed several proxies, which are: (1) real earnings before interest and taxes (EBIT), (2) return on sales (ROS, i.e. net profit before interest and taxes divided by sales), (3) return on assets (ROA, i.e. net profit before interest and taxes divided by total assets), and (4) return on equity (ROE, i.e. net profit before interest and taxes divided by total equity). In the following sub-sections, the study provides the results of the comparisons between pre-and post-privatisation for these proxies.

6.3.1.1 Testing the changes in the real earnings before interest and taxes (EBIT) pre- and post-privatisation

Table 6-3 presents the statistical results for real earnings before interest and taxes for all privatised firms, which are privatised through IPOs and represent a test group. The mean (median) of EBIT for all privatised firms increased from 74% (62.5%) pre- to 92.4% (81.5%) post-privatisation. Most of the privatised firms (around 70%) had increased its EBIT as the study predicted, which represents 32 firms; in addition, 8 firms achieved the same percentage of its
median after privatisation. The rest of the test group (14 firms) achieved EBIT below the median as shown in Chart 6-1.

The study tests the null hypothesis that the change in the mean (median) EBIT post- versus EBIT pre-privatisation is equal to zero. The alternative hypothesis is that it is not equal to zero.

As a result of the p-value for a proportion statistical test being 5%, the study rejects the null hypothesis at the 95% confidence level. Also, the p-value for the Wilcoxon signed-rank test is 8%. So, there are significant improvements of EBIT after privatisation for most privatised firms at the 90% confidence level, but these improvements are slight. In this context, Tables 6-4 and 6-5, rows 2 and 3, showed that both partially and fully privatised firms achieved an increase
in EBIT, but the partially privatised firms achieved profits higher than fully privatised firms. All statistical tests for EBIT are not statistically significant at any chosen level for both of them.

6.3.1.2 Testing the changes in the real earnings before interest and taxes on sales (ROS) pre- and post-privatisation

As seen from Table 6-3, the mean (median) of ROS for all privatised firms had increased from 10 per cent (7 per cent) pre- to 13 per cent (10 per cent) post-privatisation. The increase in the ROS is equal to 40 firms of the test group, which represents 74 per cent of privatised firms. This means that privatisation led to improving the ROS by around 30 per cent from 10 to 13 per cent for 74 per cent of privatised firms, as seen from Chart 6-2.

**Chart 6-2 The performance of the return on sales for partially and fully privatised firms pre- and post-privatisation**
The study tested the null hypothesis that the change of mean (median) ROS post- versus ROS pre-privatisation is equal to zero versus the alternative hypothesis that it is not equal to zero. Since the p-value for the non-parametric Wilcoxon signed-rank test and proportion test proportion tests are less than 1%, the study rejected the null hypothesis at the 99% confidence level. It means that there are significant changes in the median for ROS after privatisation for most privatised firms.

By extending the analysis according to type of privatisation, as partial or full privatisation, the study finds that the mean (median) of ROS for partially privatised firms increased from 7.5 (6.3) per cent pre- to 14 (11.2) per cent post-privatisation for 15 firms, which represent 94 per cent of partial privatised firms, as shown in Chart 6-2. The increase in ROS for partial privatisation is significant at the 99% confidence level by using all statistical tests, as shown in Table 6-5.

In addition, Table 6-4 demonstrates that 66 per cent of fully privatised firms achieved an improvement in ROS. The increase in the median of ROS is significant at the 10% confidence level, by using the non-parametric Wilcoxon signed-rank test, but not significant by using other statistical tests.

6.3.1.3 Testing the changes in the real earnings before interest and taxes on assets (ROA) pre- and post-privatisation

In calculating the return on assets the goal is to assess the effectiveness of firm's asset-utilisation, which is calculated by dividing the earnings before interest and taxes by the total assets.
After privatisation, as shown in Table 6-3, the privatised firms improved the use of their assets; the mean (median) for the test group increased after privatisation from 6 (5) per cent pre- to 7 (8) per cent post-privatisation.

It is clear from Chart 6-3 that thirty-three firms from the test group have increased their ROA above the mean (21 fully privatised and 12 partially privatised); this means that 62 per cent from privatised firms experienced an improvement in the use of their assets.

Although the change between before and after privatisation for ROA are low (almost 1.2 per cent), it achieved a statistically significant change at the 10% level by using the non-parametric Wilcoxon signed-rank test and the proportion test, but not any significant change by using another statistical test. The study
rejected the null hypothesis at the 90% confidence level. Thus, there are significant changes for ROA after privatisation for most privatised firms.

Extending the analysis to show whether there is any significant change between pre- and post-privatisation for fully and partially privatised firms, it can be observed that the fully privatised firms increased their ROA after privatisation for 21 firms which represents 57 per cent from the fully privatised sample. All statistical tests, namely, parametric, Wilcoxon and proportion tests, for ROA are not statistically significant at the any chosen level, as seen from Table 6-4.

Moving to rows 10-12 from Table 6-5, ROA for partially privatised firms increases significantly after divestiture. All statistical tests (parametric, Wilcoxon and proportion tests) show a statistically significant change in ROA performance. The study rejects the null hypothesis, at the 95% and 90% confidence level for the change in the mean and the median, respectively. Thus, there are significant changes in the mean and median of ROA for partially privatised firms.

6.3.1.4 Testing the changes in the real earnings before interest and taxes on equity (ROE) pre- and post-privatisation

Tables 6-3, 6-4, and 6-5, rows 14 and 15, provide the statistical tests for ROE for 54 privatised firms, 38 fully privatised firms, and 16 partially privatised firms, respectively. The mean (median) of ROE for the test group increased after privatisation from 26 (24) to 28 (26) per cent.
Chart 6-4 shows that the ROE for 61 per cent of the whole privatised firms had increased after privatisation, which represent 31 firms (23 fully and 8 partially firms). The median for either fully privatised or partially privatised firms increased after privatisation (1.6 percentage points for fully privatised firms, and 0.01 percentage points for partially privatised firms).

All statistical tests (parametric, Wilcoxon and proportion tests) showed a p-value of more than 10 per cent, hence, the increase in ROE for the whole sample of privatised firms is not significant at the any chosen level.

Extending the analysis to show whether there is any significant change between pre- and post-privatisation for fully and partially privatised firms, it can be observed that the fully privatised firms increased their ROE after privatisation for 23 firms which represents 66 per cent from the fully privatised sample. All
statistical tests, namely, parametric, Wilcoxon and proportion tests, for ROE are not statistically significant at the any chosen level, as seen from Table 6-4.

Moving to rows 14-16 from Table 6-5, partially privatised firms increased their ROE after privatisation for 8 firms, which represents 50 per cent from the partially privatised sample. All statistical tests (parametric, Wilcoxon and proportion tests) show a statistically not significant change in ROE performance at the any prescribed level.

6.3.2 Testing the changes in the operating efficiency ratios pre- and post-privatisation

Operating efficiency measures the enterprises' ability to use its resources efficiently. Also, labour productivity measures the effectiveness of the enterprise to achieve high level of sales and operating income per employee. One objective of governments in privatising SOEs is the greater stress on generating profits. Privatised firms, therefore, should try to employ their resources more efficiently. The study expected that the privatisation programme would provide a better allocation of resources - whether financial, human, or technological - for an improvement in operating efficiency is predicted after privatisation.

The study measures operating efficiency by two ratios: (i) sales efficiency (SALEFF, i.e. inflation-adjusted sales per employee), and (ii) net income efficiency (INEFF, i.e. inflation-adjusted net income per employee). Both ratios are computed as an index, defined to be one for year 0 (the year of privatisation), with other years being expressed relative to unity in those years.
In the following sections, the study discusses the results of statistical tests by comparisons between pre- and post-privatisation for these ratios.

6.3.2.1 Testing the changes in the sales efficiency (SALEFF) pre- and post-privatisation

Table 6-3, rows 18-20, shows that sales efficiency increased in the mean (0.38 percentage point) for the whole sample of privatised firms, although the median dropped (-8.21 percentage points) after privatisation. Only 21 firms had increased their SALEFF after privatisation (18 fully privatised and 3 partially privatised) as shown in Chart 6-5.

Chart 6-5 The performance of the sales efficiency for partially and fully privatised firms pre- and post-privatisation

The study tests the null hypothesis that the change in mean (median) SALEFF post- versus SALEFF pre-privatisation is equal to zero. The alternative
hypothesis is that it is not equal to zero. All statistical tests (parametric, Wilcoxon and proportion tests) for SALEFF provide a p-value is more than 10 per cent; thus the change in the SALEFF is not statistically significant at the any chosen given level. Moving to Table 6-4, rows 18-20, the study makes the same observation for fully privatised firms.

Extending the analysis to the partially privatised firms, as seen from Table 6-5, the mean (median) for SALEFF decreased -23.4 (-6) percentage points post-privatisation for thirteen firms, which represents 81% from the sample for partial privatisation. All statistical tests for SALEFF are statistically significant at the 95% confidence level.

6.3.2.2 Testing the changes in the income efficiency (INEFF) pre- and post-privatisation

Income efficiency measures the labour productivity for the privatised firms. From Table 6-3, rows 22-24, the mean (median) of INEFF for the test group increased after privatisation from 78 (59) to 103 (93) per cent. Chart 6-6 shows that the INEFF for 71 per cent of privatised firms had increased after privatisation by around 25.7 per cent in 37 privatised firms (25 fully privatised and 12 partially privatised firms).

As a result of the p-value for a proportion statistical test and the Wilcoxon signed-rank test being equal to or less than 1%, the study rejects the null hypothesis at the 99% confidence level. Thus, there are statistically significant improvements of the INEFF after privatisation for most privatised firms. Table 6-4 provides the same results for fully privatised firms.
Moving to Table 6-5, the statistical tests (Wilcoxon and proportion tests) for partially privatised firms indicate a significant improvement in the median of INEFF at the 90% confidence level. In addition, the p-value of the parametric test is more than 10%; hence, the change in the mean of the INEFF is not significant at any prescribed level.

6.3.3 Testing the changes in the output ratios pre- and post-privatisation

Successful privatisation programmes are typically characterised not only by increased profitability and efficiency, but also by new growth and higher output. Output is proxied by real sales. For calculations of real sales, data of sales are deflated using the CPI, then computed as an index normalised to unity for
year 0 (the year of privatisation). Other years (year -2, year -1, year +1, and year +2) are expressed relative to unity.

The study expects that firms following privatisation should increase their output due to competition-pressures, better incentives, and more financing opportunities. In the following paragraph, the study discusses the results of the comparison between the average inflation-adjusted sales level, pre- and post-privatisation period, as a proxy for output.

6.3.3.1 Testing the changes in the real sales (SAL) pre- and post-privatisation

As seen from Table 6-3, rows 25-27, the mean (median) of the real sales dropped from 110 per cent (107 per cent) pre-privatisation to 86 per cent (84 per cent) post-privatisation. It is clear from Chart 6-7 that just 26 per cent of privatised firms exhibit an increase in output, while the remainder decreased.

The study tests the null hypothesis that the change of mean (median) SAL post-versus SAL pre-privatisation is equal to zero. The alternative hypothesis is that it is not equal to zero.

All statistical tests namely, parametric, Wilcoxon and proportion tests, for the change in the SAL variable, are statistically significant at the 99% confidence level. It means that privatisation has a negative impact on the performance of output for privatised firms at the 99% confidence level. Forty privatised firms achieved a decline in their SAL by around 23.7 per cent.
By analysing these results according to the type of privatisation as partial or full privatisation, the study finds that the change in the mean (median) of SAL for partially privatised firms decreased from 112 per cent (137 per cent) pre- to 83 per cent (85 per cent) post-privatisation for 13 firms, which represent 81 per cent of partially privatised firms. The drop in the SAL variable for partial privatisation is significant at the 99% confidence level by using parametric, and proportion tests; it means that there is a significant change of SAL after privatisation for most partially privatised firms at the 99% confidence level. Additionally, the p-value of the Wilcoxon test is less than the 5% level, as shown in Table 6-5; hence, there is a significant change at the 95% confidence level.

Furthermore, Table 6-4 demonstrates that 26 per cent of fully privatised firms achieved an improvement in their SAL. The remainder of the fully privatised
firms achieved decreases in their SAL. The decrease in SAL is significant at the 99% confidence level by using all chosen statistical tests (parametric, Wilcoxon and proportion tests).

6.3.4 Testing the changes in the leverage ratios pre- and post-privatisation

Leverage is one of measurement of financial risk\textsuperscript{54}. By analysing the debt ratio, one can assess whether the privatised SOEs lowered their debt-financing or not. The study expects that a firm's capital structure might change significantly in response to the switch from an SOE to private ownership. On the other hand, before privatisation, the government provides debt-guarantees. Therefore, SOEs are able to borrow at relatively low costs, but after privatisation the government removes these guarantees. Hence, privatised firms do not have the advantage of borrowing funds at a lower rate during the privatisation period, but they will have the opportunity to access the equity markets, domestically and internationally (Bradley, Jarrell, and Kim, 1984). Hence, the researcher expected a decline in the debt ratio after privatisation.

To test for this proposition, the study tests the null hypothesis that the change of mean (median) leverage post- versus leverage pre-privatisation equals zero. The alternative hypothesis is that it is not equal to zero. Thus, under H1: privatisation leads to an increase in leverage ratios of the privatised firms, and under H2: privatisation leads to a decrease in leverage ratios of the privatised firms.

\textsuperscript{54} Financial risk includes the ability of firms to pay short-term debt, also ability of firms to service interests on short and long-term debt.
To examine the changes in leverage, the study employs two ratios: total debt to total assets (TDTA) and total debt to total equity (TDTE). In the following subsections, the study presents the results from testing these ratios by using parametric, Wilcoxon and proportion tests.

6.3.4.1 Testing the changes in the total debt to total assets: leverage one (TDTA), pre- and post-privatisation

Tables 6-3, 6-4, and 6-5, rows 29-31 provide the all the statistical tests of the TDTA ratio for 54 privatised firms, namely, 38 fully privatised firms, and 16 partially privatised firms, respectively. The mean (median) of TDTA for the test group decreased after privatisation from 21 per cent (19 per cent) to 20.9 per cent (16 per cent). It is clear from Chart 6-8 that the TDTA of 57 per cent of privatised firms had decreased. It means that thirty-one firms achieved a decrease in their TDTA, as the study predicted. The results of parametric, Wilcoxon, and proportion tests show an insignificant decrease in both mean and median at any given level.

By analysis of these results, according to the type of privatisation as partial or full privatisation, the study finds that the mean of TDTA for fully privatised firms increased from 22 per cent pre- to 22.4 per cent post-privatisation, but the median decreased 1.7 per cent after privatisation. Since the p-value for all statistical tests of TDTA for fully privatised firms is more than 10%, the study does not reject the null hypothesis. Hence, at any of the chosen levels, there are statistically insignificant changes in mean and median of TDTA for full privatisation.
Moving to Table 6-5, the mean (median) of TDTA for partially privatised firms decreased from 19.9 per cent (19.8 per cent) pre- to 14.1 per cent (12.8 per cent) post-privatisation for 11 firms, which represents 69 per cent from partially privatised firms. Since the p-value for the parametric t-statistical test is equal to 5%, the study just rejects the null hypothesis at the 95% confidence level. It means that there is a significant impact on the change in mean for TDTA. Since the p-value for Wilcoxon test is more than 10%, there is an insignificant effect for the change in median for TDTA for partially privatised firms.

6.3.4.2 Testing the changes in the total debt to total equity: leverage two (TDTE) pre- and post-privatisation

The mean (median) of total debt to total equity (TDTE) for the test group decreased after privatisation from 73 per cent (42 per cent) to 29 per cent (10 per cent), as shown in rows 34 and 35 in Table 6-3. Thirty-eight firms achieved
results as the study predicted, which represents 78 per cent of the test group, as shown in Chart 6-9.

**Chart 6-9 The performance of the total debt to total equity for partially and fully privatised firms pre- and post-privatisation**

Since the p-value for all statistical tests is less than 1%, the study rejects the null hypothesis at the 99% confidence level. Hence, there are statistically significant impacts on the change of mean and median for TDTE. The same observation can be observed for fully privatised firms, as shown in Table 6-4, rows 34 and 35.

Extending the analysis to show whether there is any significant change from pre- to post-privatisation for partially privatised firms, the mean (median) of the TDTE ratio decreased by around 40.7 per cent (30 per cent) following privatisation, as seen in Table 6-5. The p-value of the parametric, Wilcoxon and proportion tests are 1%, 10%, and 5%, respectively. Thus, the decrease in the
mean is significant at the 99% confidence level; also the change in the median of TDTE is significant at the 90% confidence level.

6.3.5 Testing the changes in the employment level pre- and post-privatisation

The impact of privatisation on the level of employment (EMPL) is one of the crucial issues for a privatisation programme. Most of the SOEs tend to be over-staffed for many social reasons. One objective of establishing the public sector is creating as many jobs opportunities as possible. In this context, extensive layoffs are expected to take place because of the style of new management, where this issue will be considered in favour of business objectives. Therefore, the study expected that employment levels will decline following divestiture. An interesting point here is that there is neither theoretical nor empirical consensus with regard to the impact of privatisation on the level of employment. In other words, privatisation might lead to an increase in the level of employment, because the privatised firms probably would target growth and expand their investment-spending. To test for this proposition, the study computes the average level of employment prior to and after privatisation, then tests the null hypothesis of the change of mean (median) for EMPL post- versus EMPL pre-privatisation being equal to zero. The alternative hypothesis is that it is not equal to zero.

To examine employment level-changes, the study calculates the mean and median for the level of employment for the pre- and the post-privatisation period. In the next paragraph, the study will present the results from comparing the level of employment pre- and post-privatisation.
6.3.5.1 Testing the changes in the number of employee (EMPL) pre- and post-privatisation

Rows 38-40 in Table 6-3 present the decline in the mean (median) of the employment level for the whole sample of privatised firms, which decreased by 607 employees (368 employees) after privatisation.

It is clear from Chart 6-10 that forty-five firms suffered declines in their employment-level (34 full privatisation and 11 partial privatisation). It means that 84% from the test group had decreased the level of employment, as the study predicted.

Chart 6-10 Number of employees for partially and fully privatised firms pre-and post-privatisation

Since the p-value for all statistical tests is less than 1%, the study rejects the null hypothesis at the 99% confidence level. Hence, there is a statistically
significant impact on the change in mean (median) for EMPL. The same observation can be observed by using LOG EMPL as shown in Table 6-3, in rows 42 and 43. The similar results are shown in Table 6-4 for fully privatised firms. Moving to rows 38-40 in Table 6-5, the results of the parametric and Wilcoxon tests, for the partially privatised firms, show an insignificant mean (median) decrease in employment. For example, the mean (median) employment level decreases by 495 employees (470 employees) after privatisation. The proportion test (p-value is 7.4%) shows that the vast majority (69%) of partially privatised firms reduced the employment level during post-privatisation.

Although there was no consensus in the effect of privatisation on the level of employment, the study found that more than 85% from the whole sample of privatised firms achieved a statistically significant decrease in their mean (median) of the EMLP.

### 6.4 Summary

The aim of this chapter is to evaluate the performance of Egyptian privatised firms after privatisation comparing it with the performance before privatisation. In this chapter the first hypothesis for this thesis, which is “privatisation leads to improvement in the performance of privatised firms following privatisation” has been tested by using the same methodology of MNR1994.

This chapter consists of two parts. Part One presented the descriptive statistics for privatised firms (test group) and private firms (control group). Part Two
presented the results of comparison between the pre- and post-privatisation performance of Egyptian privatised firms that privatised through IPOs between 1991 and 2004.

The descriptive statistics of the financial data for privatised firms showed that most financial variables changed following privatisation; in addition, these variables have a standardised skewness and a standardised kurtosis out of the range ±2. This means that most of the financial variables do not tend to be normally distributed either pre- or post-privatisation. Hence, the study employed the non-parametric Wilcoxon signed-rank test to examine whether the changes in the median of these variables pre- and post-privatisation are significant or not. As well as this, the performance changes in mean (median) values of privatised firms lagged behind many of their counterparts, and so the study used the Mann-Whitney test to examine if the difference in these variables between the test group and control group was significant or not.

According to the results presented in this chapter, the privatisation programme does not financially harm the privatised firms. The performance of Egyptian privatised firms had improved after transfer from state ownership to private ownership. All profitability ratios, apart from ROE, increased significantly after divestiture of privatised firms. Additionally, the change of performance for INEFF increased statistically significantly. By contrast, the change of SALEFF is not statistically significant. Operating efficiency, in general, had increased after privatisation. Furthermore, the results document significant decreases in the level of employment after privatisation. The study will provide full discussion on these results in chapter nine.
An important point here is that the reduction in the employment level in a company after the privatisation programme might be due to dropping a whole production-line. Thus, the ownership of that production-line may be transferred to another owner, with the production-line still in operation with almost the same number of employees. Thus, there would be no decrease in the employment level in the macro terms, because the employees would have only shifted from one owner to another.

The question that arises now is: “is it better to continue to privatise or not?” To answer this question, the researcher cannot fully draw conclusions from the results mentioned in this chapter because the data used in the analysis do not adjust for industry factors that may affect the values of the performance indicators of privatised firms. In this context, the researcher cannot determine if the changes in performance are due to privatisation itself or to other factors. So the question now is: are the changes in values of the performance indicators of privatised firms due to the new ownership structures? Or, are they attributable to external factors, other than privatisation? To examine that the improvement in performance results from privatisation itself, the researcher will compare the performance changes of privatised firms with the performance changes of private firms similar in size and industry, which will be discussed in the next chapter.
CHAPTER 7 A COMPARATIVE ANALYSIS OF THE PERFORMANCE OF PRIVATISED AND PRIVATE FIRMS

7.1 Introduction

In chapter six, the researcher investigated the first hypothesis in this thesis, by presenting the results of the comparative analysis of pre- and post-privatisation performance by using appropriate statistical tests to reflect the changes in the performance, and concluded that the performance of Egyptian privatised firms had improved after transfer from state ownerships to private ownership.

As argued earlier, it is of interest to understand whether any observed performance changes in privatised firms are due to privatisation itself, irrespective of any industry-wide factors. In this chapter, the study will attempt to meet the second objective of this research by investigating the second hypothesis in this thesis, that is "the performance of privatised firms following privatisation is similar to the performance of their counterpart from the private sector" by comparing the changes in the performance indicators in privatised firms with the changes in the performance indicators in the private firms (control group) to decide whether the privatisation programme was the cause of these changes or not.

The year 0 of a given control firm would be the year of privatisation of its sample firm (privatised). The study also employs the Mann-Whitney test to find out whether the performance changes in privatised firms are different from those of
private firms. This comparison is undertaken based on both absolute and relative performance change methods, which are mentioned in Chapter Five.

An interesting point here is that any industry-trend would affect values for firm means and medians; thus, a change in unadjusted performance measures may be due to factors other than privatisation. This study uses Barber and Lyon's (1996) methodology by matching the entire sample of privatised firms to a control group from private sectors based on industry and size55.

To overcome the problem of different past performances between privatised and private firms, the study uses the absolute56 and relative57 performance change methods to measure the performance indicators (profitability, operating efficiency, output, employment levels, and leverage).

To test the performance of privatised firms after comparing them with the control group, the study computes the relative performance change for each performance measure, then calculates the mean (median) of each performance variables for at least two years post-privatisation (years +1 to +2) periods. The year 0 of a given control firm would be the year of privatisation of its sample firm (privatised). There follow calculations for the differences between the privatised means (medians) post-privatisation and their counterparts. The study tests the null hypothesis that each performance difference for the mean (median) between privatised firms and private ones is equal to zero, by employing the parametric and the non-parametric test statistics mentioned above. In addition

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55 Barber and Lyon's (1996) argument is that the 70-130% size-filter yields test statistics that are well specified. Most privatised firms are matched within the range of 78%-125% of private firms.
56 Full details about the absolutes performance data are shown in Appendices 7.1, 7.2 and 7.3.
57 Full details about the relative performance data are shown in Appendices 7.4, 7.5 and 7.6.
to this, the study uses the Mann-Whitney test for the significant difference in medians. The study provides the results from this test in Table 7-1 for all privatised firms, Table 7-2 for fully privatised firms, and Table 7-3 for partially privatised firms.

The rest of this chapter is organised to provide the results of the comparison between the performance of Egyptian privatised firms (test group), that experienced full or partial privatisation between 1991 and 2004 through IPOs, and counterparts from private firms (control group), as follows. Section two provides the results from testing the difference in profitability indicators between privatised and private firms. Section three articulates the results from testing the difference in operating efficiency ratios between privatised and private firms. The results from testing the difference in output measures between privatised and private firms are shown in the fourth section. Section five provides the results from testing the difference in leverage ratios between privatised and private firms. The results from testing the difference in the level of employment between privatised and private firms are presented in the sixth section. The summary chapter is set out in section seven.
Table 7-1 Comparison of Performance Difference between Privatised and Private Firms (Absolute and Relative Performance Change Methods)

This table shows the results of comparison of performance changes between privatised firms and their control firms (private firms) using two techniques: the parametric t-test and the non-parametric Mann-Whitney test for the significant differences between privatised firms and private ones. However, for the relative performance change method, the researcher calculates the absolute performance change for each firm, privatised or private, as follows: \( APC = \frac{P_{t}}{P_{t-1}} \), where \( APC \) is the absolute performance change, \( P_{t} \) is the mean performance post-privatisation, and \( P_{t-1} \) is the mean performance pre-privatisation. The relative performance change for each firm is calculated as follows: \( RPC = \frac{P_{t}}{P_{t-1}} \) where \( RPC \) = relative performance change, \( P_{t} \) = mean performance post-privatisation, \( P_{t-1} \) = mean performance pre-privatisation. The non-parametric Mann-Whitney test compares the medians of each sample by combining the two samples, sorting the data from smallest to the largest, and then comparing the average ranks of the two samples in the combined data. The study lists the results under the null hypothesis that the mean (median) of sample one equals the mean (median) of sample two versus the alternative hypothesis that the mean (median) of sample one does not equal the mean (median) of sample two. The study provides the mean (median) values of each variable based on the relative performance change method, the mean (median) differences between privatised and their counterparts, t-statistics with their significant levels, the average rank for each sample, and the p-value to show whether there is a statistically significant difference between medians of each sample.

<table>
<thead>
<tr>
<th>Proxies</th>
<th>No. of Firms</th>
<th>Absolute performance change method</th>
<th></th>
<th>Relative performance change method</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Privatised Firms Mean (Median)</td>
<td>Private Firms Mean (Median)</td>
<td>Difference in Mean (Median)</td>
<td>t-Statistic for difference in Mean (P-value)</td>
<td>Av- Rank (P-value)</td>
</tr>
<tr>
<td>Profitability</td>
<td>54</td>
<td>-0.349 (-0.24)</td>
<td>0.7020 (0.25)</td>
<td>-1.059 (-0.66)</td>
<td>-3.525 (0.0006)*</td>
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<td>-0.029 (-0.01)</td>
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<td>-0.35 (0.01)</td>
<td>-1.15 (0.252)</td>
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<td>-0.0259 (-0.01)</td>
<td>-0.0190 (-0.01)</td>
<td>-0.00686 (-0.01)</td>
<td>-0.665 (0.508)</td>
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<td>-0.0259 (-0.01)</td>
<td>-0.0190 (-0.01)</td>
<td>-0.00686 (-0.01)</td>
<td>-0.665 (0.508)</td>
</tr>
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<td>t-Statistic for difference in Mean (P-value)</td>
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<td>-0.0874 (-0.03)</td>
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<td>1.77 (0.08)**</td>
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<td>Sales efficiency (SALEFF)</td>
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<td>0.460 (0.145)</td>
<td>-0.926 (-0.34)</td>
<td>-2.268 (0.0246)**</td>
</tr>
<tr>
<td>and taxes (INEFF)</td>
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<td>Output</td>
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<td>Real sales (SAL)</td>
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<td>Total debt to total assets (Lev. 1)</td>
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<td>Total employment (EMPL)</td>
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*; **; and *** refer to 1%, 5%, and 10% significance levels, respectively.
Table 7-2 Comparison of Performance Difference between Fully Privatised Firms and Private Firms (Absolute and Relative Performance Change Methods)

<table>
<thead>
<tr>
<th>Proxies</th>
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<th>Relative performance change method</th>
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<td>Private Firms Mean (Median)</td>
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<td>Earnings before interest and taxes (EBIT).</td>
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<td>-0.485 (-0.24)</td>
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<td>0.6381 (0.215)</td>
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<td>-1.121 (-0.675)</td>
<td>-1.121 (-0.675)</td>
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<td>-3.0619 (0.003)*</td>
<td>-3.0619 (0.003)*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>32-44</td>
<td>32-44</td>
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<tr>
<td>Earnings before interest and taxes to sales (ROS).</td>
<td>38</td>
<td>-0.0521 (-0.0105)</td>
<td>-1.143 (-0.009)</td>
</tr>
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<td></td>
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<td>-2.163 (-0.150)</td>
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<td>-1.6971 (0.0976)**</td>
<td>-1.6606 (0.089)***</td>
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<td></td>
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<td>35-41</td>
<td>37-39</td>
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<td>Earnings before interest and taxes to assets (ROA).</td>
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<td>-0.032 (-0.0180)</td>
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<td>40-36</td>
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<td>38</td>
<td>-0.2389 (-0.1197)</td>
<td>-0.681 (-0.36)</td>
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<td></td>
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<td>-0.0786 (-0.030)</td>
<td>-0.085 (-0.21)</td>
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<td></td>
<td>-1.713 (-0.0908)**</td>
<td>-1.9856 (0.048)**</td>
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<td></td>
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<td>28-48</td>
<td>33-43</td>
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<td>Operating Efficiency</td>
<td></td>
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<tr>
<td>Sales efficiency (SALEFF).</td>
<td>38</td>
<td>0.1104 (-0.0428)</td>
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<td></td>
<td></td>
<td>0.19 (-0.15)</td>
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<td>-0.0795 (-0.222)</td>
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<td>-0.5108 (0.6109)</td>
<td>-0.5108 (0.6109)</td>
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<td>35-41</td>
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<tr>
<td>Income efficiency before interest and taxes (INEFF).</td>
<td>38</td>
<td>-0.6847 (-0.065)</td>
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<tr>
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<td>0.3863 (-0.065)</td>
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<td>-1.071 (-0.395)</td>
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<td></td>
<td>-1.955 (0.0543)****</td>
<td>-1.955 (0.0543)****</td>
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Table 7.2 Cont.

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<td>Privatised Firms Mean (Median)</td>
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<td>Output</td>
<td>38</td>
<td>0.1261 (-0.2056)</td>
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<td>Real sales (SAL).</td>
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<td>0.0814 (0.0440)</td>
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<td>Total debt to total assets (Lev. 1)</td>
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<td>-431.243 (-242.58)</td>
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<td>Total debt to total equity (Lev. 2)</td>
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<td>-0.0226 (-0.14)</td>
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<td>Employee</td>
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<td>Total employment (EMPL)</td>
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<td>-431.243 (-242.58)</td>
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<td>LOG EMPL</td>
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<td>-0.0226 (-0.14)</td>
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* *, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.
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<tr>
<td>Earnings before interest and taxes (EBIT).</td>
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<td>-0.031 (0.245)</td>
<td>-0.031 (0.24)</td>
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<td>-0.8537 (0.36)</td>
<td>-0.8537 (0.36)</td>
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<td></td>
<td>-1.7335 (0.093)**</td>
<td>-1.7335 (0.093)**</td>
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<tr>
<td>Earnings before interest and taxes to sales (ROS).</td>
<td>16</td>
<td>0.0231 (0.015)</td>
<td>0.0889 (0.0181)</td>
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<td>0.0480 (0.0312)</td>
<td>-0.222 (0.3353)</td>
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<td></td>
<td>1.8080 (0.081)**</td>
<td>(0.9251) (0.3178)</td>
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<td>18-14</td>
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<tr>
<td>Earnings before interest and taxes to assets (ROA).</td>
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<td>-0.015 (-0.0144)</td>
<td>0.006 (-0.014)</td>
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<td>0.0169 (0.000)</td>
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<td>0.9370 (0.3562)</td>
<td>-0.448 (0.6576)</td>
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<td>18-14</td>
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<tr>
<td>Earnings before interest and taxes to equity (ROE).</td>
<td>16</td>
<td>-0.1431 (-0.105)</td>
<td>-0.2881 (-0.3)</td>
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<td>-0.1081 (-0.03)</td>
<td>0.0368 (-0.31)</td>
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<td>-0.0355 (-0.05)</td>
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<td>-0.455 (0.6505)</td>
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<td>14-18</td>
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<tr>
<td>Operating Efficiency</td>
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<td></td>
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<tr>
<td>Sales efficiency (SALEFF).</td>
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<td>-0.0854 (-0.065)</td>
<td>-0.0854 (-0.0656)</td>
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<tr>
<td></td>
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<td>0.7162 (0.17)</td>
<td>0.7162 (0.17)</td>
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<td>-0.8017 (-0.4069)</td>
<td>-0.8017 (-0.406)</td>
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<td>-1.6556 (0.1082)</td>
<td>-1.6556 (0.1082)</td>
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<tr>
<td>Income efficiency before interest and taxes (INEFF).</td>
<td>16</td>
<td>0.065 (-0.210)</td>
<td>0.065 (-0.2108)</td>
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<tr>
<td></td>
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<td>0.6368 (0.225)</td>
<td>0.6368 (0.225)</td>
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<td>-0.5714 (-0.0504)</td>
<td>-0.5714 (-0.050)</td>
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<td>-1.393 (0.1737)</td>
<td>-1.393 (0.1737)</td>
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Table 7.3 Cont.

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<td>Privatised Firms Mean (Median)</td>
</tr>
<tr>
<td><strong>Output</strong></td>
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<td></td>
</tr>
<tr>
<td>Real sales (SAL)</td>
<td>16</td>
<td>-0.1731 (-0.154)</td>
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<td><strong>Leverage</strong></td>
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<tr>
<td>Total debt to total assets (Lev. 1)</td>
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<td>0.0275 (0.0078)</td>
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<tr>
<td>Total debt to total equity (Lev. 2)</td>
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<td>-0.0957 (-0.075)</td>
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<td><strong>Employee</strong></td>
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<td>Total employment (EMPL)</td>
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</tr>
<tr>
<td>LOG EMPL</td>
<td>16</td>
<td>-0.118 (-0.12)</td>
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*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.
7.2 Testing the difference in profitability measures between privatised and private firms

It is well documented, theoretically and empirically, that transferring a firm from the state to the private sector should lead to an increase in profitability, as private management would show a greater concern for profit compared to government. Megginson and Bouchkova (2000) document highly significant improvements in profitability as well as the number of shareholders of the privatised firms being significantly higher (at level 0.01) than the number of shareholders in the matching private sample firms.

The researcher expects that the improvement in the profitability of the privatised firms (as previously presented in Chapter Six) is similar to the performance of equivalent private companies. In the following sections, the study provides the results of comparing the difference in profitability between privatised firms and their counterparts from private firms, by using all the profitability ratios, which are mentioned before (EBIT, ROS, ROA, and ROE).

7.2.1 Testing the difference in the ratio of real earnings before interest and taxes (EBIT) between privatised and private firms

It is clear from Table 7-1 that the absolute and relative values of the mean (median) of EBIT for all privatised firms are less than for their control group. For example, the difference in the mean (median) is -106 per cent (-66 per cent) as absolute values and is -106 per cent (-66 per cent) as relative values.
The study tests the null hypothesis that the difference in the mean (median) EBIT for privatised firms after privatisation versus EBIT for private firms equals zero. The alternative hypothesis is to be not equal to zero.

All statistical tests (parametric and Mann-Whitney tests) reveal p-values for the absolute and relative performance of EBIT less than 1%. Hence, the study accepted the alternative hypothesis at the 99% confidence level. It means that the difference in EBIT between privatised firms and their control group is significant at the 99% confidence level.

By extending the analysis according to type of privatisation as partial or full privatisation, the study finds the same results for fully privatised firms, as shown in rows 2 and 3 in Table 7-2. It means that the difference in EBIT between fully privatised firms and their counterparts is significant at the 99% confidence level.

Moving to Table 7-3, the results of the p-values for parametric and Mann-Whitney tests for partially privatised firms are 9% and 4.3%, respectively, so the study rejects the null hypothesis. It means that there is a significant difference in the mean and median of EBIT at the 90% and 95% confidence level, respectively.

### 7.2.2 Testing the difference in the ratio of return on sales (ROS) between privatised and private firms

As shown in Table 7-1, the performance of ROS for private firms is better than the performance of the whole sample of privatised firms; the difference in the mean (median) is -3.5 per cent (-1 per cent) for absolute values and is -145 per
cent (-4 per cent) for relative values. The difference in the median between the relative performance of ROS for the whole sample of privatised firms and their counterparts is very small. The study examined the null hypothesis that the relative performance of the ROS for privatised firms equals the performance of private firms. The alternative hypothesis is to be not equal.

The p-values for all statistical tests (parametric and Mann-Whitney) are more than 10%; hence, the study does not reject the null hypothesis. It means that there is no difference in the performance of ROS between the privatised and private firms after privatisation. Moving to Table 7-3, the study found the same observation for partially privatised firms; which is, there is an insignificant difference in the performance of ROS between partially privatised firms and their counterparts.

In addition, the results from Table 7-2 for fully privatised firms show that the difference in ROS is significant at the 10% level by using the parametric statistical test. The study rejected the null hypothesis at the 90% confidence level. Thus, there is a significant difference in the mean of ROS between the fully privatised firms and their counterparts at the 90% confidence level. Since the p-value for the Mann-Whitney test is 59%, the study does not reject the null hypothesis; hence, there is no significant difference in the median of ROS between the fully privatised firms and their counterparts at any chosen level.
7.2.3 Testing the difference in the ratio of return on assets (ROA) between privatised and private firms

The difference in the performance of ROA between privatised firms and their private ones is illustrated in rows 8 and 9 in Table 7-1. The difference in the absolute values for the mean (median) is very little (-0.6 per cent for mean and -1 per cent for median), but the difference in the relative values for the mean (median) is -54.4 per cent (18 per cent). The study tests the null hypothesis that there is no difference between the relative performance of ROA for privatised firms and for private firms.

The statistical t-test shows a difference between the mean of ROA for both the whole sample of privatised firms and their counterparts at the 95% confidence level. Thus, the mean performance of ROA for privatised firms is not similar to the mean performance of ROA for private firms. As well as this, the Mann-Whitney test does not show a significant difference between the median of ROA for each of them. Hence, the median of ROA for privatised firms is similar to the performance of ROA for private firms.

Extending the analysis to show whether there is any significant difference between privatised firms and their counterparts for fully and partially privatised firms, the study finds that the difference between the mean (median) of the relative performance of ROA for partially or fully privatised firms and their counterparts is not significant at any level of confidence by using the statistical t-test, and the Mann-Whitney test, as shown in Tables 7-2 and 7-3, row 9. Hence, the study does not reject the null hypothesis. It means that there is no
difference in the performance of ROA between the fully or partially privatised and private firms after privatisation.

7.2.4 Testing the difference in the ratio of return on equity (ROE) between privatised and private firms

It is clear from Table 7-1 that the performance of ROE for private firms is better than the performance of privatised firms, for the difference in the mean (median) is -12.3 per cent (-9.5 per cent) for absolute values and is -51.5 per cent (-15 per cent) for relative values. The study tests the null hypothesis that "the relative performances of the ROE for privatised firms and their counterparts are equal. The alternative hypothesis is to be not equal".

The p-value for the parametric statistical test is 3.6%; hence, the study accepts the alternative hypothesis. It means that there is a significant difference in the mean performance of ROE between the privatised and private firms following privatisation at the level of 95% confidence. In this context, the p-value for the non-parametric Mann-Whitney statistical test is 8.5%; thus, the study also accepts the alternative hypothesis of a difference in the median at the 90% confidence level. Moving to Table 7-2, rows 11 and 12, the study shows that there is a significant difference at the 95% confidence level in both the mean and median between fully privatised firms and their counterparts.

Extending the analysis to partially privatised firms, the results in rows 11 and 12, in Table 7-3 show that the p-values for the parametric statistical test and the non-parametric Mann-Whitney statistical test are more than 10%. Hence, the
study does not reject the null hypothesis. Thus, there is no significant difference in the performance of ROE between partially privatised firms and their counterparts.

7.3 Testing the difference in the operating efficiency ratios between privatised and private firms

To increase the ability of a firm to use its resources efficiently is one objective of private management. The study expected that transferring a firm from state ownership to private ownership might lead to a better allocation of the firm's resources. Also, the researcher expects that the improvement in the operating efficiency post-privatisation is similar to the performance of private firms. In the following two sections, the study discusses the results of the comparison between operating efficiency for privatised firms and their counterparts, by using sales efficiency and net income efficiency ratios after computing them as an index, defined to be one for year 0 (the year of privatisation), with other years being expressed relative to unity in these years.

7.3.1 Testing the difference in the ratio of sales efficiency (SALEFF) between privatised and private firms

Table 7-1, rows 14 and 15, reveals that the sales efficiency for private firms is more than the SALEFF for privatised firms, the difference in the mean (median) is -29 per cent (-26 per cent) for absolute values, and is -29 per cent (-26 per cent) for relative values. The difference in the median for ROS between privatised and counterparts is very large. The study tests the null hypothesis
that the relative performance of the SALEFF for privatised firms equals the performance of their counterparts. The alternative hypothesis is to be not equal.

The p-value for the Mann-Whitney statistical test for the whole sample of privatised firms is 3.9%; hence, the study rejects the null hypothesis. It means that there is a significant difference at the 95% confidence level in the median performance for SALEFF between the privatised and private firms, following privatisation. In addition, the p-value for the parametric statistical test is more than 10%, so the study does not reject the null hypothesis. It is means that, there is no significant difference in their means.

The same observation can be observed for partially privatised firms, as shown in Table 7-3. Furthermore, the results from Table 7-2 for fully privatised firms show that there is no significant difference in both the means and medians at any level of confidence, by using parametric and Mann-Whitney statistical tests.

7.3.2 Testing the difference in the ratio of net income efficiency (INEFF) between privatised and private firms

The productivity of labour measures the net income efficiency for the privatised firms. The study tests the null hypothesis that the difference of the mean (median) of the relative performance of INEFF for privatised firms after privatisation versus INEFF for their counterparts equals zero. The alternative hypothesis is that it is not equal to zero.

It clear from Table 7-1, rows 17 and 18, that the p-value for the parametric statistical test for the wholly privatised firms is less than 5%. It means that the
difference (-92 per cent) in the mean of INEFF between the wholly privatised firms and their control group is significant at the 95% confidence level.

By contrast for the median, the p-value for the Mann-Whitney test is 21.6%. Thus, the study does not reject the null hypothesis. The difference (-34 per cent) in the median of INEFF between the wholly privatised firms and their counterparts is insignificant at any prescribed level. The same results can be observed for fully privatised firms, as shown in rows 17 and 18 in Table 7-2.

By extending the analysis to partially privatised firms, as seen from Table 7-3, the results of the p-value for parametric and Mann-Whitney tests are 17.3% and 29.9%, respectively; so the study concludes that the differences in the both means and medians of INEFF, between partially privatised firms and their counterparts, are insignificant at any prescribed level of confidence.

7.4 Testing the difference in output ratio between privatised and private firms

Before privatisation, the privatised firms are working under a monopoly condition, but now the firms are working in a competitive environment. It means that privatised firms are exposed to the market forces; thus, the study expects the output of privatised firms to be similar to the output of private firms, after computing the output as an index normalised to unity for year 0 (the year of privatisation). Other years (year +1, and year +2) are expressed relative to unity.
In the next section, as a proxy for output, the study presents the results of the comparison between the real sales for privatised firms, following privatisation, and their counterparts from private sectors.

7.4.1 Testing the difference in the ratio of real sales (SAL) between privatised and private firms

As shown in Table 7-1, rows 19-21, the performance of SAL for private firms is better than the performance of privatised firms. The difference in the mean (median) is -76.7 per cent (-53.7 per cent) for absolute values and is -76.7 per cent (-53.7 per cent) for relative values. The difference in the mean (median) for SAL between privatised and private firms is very high. The study examines the null hypothesis that the relative performance of the SAL for privatised firms is similar to the performance of private firms. The alternative hypothesis is to be not equal.

The p-value of all statistical tests (parametric and Mann-Whitney) for wholly privatised firms is less than 1%; hence, the study accepts the alternative hypothesis. It means that there is a difference in the performance of SAL between the privatised and private firms following privatisation at the 99% confidence level.

By extending the analysis to types of privatisation, the same result can be observed for fully privatised firms, as shown in Table 7-2. In addition, the results from Table 7-3 for partially privatised firms show that the difference in the relative performance of SAL is significant at the 90% confidence level, by using
a parametric statistical test. The p-value for the Mann-Whitney statistical test is less than 1%; thus, the study rejects the null hypothesis. Hence, the difference in the median of SAL between partially privatised firms and their counterparts is significant at the 99% confidence level.

7.5 Testing the difference in leverage ratios between privatised and private firms

As was mentioned in Chapter six, Section 6.3.4, the government removes debt guarantees after privatisation. Privatised firms do not have the advantage of borrowing funds at a lower rate during the post-privatisation period, but they will have the opportunity to access the equity markets. Therefore, it can be expected that the switch from SOEs to private ownership should lead to a decline in leverage. The study expects the decline in the leverage of privatised firms to be similar to their counterparts from private firms.

To examine the difference in leverage between privatised firms and their counterparts, the study employs two ratios: total debt to total assets (TDTA) and total debt to total equity (TDTE). In the following sub-paragraphs, the study presents the results from testing these ratios, by using a parametric t-test and a Mann-Whitney test.
7.5.1 Testing the difference in the ratio of total debt to total assets (TDTA) between privatised and private firms

As seen from Table 7-1, rows 23 and 24, the performance of TDTA for the whole sample of privatised firms is more than the performance of their counterparts. The difference in the mean (median) is 12.8 per cent (9.3 per cent) for absolute values and is 15 per cent (16 per cent) for relative values. The study examines the null hypothesis that the total debt to total assets for privatised firms is similar to the total debt to total assets of private firms. The alternative hypothesis is to be not similar.

All statistical tests (parametric and Mann-Whitney) for the relative performance of TDTA report a p-value less than 1%; hence, the study rejects the null hypothesis. It means that there is a significant difference in both the mean and median of performance of TDTA between the wholly privatised firms and their counterparts, following privatisation, applying the 99% confidence level. The same observation can be observed for fully privatised firms, as shown in Table 7-2.

By extending the analysis to partially privatised firms, as seen from Table 7-3, rows 23 and 24, the p-value for the parametric statistical test is 8.5%; hence, the study accepts the alternative hypothesis. It means that there is a significant difference in the mean of the relative performance for TDTA between the privatised and private firms after privatisation at the 90% confidence level. In addition, the p-value for the non-parametric Mann-Whitney statistical test is
5.2%; thus, the study also accepts the alternative hypothesis for a difference in the median of the relative performance for TDTA at the 90% confidence level.

7.5.2 Testing the difference in the ratio of total debt to total equity (TDTE) between privatised and private firms

The mean of total debt to total equity (TDTE) following privatisation for the test group are less than for the control group, in contrast to the median. The difference in the absolute values for the mean (median) is 1.02 per cent (-2.1 per cent) but the difference in the relative values for the mean (median) is -60.7 per cent (7.7 per cent), as shown in rows 26 and 27, from Table 7-1. The study examines the null hypothesis that "the difference in total debt to total equity ratio for the test group is equal to the total debt to total equity ratio for the control group". The alternative hypothesis is to be not equal.

It clear from Table 7-1 that the p-values of the parametric statistical test for the absolute and relative performance for the whole sample of privatised firms are more than 10%. Hence, the study does not reject the null hypothesis. The difference in the mean of TDTE between the wholly privatised firms and their counterparts is insignificant at any prescribed level of confidence. The same result for the median, namely the p-value for the Mann-Whitney test, is 12.9%; thus, the study does not reject the null hypothesis. It means that there is no significant difference in the median of TDTE between privatised firms and their counterparts.
By extending the analysis according to different kinds of privatisation, the p-value for the parametric statistical test for the relative performance of fully privatised firms is 10.3%. Hence, the difference in the mean of TDTE between fully privatised firms and their counterparts is insignificant at any prescribed level of confidence, as shown in rows 26 and 27 in Table 7-2. In addition, the p-value for the Mann-Whitney test is 23.3%; thus, there is no significant difference in the median of TDTE between fully privatised firms and their counterparts.

Moving to rows 26 and 27 in Table 7-3, the results provide that the p-value of all statistical tests for the relative performance of TDTE is more than 10% for partially privatised firms; hence, the study does not reject the null hypothesis. Thus, there is no difference in the performance of TDTE between partially privatised firms and their counterparts in private sector.

7.6 Testing the difference in employment level between privatised and private firms

Human resources are one of the most important resources for the success of an organisation. One crucial issue in the privatisation programme is its effect on the level of employment (EMPL) after firms move from state control to being private firms.

To avoid discrepancies in the number of employees between privatised firms and their counterparts from private sectors, the study does not use the number of employees as a measure of the employment level, because it would not be accurate to measure the level of employment effectively by using an absolute
number of employees in each firm. Hence, the study employs the LOG of employees method to compare the difference between both of them. The study expected that the decline in the employment level for privatised firms is similar to their counterparts. In the next section, the study presents the results from testing the difference in log of employees between privatised and private firms by using parametric t-test and Mann-Whitney tests.

7.6.1 Testing the difference in LOG of employees (EMPL) between privatised and private firms

It is clear from rows 29 and 33 in Table 7-1 that the absolute and relative values of the mean (median) of EMPL for all privatised firms are less than for their counterparts. For example, the difference in the mean (median) is -606 employees (-402 employees) for absolute values and is -5 per cent (-4 per cent) for relative values (log EMPL).

The study tested the null hypothesis that the difference in the mean (median) EMPL for privatised firms after privatisation versus EMPL for private firms equals zero. The alternative hypothesis is to be not equal to zero.

All statistical tests (parametric and Mann-Whitney tests) showed that the p-values of EMPL for the whole sample of privatised firms are less than 1%. Hence, the study rejected the null hypothesis at the 99% confidence level. It means that the difference in EMPL between privatised firms and their counterparts is significant at the 99% confidence level.
Extending the analysis to compare the changes in the level of employees for privatised firms and private firms according to types of privatisation, the study finds significant differences at the 99% confidence level for the fully and partially privatised firms, as shown in Tables 7-2 and 7-3.

7.7 Summary

Most empirical studies on privatisation examine the financial and operating performance of privatised firms or compare the performance of SOEs with private firms, without directly testing the performance of privatised firms against private firms. This chapter investigated the second hypothesis in this thesis, that is "the performance of privatised firms following privatisation is similar to the performance of their counterpart from the private sector" by testing the performance changes of privatised Egyptian firms after matching them to their counterparts from the private sector, according to size and industry.

According to the results presented in this chapter, the performance of Egyptian privatised firms had improved after privatisation. Although the results of all measures of profitability for privatised firms (apart from ROS) show a significant difference when compared with those of the private firms, the study concluded that the profitability of the privatised firms had improved after privatisation, and their profitability was approaching the profitability for private firms, which are similar in size and industry.

Additionally, operating efficiency, in general, had increased after privatisation. In this context, there is a statistically significant difference between the
performance in operating efficiency for privatised firms and for their counterparts from the private sector. Despite that, privatised firms have improved their operating efficiency. However, this improvement is not the same as or closes to the performance of private companies. Furthermore, the results document significant decreases in the level of employment after privatisation, and at the same time, there is a significant difference in the level of employees between privatised firms and their counterparts in private sector. The study will provide full discussion associated with these results in chapter nine.

In next chapter, the study attempts to meet the third objective of this research, by investigating the third hypothesis in this thesis, that is "there is an environmental impact on the performance of the firms after privatisation." This will be achieved by analysing the combined impact of the post-privatisation sectoral environment and pre-privatisation experience upon the post-privatisation performance.
CHAPTER 8 THE COMBINED IMPACT OF THE PRE-PRIVATISATION EXPERIENCE AND POST-PRIVATISATION ENVIRONMENT UPON THE POST-PRIVATISATION PERFORMANCE

8.1 Introduction

In chapters six and seven, the study investigated the first two hypotheses for this research and presented the empirical results of the statistical analysis for the changes in the performance ratios by using 54 Egyptian privatised firms (whether partially or fully privatisation) with a matching number of private firms, and concluded that privatisation improves the performance of SOEs which have become privatised. Also, these improvements are not the same as or close to the performance of private firms.

To draw a complete picture of this empirical study with the empirical results that are documented in other studies, which test the impact of ownership structure\textsuperscript{58} {such as the study of Boardman and Vining (1989); Earle (1998); Gregorian (2000); Kwoka (2002); Megginson and Bouchkova (2000); Kocenda and Svejnar (2003); Boubakri, Cosset, and Guedlhami (2005); Jones and Mygind (2002); and Omran (2007)}, and the competitive environment\textsuperscript{59} {such as the

\textsuperscript{58} Other studies show that the ownership structure has an effect on the performance of firm. This effect is conditioned by the degree of state or private ownership involvement; the study can model this relationship by having the percentage of each type of ownership as a determinant of the privatised firm's performance.

\textsuperscript{59} The study investigates the impact of a competitive environment, since the source of performance might be due to competition. The study expects that with privatization, competition is enhanced and the private sector is allowed to participate in most economic activities.
study of Megginson and Boutchkova (2000); Otchere (2002); Chirwa (2004); Li and Xu (2004)}, the study examines the relationship between the ownership structure, the performance for privatised firms pre-privatisation, the size of privatised firms, the performance of private firms and the performance of privatised firms following privatisation.

In this chapter, the study reports the empirical results of the combined impact of the post-privatisation sectoral environment and the pre-privatisation experience on post-privatisation performance, by using regression models, which are explained in Chapter Five. The analysis is divided into three stages. In the first stage, the study presents the results of the combined impact of the post-privatisation sectoral environment and the pre-privatisation experience on post-privatisation performance by using three years pre- and post-privatisation. In the second stage, the study uses only the third year post-privatisation to articulate the results of the combined impact of the post-privatisation sectoral environment and the pre-privatisation experience on post-privatisation performance. In the third stage, the study will use the final year of the study period (year 2004) to show the effect of competition with the passage of time on post-privatisation performance.

The remainder of this chapter is organised as follows. Section two presents the impact of the new environment on the performance of the privatised firms through three years following privatisation. The impact of the new environment on the performance of the privatised firms in the third year following privatisation is explained in Section three. Section four shows the results of the impact of the
new environment on the performance of the privatised firms in the year 2004. Section five concludes with the summary of the chapter.

8.2 The impact of the new environment on the privatised firms’ performance through the three years following privatisation

To test the impact of the new environment on the performance of the privatised firms, the study calculates the mean value of each performance indicator for 3 years pre-privatisation (years, -3 to -1) for 54 privatised firms. Also, the study calculates the actual value of each performance indicator for the three years post-privatisation (year by year for +1 to +3) and the actual performance data in the same period for 54 private firms, which together represent the competitor group. Furthermore, the actual percentages of the ownership of the state in the privatised firm (APOSFP) are calculated for three years following privatisation. In addition, the study uses the log size as a control factor.

Table 8-1 presents the multiple regression results of the combined impact of the post-privatisation sectoral environment and the pre-privatisation experience on post-privatisation performance, by using financial ratios data for three years pre- and post-privatisation (full details about the results are shown in Appendices 8.1 and 8.2).

---

60 For more details about the 54 privatised firms and their counterparts from private sector, please see Tables 5-5 and 5-9.
61 Log size equals the natural log of total assets year by year for three years after privatisation.
Table 8-1 The results of the regression models showing the environmental impacts on the performance measures

This table presents regression results that seek to explain the changes in the performance from pre- to post-privatisation. The model is: 
\[ Y_{it} = \alpha + \beta_1 \text{LOG(SIZE)}_{it} + \beta_2 \text{APOSPF}_{it} + \beta_3 V_i + \beta_4 X_{it} + \varepsilon_{it} \]
where: \( Y_{it} \) is the performance measurement in year \( t \) of the privatised firm \( i \) after privatisation. It is the dependent variable. The dependent variables are: percentage of earnings before interest and tax / sales (ROS), earnings before interest and tax / assets (ROA), earnings before interest and tax / equity (ROE), earnings before interest and tax deflated by the consumer price index (EBIT), real sales deflated for the change in inflation (SAL), sales per employee (SALEFF), EBIT per employee (INEFF), the total number of employees (EMPL), total debt to total assets (TDTA), and total debt to total equity (TDTE); and \( \text{APOSPF}_{it} \) is the percentage of state ownership in year \( t \) of the privatised firm \( i \) after privatisation; and \( V_i \) is the mean performance of firm \( i \) over 3 year's pre-privatisation; and \( X_{it} \) is the actual performance measurement in year \( t \) for the matched private firm \( i \) in the control group, and \( \text{LOG(SIZE)}_{it} \) is natural log (size) in year \( t \) of the privatised firm \( i \) after privatisation. The regression coefficients and their respective p-values are shown in the first five columns of data.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Constant</th>
<th>Size</th>
<th>APOSPF</th>
<th>Performance Pre (V_i)</th>
<th>Performance Private (X_{it})</th>
<th>F. ratio</th>
<th>R squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on Sales</td>
<td>-0.3994</td>
<td>0.0380</td>
<td>-0.0612</td>
<td>0.9659</td>
<td>0.0227</td>
<td>36.50</td>
<td>46.9%</td>
</tr>
<tr>
<td>P-value</td>
<td>0.0027*</td>
<td>0.0006*</td>
<td>0.1323</td>
<td>0.0000*</td>
<td>0.7619</td>
<td>0.000*</td>
<td></td>
</tr>
<tr>
<td>Return on Assets</td>
<td>0.0021</td>
<td>0.0046</td>
<td>-0.0133</td>
<td>0.6891</td>
<td>-0.0550</td>
<td>10.18</td>
<td>18.6%</td>
</tr>
<tr>
<td>P-value</td>
<td>0.9724</td>
<td>0.3551</td>
<td>0.4601</td>
<td>0.0000*</td>
<td>0.2086</td>
<td>0.000*</td>
<td></td>
</tr>
<tr>
<td>Return on Equity</td>
<td>-0.3263</td>
<td>0.0458</td>
<td>-0.0260</td>
<td>0.4370</td>
<td>-0.0598</td>
<td>4.84</td>
<td>8.72%</td>
</tr>
<tr>
<td>P-value</td>
<td>0.1814</td>
<td>0.0225**</td>
<td>0.7414</td>
<td>0.0004*</td>
<td>0.4347</td>
<td>0.001*</td>
<td></td>
</tr>
<tr>
<td>Earnings before Interest and Taxes</td>
<td>-3.1479</td>
<td>0.4877</td>
<td>-0.2704</td>
<td>0.8041</td>
<td>-0.0496</td>
<td>37.3</td>
<td>47.42%</td>
</tr>
<tr>
<td>P-value</td>
<td>0.0201**</td>
<td>0.0000*</td>
<td>0.5746</td>
<td>0.0005*</td>
<td>0.4981</td>
<td>0.0000*</td>
<td></td>
</tr>
</tbody>
</table>

225
Table 8.1 Cont.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Constant</th>
<th>Size</th>
<th>APOS Pf</th>
<th>Performance Pre ($Y_i$)</th>
<th>Performance Private ($X_{ij}$)</th>
<th>F. ratio</th>
<th>R squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Sales (log)</td>
<td>-0.6281</td>
<td>0.0516</td>
<td>-0.1251</td>
<td>0.3435</td>
<td>-0.0327</td>
<td>7.01</td>
<td>13%</td>
</tr>
<tr>
<td>P-value</td>
<td>0.0002*</td>
<td>0.0002*</td>
<td>0.0145*</td>
<td>0.0003*</td>
<td>0.3886</td>
<td>0.0000*</td>
<td></td>
</tr>
<tr>
<td>Sales Efficiency</td>
<td>0.1501</td>
<td>0.0297</td>
<td>-0.7163</td>
<td>0.9075</td>
<td>-0.0176</td>
<td>10.78</td>
<td>19.54%</td>
</tr>
<tr>
<td>P-value</td>
<td>0.8173</td>
<td>0.5872</td>
<td>0.0005*</td>
<td>0.0000*</td>
<td>0.5164</td>
<td>0.0000*</td>
<td></td>
</tr>
<tr>
<td>Net Income Efficiency</td>
<td>-4.1893</td>
<td>0.3179</td>
<td>-1.3052</td>
<td>2.4706</td>
<td>0.0568</td>
<td>74.64</td>
<td>64.65%</td>
</tr>
<tr>
<td>P-value</td>
<td>0.035**</td>
<td>0.0557**</td>
<td>0.0368**</td>
<td>0.0000*</td>
<td>0.2340</td>
<td>0.0000*</td>
<td></td>
</tr>
<tr>
<td>Total Debt to Total Assets</td>
<td>-0.1163</td>
<td>0.0138</td>
<td>-0.1032</td>
<td>0.6185</td>
<td>0.0885</td>
<td>16.35</td>
<td>27.60%</td>
</tr>
<tr>
<td>P-value</td>
<td>0.5466</td>
<td>0.4170</td>
<td>0.0831***</td>
<td>0.0000*</td>
<td>0.2634</td>
<td>0.0000*</td>
<td></td>
</tr>
<tr>
<td>Total Debt to Total Equity</td>
<td>0.2756</td>
<td>-0.0299</td>
<td>0.5920</td>
<td>0.2733</td>
<td>-0.0699</td>
<td>18.15</td>
<td>29.88%</td>
</tr>
<tr>
<td>P-value</td>
<td>0.5934</td>
<td>0.4910</td>
<td>0.0002*</td>
<td>0.0000*</td>
<td>0.2420</td>
<td>0.0000*</td>
<td></td>
</tr>
<tr>
<td>Number of Employees</td>
<td>-0.7307</td>
<td>0.0433</td>
<td>0.0673</td>
<td>1.0224</td>
<td>-0.0275</td>
<td>523.25</td>
<td>92.84%</td>
</tr>
<tr>
<td>P-value</td>
<td>0.008***</td>
<td>0.0771***</td>
<td>0.4428</td>
<td>0.0000*</td>
<td>0.2254</td>
<td>0.0000*</td>
<td></td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.
Table 8-1 includes comprehensive results. For more illustration, the researcher split this table into ten further tables, according to the dependent variables of the regression model; then, the study explains them in the following subsections.

8.2.1 Testing the impact of ROS performance experience pre-privatisation and the new environment on ROS performance through the three years post-privatisation

Table 8-2 presents the regression results for real earnings before interest and taxes on sales for all privatised firms, which were privatised through IPOs. The study tests the null hypothesis that is "the new environment for the privatised firm does not impact the performance of ROS after privatisation". The alternative hypothesis is that "the new environment affects the performance of ROS".

As shown in Table 8-2, the p-value of the regression coefficient for $V_1$, which refers to the ROS pre-privatisation is less than 1%, which means that there is a significant relationship, i.e. a significant impact upon the ROS (dependent) variable post-privatisation at the 99% confidence level. Additionally, this relation is very strongly positive (i.e. the correlations between the dependent variable

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62 The new environment reflects three factors, which are: the ownership structure, the performance of private firms and the size of privatised firms following privatisation.

63 Kvanli, Pavur, and Keeling (2006) argue that, if the correlation between the dependent variable and independent variables is more than 0.50, the relationship between them is very strong. If the correlation between them equals 0.50, the relationship between them is moderate. If the correlation is less than 0.50, the relationship between them is weak. Also, if the correlation range among independent variables is between ± 0.50, there is no problem of multicollinearity.
(ROS) and independent variable ($V_j$) is more than 0.50 and coefficient value is 0.9659). Since the p-value for the coefficient for the size of the privatised firm is 0.006, the size is significant at the 99% confidence level. So, the study rejects the null hypothesis only for the firm size and $V_j$ at the 99% confidence level.

Table 8-2 The results of the regression analysis for the dependent variable: ROS (three years pre- and post-privatisation)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.3994</td>
<td>0.0027*</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.0380</td>
<td>0.0006*</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.0612</td>
<td>0.1323</td>
<td></td>
</tr>
<tr>
<td>Performance Pre ($V_j$)</td>
<td>0.9659</td>
<td>0.0000*</td>
<td></td>
</tr>
<tr>
<td>Performance Private ($X_{i,t}$)</td>
<td>0.0227</td>
<td>0.7619</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td></td>
<td>0.0000*</td>
<td>36.500</td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td></td>
<td>48.2%</td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td></td>
<td>46.66%</td>
</tr>
</tbody>
</table>

Correlation matrix for coefficient estimates

<table>
<thead>
<tr>
<th></th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>ROS pre-</th>
<th>ROS private</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.3972</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROS pre-</td>
<td>0.1897</td>
<td>-0.1525</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>ROS private</td>
<td>-0.2303</td>
<td>0.1289</td>
<td>-0.2857</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Correlations between the dependent variable (ROS) and independent variables

<table>
<thead>
<tr>
<th></th>
<th>ROS post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>ROS pre-</th>
<th>ROS pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROS post</td>
<td>1.0000</td>
<td>0.1266</td>
<td>0.0405</td>
<td>0.6614</td>
<td>0.2295</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

Furthermore, the p-values of the regression coefficient for the remaining independent variables, which are ROS performance for private firms and APOSPF, are more than 10%; thus, the null hypothesis for these variables cannot be rejected. Hence, there is no significant relationship between the performance of ROS following privatisation and the performance of their counterpart in the private sector; nor the percentage owned by the state in the privatised firm. The null hypothesis that the new environment for the privatised firms does not impact upon the performance of ROS after privatisation is not rejected.
The p-value of the full regression model (pertaining to the F ratio) is less than 1%; thus, this model demonstrates a statistically significant relationship between the ROS and the combined independent variables at the 99% confidence level. The R-Squared statistic indicates that this model as fitted explains 48.2% of the variability in the performance of ROS following privatisation.

The correlation matrix between independent variables is computed to test the existence of any correlations among independent variables. The values of correlations for the independent variables are between ± 0.5, as shown in the second part of Table 8-2, so there are no problems of multicollinearity.

8.2.2 Testing the impact of ROA performance experience pre-privatisation and the new environment on ROA performance through the three years post-privatisation

Table 8-3 shows the results of the multiple regression analysis for real earnings before interest and taxes on assets for the 54 privatised firms, which were privatised through 1991-2004. The study tests the null hypothesis that is "the new environment for privatised firm does not impact the performance of ROA after privatisation". The alternative hypothesis is that "the new environment affects the performance of ROA".

The p-value of this model (concerning the F ratio) is less than 1%; hence, this model demonstrates a statistically significant relationship between the ROA and the combined independent variables at the 99% confidence level. The adjusted
R-Squared statistic for the model has a low value of 18.6%. Thus, the above regression indicates that this model as fitted explains only 18.6% of the variability in the performance of ROA following privatisation. The correlation matrix for independent variables (the performance of ROA pre-privatisation (V_i), the performance of ROA for private firms (X_i), the size of privatised firms by three years post-privatisation, and APOSPF) shows low correlations, where the correlation with absolute values is less than 0.5, thus, there are no problems of multicollinearity.

Table 8-3 The results of the regression analysis for the dependent variable: ROA (three years pre- and post-privatisation)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.0021</td>
<td>0.9724</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.0046</td>
<td>0.3551</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.0133</td>
<td>0.4601</td>
<td></td>
</tr>
<tr>
<td>Performance Pre (V_i)</td>
<td>0.6891</td>
<td>0.0000*</td>
<td></td>
</tr>
<tr>
<td>Performance Private (X_i)</td>
<td>-0.0550</td>
<td>0.2086</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td>0.0000*</td>
<td>10.180</td>
<td></td>
</tr>
<tr>
<td>R. squared</td>
<td>0.0000*</td>
<td>20.6%</td>
<td></td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td>0.0000*</td>
<td>18.6%</td>
<td></td>
</tr>
</tbody>
</table>

Correlation matrix for coefficient estimates

<table>
<thead>
<tr>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>ROA pre</th>
<th>ROA private</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0000</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.4016</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>ROA pre</td>
<td>0.2547</td>
<td>-0.1234</td>
<td>1.0000</td>
</tr>
<tr>
<td>ROA private</td>
<td>0.0792</td>
<td>-0.1897</td>
<td>-0.1536</td>
</tr>
</tbody>
</table>

Correlations between the dependent variable (ROA) and independent variables

<table>
<thead>
<tr>
<th>ROA post</th>
<th>ROA post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>ROA pre</th>
<th>ROA pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0000</td>
<td>-0.0525</td>
<td>-0.0209</td>
<td>0.4364</td>
<td>-0.0182</td>
<td></td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

It is clear from Table 8-3 that the p-value of the regression coefficient for V_i is less than 1%; thus, the study rejects the null hypothesis only for the V_i at the 99% confidence level. This means that there is a significant positive relationship (the coefficient value is 0.689) i.e. the pre-privatisation experience still has an impact upon the performance of ROA (dependent variable) post-privatisation at the 99% confidence level.
Furthermore, this table illustrates the relationships among ROA (as dependent variable) and the performance of ROA for private firms, the size of privatised firms by three years post-privatisation, and APOSPF (as independent variables). The p-values for these independent variables are more than 10%; thus, the study does not reject the null hypothesis for these variables. It means that, the relationship among ROA and all independent variables (apart from $V_i$ variable) is insignificant at any prescribed level of confidence. So, the new environment does not affect ROA performance. However, the overall explanatory power is low.

8.2.3 Testing the impact of ROE performance experience pre-privatisation and the new environment on ROE performance through the three years post-privatisation

This section studies the null hypothesis that "the new environment for the privatised firm does not impact its performance of ROE through three years after privatisation". The alternative hypothesis is that "the new environment affects the performance of ROE". The results of the multiple regression analysis for real earnings before interest and taxes on equity for all privatised firms are shown in Table 8-4.

The p-value of the regression model (relating to the F ratio) is 0.001. So this model shows a statistically significant relationship between the ROE and the combined independent variables at the 99% confidence level. The R-Squared statistic indicates that this model as fitted explains only 10.98% of the variability in the performance of ROE following privatisation.
As seen from Table 8-4, it is clear from the correlation matrix that there are no problems of multicollinearity. This result is owing to the values of correlation for independent variables (the performance of ROE pre-privatisation (V_i), the performance of ROE for private firms (X_j), the size of privatised firms, and APOSPF) are between ± 0.5.

Table 8-4 The results of the regression analysis for the dependent variable: ROE (three years pre- and post-privatisation)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.3263</td>
<td>0.1814</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.045</td>
<td>0.0225**</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.0268</td>
<td>0.7414</td>
<td></td>
</tr>
<tr>
<td>Performance Pre (V_i)</td>
<td>0.437</td>
<td>0.0004*</td>
<td></td>
</tr>
<tr>
<td>Performance Private (X_j)</td>
<td>-0.059</td>
<td>0.4347</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td>0.0010*</td>
<td></td>
<td>4.8400</td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td></td>
<td>10.98%</td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td></td>
<td>8.72%</td>
</tr>
</tbody>
</table>

Correlation matrix for coefficient estimates

<table>
<thead>
<tr>
<th></th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>ROE pre</th>
<th>ROE private</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.3639</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROE pre</td>
<td>0.0726</td>
<td>-0.2510</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>ROE private</td>
<td>-0.0407</td>
<td>-0.1556</td>
<td>-0.0691</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Correlations between the dependent variable (ROE) and independent variables

<table>
<thead>
<tr>
<th></th>
<th>ROE post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>ROE before</th>
<th>ROE pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROE post</td>
<td>1.0000</td>
<td>0.1798</td>
<td>0.1023</td>
<td>0.2756</td>
<td>-0.129</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

Consistent with the p-value of the regression coefficient for V_i being less than 1%, there is a positive significant relationship, i.e. the pre-privatisation experience still has an impact upon the ROE (dependent) variable post-privatisation at the 99% confidence level. As well as this, the p-value for the coefficient for the size of privatised firm is 0.022. So, the study rejects the null hypothesis only for V_i and firm size at the 99% and 95% confidence level, respectively. Large firms perform better, since the size coefficient is positive.
Furthermore, this table shows that, the p-values of the regression coefficients for the rest of the independent variables, which are performance of ROE for private firms and APOSPF, are more than 10%; thus, the null hypothesis for these variables cannot be rejected. This means that there is no significant relationship between the performance of ROE following privatisation and the performance of their counterpart from the private sector; nor the percentage owned by the state in the privatised firm. Hence, the new environment does not impact upon ROE performance.

8.2.4 Testing the impact of EBIT performance experience pre-privatisation and the new environment on EBIT performance through the three years post-privatisation

Table 8-5 shows the results of the multiple regression analysis for real earnings before interest and taxes for the 54 privatised firms. The study tests several null hypotheses that "there are no significant impacts of the ownership structure, the competition, and the size, respectively, on the performance of EBIT following privatisation". The alternative hypotheses are that "there are significant impacts of the ownership structure, the competition, and the size, respectively, on the performance of EBIT".

The correlation matrix for independent variables provides low correlations, where the correlation with absolute values is between ± 0.5; thus, there are no problems of multicollinearity.
The p-value of the full regression model (pertaining to the F ratio) is less than 1%. So, this model exhibits a statistically significant relationship between the EBIT and the independent variables at the 99% confidence level. The adjusted R-squared statistic indicates that this model as fitted explains 47.42% of the variability in the performance of EBIT following privatisation.

Table 8-5 The results of the regression analysis for the dependent variable: EBIT (three years pre- and post-privatisation)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-3.1479</td>
<td>0.0201*</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.4877</td>
<td>0.0000*</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.2700</td>
<td>0.5746</td>
<td></td>
</tr>
<tr>
<td>Performance Pre (V₁)</td>
<td>0.8041</td>
<td>0.0005*</td>
<td></td>
</tr>
<tr>
<td>Performance Private (X₂)</td>
<td>-0.0490</td>
<td>0.4981</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td>0.0000*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td></td>
<td>37.300</td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td></td>
<td>48.71%</td>
</tr>
</tbody>
</table>

R-squared 47.42%

Correlation matrix for coefficient estimates

<table>
<thead>
<tr>
<th></th>
<th>LOG_EBIT pre</th>
<th>LOG_EBIT private</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG_EBIT pre</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOG_EBIT private</td>
<td>-0.3946</td>
<td>1.0000</td>
<td>-0.5190</td>
<td></td>
</tr>
<tr>
<td>LOG SIZE</td>
<td>-0.1621</td>
<td>-0.4790</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.1549</td>
<td>-0.0593</td>
<td>-0.1660</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Correlations between the dependent variable (EBIT) and independent variables

<table>
<thead>
<tr>
<th></th>
<th>EBIT post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>EBIT pre</th>
<th>EBIT pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIT post</td>
<td>1.0000</td>
<td>0.5373</td>
<td>0.2419</td>
<td>0.6617</td>
<td>0.4784</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

Table 8-5 presents a significant positive relationship between the performance of EBIT after privatisation and their performance experience pre-privatisation. The correlation coefficient has a value of 0.8041 with a p-value 0.0005 at the 99% confidence level. Furthermore, this relation is very strongly positive (the correlation between EBIT post-privatisation and the EBIT pre-privatisation is 0.6617). Also, there is a significant positive relationship between the performance of EBIT after privatisation and the size of privatised firm. The regression coefficient has a value of 0.4877 with p-value 0.0000, significant at
the 99% confidence level. This means that any increase in the performance of EBIT is associated with an increase in the size of privatised firms, and vice versa. Additionally, this relation is very strong (the correlation between both of them is 0.5373). In this context, the p-values for the remaining independent variables, which are the performance of EBIT for their counterparts in the private sector; and the percentage owned by the state in the privatised firm, are more than 10%. So, the null hypothesis cannot be rejected for these variables. It means that there is no significant relationship between the performance of EBIT following privatisation and the performance of EBIT for their counterparts from in the private sector; nor the percentage owned by the state in the privatised firm.

According to the results of the multiple regression analysis for EBIT, the study concludes that the pre-privatisation experience still has an impact on post-privatisation performance, but that performance is not associated with that typical of the matched private sector. This result is consistent with literature studies' results, which were presented in Chapter Four, Sections 4.4.1 and 4.4.2 (see, for example, Claessens, 1997; Boardman and Vining, 1989; Claessens and Djankov, 2002; Newbery and Pollitt, 1997; and Omran, 2004).
8.2.5 Testing the impact of SAL performance experience pre-privatisation and the new environment on SAL performance through the three years post-privatisation

In this section, the study tests the null hypothesis that is "the new environment for the privatised firm does not impact the performance of real sales\textsuperscript{64} after privatisation". The alternative hypothesis is that "the new environment affects the performance of SAL".

It is clear from the correlation matrix in Table 8-6 that the correlation between independent variables is between ± 0.5. So, there are no problems of multicollinearity.

\begin{table}[h]
\centering
\caption{The results of the regression analysis for the dependent variable: real sales (log) (three years pre- and post-privatisation)}
\begin{tabular}{lccc}
\hline
Independent Variables & Coefficient & P-value & Other statistics \\
\hline
Constant & -0.628 & 0.0002* & \\
SIZE & 0.051 & 0.0002* & \\
APOSFP & -0.125 & 0.0145** & \\
Performance Pre ($V_i$) & 0.343 & 0.0003* & \\
Performance Private ($X_{it}$) & -0.032 & 0.3886 & \\
F. Ratio & & 0.0000* & 7.0100 \\
R. squared & & & 15.14\
R-squared (adjusted for d.f) & & & 12.98% \\
\hline
\end{tabular}
\end{table}

\begin{table}[h]
\centering
\caption{Correlation matrix for coefficient estimates}
\begin{tabular}{cccc}
\hline
LOG SIZE & APOSFP & log ADJ SAL pre- & log ADJ SAL pr \\
\hline
LOG SIZE & 1.0000 & & \\
APOSFP & -0.3618 & 1.0000 & \\
Log ADJ SAL pre- & 0.0378 & -0.0897 & 1.0000 \\
Log ADJ SAL pr & -0.2116 & -0.0003 & -0.1248 & 1.0000 \\
\hline
\end{tabular}
\end{table}

\begin{table}[h]
\centering
\caption{Correlations between the dependent variable (SAL) and independent variables}
\begin{tabular}{cccccc}
\hline
LOG SAL post & LOG SAL post & LOG SIZE & APOSFP & LOG SAL pre- & LOG SAL pr \\
\hline
LOG SAL post & 1.0000 & 0.2249 & -0.0635 & 0.2579 & 0.0207 \\
\hline
\end{tabular}
\end{table}

\textsuperscript{64} To avoid potentially large differences in the absolute values, the study will use LOG real sales.
As shown from Table 8-6, the p-values of the regression coefficients for the SAL pre-privatisation, the size of the privatised firm, and APOSPF are 0.0003, 0.0002, and 0.0145, respectively. So, there are a significant relationships i.e. impacts upon the SAL (dependent) variable post-privatisation at the 99%, 99%, and 95% confidence level, respectively.

However, this table shows no significant relationship between the performance of SAL following privatisation and the performance of their counterpart in the private sector. Hence, the new environment may not affect the performance of SAL. According to these results, the study rejects the other null hypotheses (apart from competition variable, which refers to the SAL for private firms).

8.2.6 Testing the impact of SALEFF performance experience pre-privatisation and the new environment on SALEFF performance through the three years post-privatisation

This section presents the regression results for sales efficiency for all privatised firms, which were privatised through IPOs. The study tests the null hypothesis that is "the new environment for the privatised firm does not impact on the performance of SALEFF after privatisation". The alternative hypothesis is that "the new environment affects the performance of SALEFF".

The correlation matrix between independent variables is computed to test the existence of any high correlation between independent variables. Table 8-7 reveals that the values of correlation for the independent variables are between ± 0.5. So, there are no problems of multicollinearity.
Table 8-7 The results of the regression analysis for the dependent variable: Sales Efficiency (three years pre- and post-privatisation)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.150</td>
<td>0.8173</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.029</td>
<td>0.5872</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.716</td>
<td>0.0005*</td>
<td></td>
</tr>
<tr>
<td>Performance Pre (V_i)</td>
<td>0.907</td>
<td>0.0000*</td>
<td></td>
</tr>
<tr>
<td>Performance Private (X_{it})</td>
<td>-0.017</td>
<td>0.5164</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td></td>
<td>0.0000*</td>
<td>10.780</td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td></td>
<td>21.54%</td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td></td>
<td>19.54%</td>
</tr>
</tbody>
</table>

Correlation matrix for coefficient estimates

<table>
<thead>
<tr>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>Adj SAEFF pre-</th>
<th>Adj SALEFF private</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.3647</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>SAEFF pre-</td>
<td>-0.1263</td>
<td>-0.1008</td>
<td>1.0000</td>
</tr>
<tr>
<td>Adj SALEFF private</td>
<td>-0.2532</td>
<td>0.1007</td>
<td>0.0025</td>
</tr>
</tbody>
</table>

Correlations between the dependent variable (SALEFF) and independent variables

<table>
<thead>
<tr>
<th>SALEFF post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>SALEFF pre</th>
<th>SALEFF pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>SALEFF post</td>
<td>1.0000</td>
<td>0.0052</td>
<td>-0.1913</td>
<td>0.3838</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

In general, the overall results of the regression model show that the p-value of this model (concerning the F ratio) is less than 1%; thus, this model exhibits a statistically significant relationship between the performance of SALEFF after privatisation and the combined independent variables at the 99% confidence level. The R-squared and adjusted R-squared are 21.54% and 19.54%, respectively. Thus, this model statistically as fitted explains 19.54% % of the variability in the performance of SALEFF following privatisation.

It is clear from Table 8-7 that the p-value of the regression coefficient for APOSPF is 0.05 %, which means that there is a (negative) significant relationship, i.e. a significant impact upon the SALEFF (as dependent variable) post-privatisation at the 99% confidence level. Also, the P-value for the coefficient for \(V_i\), which refers to the performance of SALEFF pre-privatisation is less than 1 %. In addition, the coefficient value of \(V_i\) is 0.907, which means that
this significant relationship is positive between the performance of SALEFF pre-privatisation and its post-privatisation at the 99% confidence level. The pre-privatisation experience still has an impact on post-privatisation performance.

Furthermore, this table shows no significant relationship between the performance of SALEFF following privatisation and the performance of their counterpart from competitive group, nor the size of the privatised firm. The new environment does not affect the performance of SALEFF. Thus, the study rejects the null hypothesis only for APOSPF and $V_i$ variables, meanwhile, the null hypothesis for the rest of the variables cannot be rejected, that is the alternative hypothesis is rejected.

8.2.7 Testing the impact of INEFF performance experience pre-privatisation and the new environment on INEFF performance through the three years post-privatisation

In the following paragraphs, the study tests the null hypothesis is that "the new environment for the privatised firm does not impact the performance of income efficiency after privatisation". The alternative hypothesis is that "the new environment affects the performance of INEFF". This is tested by using multiple regressions of the actual data through three years after privatisation. Table 8-8 shows the regression results for INEFF (as dependent variable).

It is clear from the correlation matrix for coefficient estimates that the values of correlation for the performance of INEFF pre-privatisation ($V_i$), the performance of INEFF for private firms ($X_i$), APOSPF, and the size of privatised firms
(independent variables) are in the range of ± 0.5; hence, there are no problems of multicollinearity.

Table 8-8 The results of the regression analysis for the dependent variable: Income Efficiency (three years pre- and post-privatisation)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-4.189</td>
<td>0.0352**</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.317</td>
<td>0.0557***</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-1.305</td>
<td>0.0368**</td>
<td></td>
</tr>
<tr>
<td>Performance Pre (V_i)</td>
<td>2.470</td>
<td>0.0000*</td>
<td></td>
</tr>
<tr>
<td>Performance Private (X_{i,0})</td>
<td>0.056</td>
<td>0.2340</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td>0.0000*</td>
<td></td>
<td>74.640</td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td></td>
<td>65.53%</td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td></td>
<td>64.65%</td>
</tr>
</tbody>
</table>

Correlation matrix for coefficient estimates

<table>
<thead>
<tr>
<th></th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>ADJ INEFF pre</th>
<th>ADJINEFF private</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.3784</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADJ INEFF pre</td>
<td>-0.0858</td>
<td>0.0176</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>ADJINEFF private</td>
<td>-0.1310</td>
<td>0.0972</td>
<td>0.0417</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Correlations between the dependent variable (INEFF) and independent variables.

<table>
<thead>
<tr>
<th></th>
<th>INEFF post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>INEFF pre</th>
<th>INEFF pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>INEFF post</td>
<td>1.0000</td>
<td>0.1294</td>
<td>-0.5920</td>
<td>0.7982</td>
<td>0.0468</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

The p-value of this model, related to the F ratio, is 0.000%, thus this model demonstrates a statistically significant relationship between the INEFF and the combined independent variables at the 99% confidence level. The adjusted R-squared statistic indicates that this model as fitted explains 64.65% of the variability in the performance of INEFF following privatisation, which is quite good.

Table 8-8 reveals that the p-values of the regression coefficient for the size of the privatised firm, APOSPF, and V_i are 5.57, 3.68 and 0.00 per cent, respectively. Hence, the study rejects the null hypothesis only for the size of the privatised firm, APOSPF, and V_i.
Meanwhile, the p-value of the regression coefficient for the performance of INEFF for private firms is more than 10 per cent; thus, the null hypothesis for this variable cannot be rejected. Hence, the new environment does not have an impact on the INEFF performance. Instead, the size of the privatised firm, APOSPF, and \( V_i \) (as independent variables) have a significant impact on the performance of INEFF following privatisation (as dependent variable) at the 90%, 95%, and 99% confidence level, respectively. Additionally, this relation is very strongly positive for \( V_i \) (the correlation between the dependent variable (INEFF) and independent variable (\( V_i \)) is 0.7982 and regression coefficient value is 2.470) and is very strongly negative for APOSPF (the correlation between the dependent variable (INEFF) and independent variable (APOSPF) is -0.5920 and regression coefficient value is -1.305). Also, there is no significant relationship between the performance of INEFF following privatisation and the performance of INEFF for their counterparts from the private sector.

8.2.8 Testing the impact of TDTA performance experience pre-privatisation and the new environment on TDTA performance through the three years post-privatisation

Results of the multiple regression analysis for total debts to total assets for the 54 privatised firms are shown in Table 8-9. The study examines the null hypotheses, where "there are no significant impacts for the ownership structure, the competition, the TDTA performance pre-privatisation, and the size, respectively, on the TDTA performance following privatisation". The alternative hypothesis is that "there are significant impacts for the ownership structure, the
competition, the TDTA performance pre-privatisation, and the size, respectively, on the TDTA performance.

The p-value of the full regression model (pertaining to the F ratio) is less than 1%; thus, this model demonstrates a statistically significant relationship between the TDTA and the combined independent variables at the 99% confidence level. The adjusted R-squared statistic indicates that this model as fitted explains 27.60% of the variability in the performance of TDTA following privatisation.

Table 8-9 The results of the regression analysis for the dependent variable: Total Debt to Total Assets (three years pre- and post-privatisation)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.116</td>
<td>0.5466</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.0138</td>
<td>0.4170</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.103</td>
<td>0.0831***</td>
<td></td>
</tr>
<tr>
<td>Performance Pre (V)</td>
<td>0.6185</td>
<td>0.0000*</td>
<td></td>
</tr>
<tr>
<td>Performance Private (X)</td>
<td>0.0885</td>
<td>0.2634</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td>0.0000*</td>
<td></td>
<td>16.35</td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td></td>
<td>29.40%</td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td></td>
<td>27.60%</td>
</tr>
</tbody>
</table>

Correlation matrix for coefficient estimates

<table>
<thead>
<tr>
<th>LOG SIZE</th>
<th>APOSPF %</th>
<th>TDTA pre-</th>
<th>TDTA private</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.3774</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>TDTA pre-</td>
<td>-0.3075</td>
<td>0.0094</td>
<td>1.0000</td>
</tr>
<tr>
<td>TDTA private</td>
<td>-0.3058</td>
<td>0.1469</td>
<td>0.0878</td>
</tr>
</tbody>
</table>

Correlations between the dependent variable (TDTA) and independent variables.

<table>
<thead>
<tr>
<th>TDTA post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>TDTA pre</th>
<th>TDTA pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDTA post</td>
<td>1.0000</td>
<td>0.2014</td>
<td>-0.0440</td>
<td>0.5198</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

The p-value of the regression coefficient for APOSPF is 8.3%. In addition, the p-value of the regression coefficient for the performance of TDTA pre-privatisation is less than 1%; hence, the study rejects the null hypothesis only for both APOSPF at the 90% confidence level and the performance of TDTA pre-privatisation at the 99% confidence level. Meanwhile, the p-values of the
regression coefficient for the remaining independent variables, which are performance of TDTA for private firms and the size of privatised firms, are more than 10 per cent; thus, the null hypothesis for these variables cannot be rejected.

According to the above, the relationship between the performance of TDTA post-privatisation and the performance of TDTA pre-privatisation is very strongly positive (i.e. the correlation between the dependent variable (TDTA post-) and the independent variable (TDTA pre-) is 0.5198 and regression coefficient value is 0.6185). Also, there is no significant relationship between the performance of TDTA following privatisation and the performance of TDTA for their counterparts from private firms.

Furthermore, Table 8-9 shows clearly that the correlation matrix for the performance of TDTA pre-privatisation, the performance of TDTA for private firms, the size of privatised firms by three years post-privatisation, and APOSFP (as independent variables) shows low correlations, with absolute values between ±0.5; thus, there are no problems of multicollinearity.

8.2.9 Testing the impact of TDTE performance experience pre-privatisation and the new environment on TDTE performance through the three years post-privatisation

This section discusses the results of the multiple regression analysis for total debts to total equity for the all privatised firms, which were privatised from 1991 to 2004 by IPOs, as shown in Table 8-10. The study tests the null hypothesis that is "the new environment for privatised firm does not impact the TDTE..."
performance after privatisation". The alternative hypothesis is that "the new environment affects the TDTE performance".

Table 8-10  The results of the regression analysis for the dependent variable: Total Debt to Total Equity (three years pre- and post-privatisation)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.2756</td>
<td>0.5934</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>-0.0290</td>
<td>0.4910</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>0.5920</td>
<td>0.0002*</td>
<td></td>
</tr>
<tr>
<td>Performance Pre (V)</td>
<td>0.2733</td>
<td>0.0000*</td>
<td></td>
</tr>
<tr>
<td>Performance Private (X)</td>
<td>-0.0698</td>
<td>0.2420</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td></td>
<td>0.0000*</td>
<td>18.150</td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td></td>
<td>31.62%</td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td></td>
<td>29.88%</td>
</tr>
</tbody>
</table>

Correlation matrix for coefficient estimates

<table>
<thead>
<tr>
<th>TDTE pre-</th>
<th>TDTE private</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDTE pre-</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TDTE pr</td>
<td>-0.1675</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>LOG SIZE</td>
<td>-0.1553</td>
<td>-0.2719</td>
<td>1.0000</td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.1510</td>
<td>0.1348</td>
<td>-0.3526</td>
</tr>
</tbody>
</table>

Correlations between the dependent variable (TDTE) and independent variables.

<table>
<thead>
<tr>
<th>TDTE post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>TDTE before</th>
<th>TDTE pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDTE post</td>
<td>1.0000</td>
<td>0.1517</td>
<td>0.3537</td>
<td>0.4917</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

The correlation matrix shows no problems of multicollinearity. This result is due to the values of correlation for independent variables (the TDTE performance pre-privatisation (V), the TDTE performance for private firms (X), APOSPF, and the size of privatised firms) being in the range of ± 0.50.

The p-value of this model (relating to the F ratio) is 0.001, so this model shows a statistically significant relationship between the TDTE and its new environment at the 99% confidence level. The adjusted R-squared statistic indicates that this model as fitted explains 29.88% of the variability in the performance of TDTE following privatisation.
Since the p-value of the regression coefficient for APOSPF, which refers to the percentage owned by the state in the privatised firm, is less than 1 %, there is a significant positive relationship, i.e. a significant impact upon the TDTE (dependent variable) post-privatisation at the 99% confidence level. Also, the p-value for the coefficient for the TDTE pre-privatisation is less than 1 %. This means that a subsequent increase in the performance of TDTE is associated with an increase TDTE pre-privatisation, and similarly for an increase in APOSPF. So the study rejects the null hypothesis only for APOSPF and V_i at the 90% and 99% confidence level, respectively.

Furthermore, the p-values of the regression coefficient for the remaining independent variables, which are performance of TDTE for private firms and the size of privatised firms, are more than 10 %; thus, the null hypothesis for these variables cannot be rejected. It means that there is no significant relationship between the performance of TDTE following privatisation and the performance of TDTE for their counterparts.

8.2.10 Testing the impact of the pre-privatisation and post-privatisation environments upon EMPL through the three years post-privatisation

In this section, the study tests the null hypothesis that is "the new environment for privatised firm does not impact the employment level after privatisation". The alternative hypothesis is that "the new environment affects the employment level by using multiple regressions of the actual data of the number of employees for three years after privatisation". Table 8-11 shows the regression results for employment level (as dependent variable).
Table 8-11 The results of the regression analysis for the dependent variable: Number of Employees (three years pre- and post-privatisation)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.7307</td>
<td>0.0086</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.0433***</td>
<td>0.0858***</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>0.0673</td>
<td>0.4428</td>
<td></td>
</tr>
<tr>
<td>Employment level Pre (V)</td>
<td>1.0224*</td>
<td></td>
<td>0.0000*</td>
</tr>
<tr>
<td>Employment level Private (X Unused)</td>
<td>-0.0275</td>
<td>0.2254</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td>0.0000*</td>
<td></td>
<td>523.25</td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td>93.02%</td>
<td></td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td>92.84%</td>
<td></td>
</tr>
</tbody>
</table>

Correlation matrix for coefficient estimates

<table>
<thead>
<tr>
<th></th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>LOG EMPL pre-</th>
<th>LOG EMPL private</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.2193</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOG EMPL pre-</td>
<td>-0.4131</td>
<td>-0.0826</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>LOG EMPL private</td>
<td>-0.0238</td>
<td>-0.2773</td>
<td>-0.3478</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Correlations between the dependent variable (EMPL) and independent variables

<table>
<thead>
<tr>
<th></th>
<th>EMPL post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>EMPL before</th>
<th>EMPL pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMPL post</td>
<td>1.0000</td>
<td>0.5362</td>
<td>0.3553</td>
<td>0.9633</td>
<td>0.4449</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

In general, the p-value of this model (related to the F ratio) is less than 1%, thus this model demonstrates a statistically significant relationship between the EMPL and its new environment at the 99% confidence level. The adjusted R-squared statistic indicates that this model as fitted explains 92.84% of the variability in the performance of EMPL following privatisation. The correlation matrix shows that the values of correlation for independent variables are less than 0.5; hence, there are no problems of multicollinearity.

It is clear from Table 8-11 that the p-value of the regression coefficient for V, which refers to the EMPL pre-privatisation, is less than 1 per cent. This means that there is a significant relationship i.e. a significant impact upon the EMPL (dependent variable) post-privatisation at the 99% confidence level. Additionally, this relation is very strongly and positive (i.e. the correlation between the dependent variable (EMPL) and independent variable (V)) is more than 0.50 and the regression coefficient value is 1.0224).

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In addition, the p-value for the coefficient for the size of privatised firm is 8.58%. So, the size is significant at the 90% confidence level. Hence, the study rejects the null hypothesis only for the size of privatised firm, and $V_i$. In this context, the p-values of the regression coefficient for the remaining independent variables (APOSFP and employment level for private firms) are more than 10 per cent; thus, the null hypothesis for these variables cannot be rejected. It means that the size of privatised firm, and $V_i$ (as independent variables) have significant impacts on the employment level (as dependent variable) at the 90%, and 99% confidence level, respectively.

8.2.11 Review of factors affecting performance through the three years following privatisation

According to the results of impact of the new environment on the privatised firms' performance through the three years following privatisation, there is a significant negative impact of APOSFP on several performance indicators. It means that an increase in the percentage for state ownership in the privatised firms is associated with a decrease in the performance, and vice versa. This negative impact may be due to the importance of social objectives of the state compared with the objective of achieving profit. This result interprets the lower performance of firms owned by the state. In the meantime, this result supports the Egyptian privatisation programme as an important element of the economic reform programme. This result is consistent with Earle (1998), Gregorian (2000), Jones and Mygind (2002), Kocenda and Svejnar (2003), Boubakri, Cosset, Guedlhami (2005) who documented that there is a significant negative impact on the firm's performance in the case of interaction between the legal protection and concentration of ownership; also, state-owned and mixed firms are significantly less profitable and productive than privately owned firms.
The size of the firm has a significant positive impact on the performance indicators (apart from ROA, TDTA, TDTE and SALEFF) of privatised firms following privatisation. The positive relationship between the performance and firm size can be interpreted by three reasons: (i) large firms have an opportunity to venture for cheaper sources of capital beyond the national boundaries, giving them a competitive advantage over the smaller firms in the same sector as they were effectively working on cheaper capital; (ii) large firms were able to fully realise the potential gains of their large size through economies of scale and scope; and (iii) small firms are seeking to improve efficiency and increase their competition-opportunities with counterpart firms through entering new markets, domestically or internationally. This result is consistent with the literature, such as by Peter and Sarah (2004), Ram and Mayank (2002), and Moen (1999). (See: Chapter Four, Section 4.4.4).

Furthermore, the results of the multiple regression analysis for all performance measures show that there is a significant positive relationship between the performance experience of firm's pre-privatisation and their performance post-privatisation. By contrast, the impact of competition (the performance of counterparts from private sector) is not significant on the performance of privatised firms following privatisation directly. The overall conclusion so far is the new environment does not have a significant effect on post-privatisation performance through the three years following privatisation.

These results might be due to four reasons: (i) the state retains a stake in the fully privatised firms and a control over specific industries. Meanwhile, the competition between privatised firms and their counterparts should encourage
privatised firms to shift their management style toward increasing their efficiency and profitability. (ii) the actual percentage of state ownership in the most privatised firms might be higher (i.e. more than 51%); thus, these firms are working under a monopoly environment, and not under a competitive environment; (iii) the privatised firms do not take enough time to compete with their competition group (regarding the importance of time-effects on the competition between privatised firms and private firms, see Villaloga, (2000); and finally, (iv) the new environment has no quick effect on privatised firm-performance, but it might yield greater rewards in the future when competition replaces monopoly.

So, the study examines in the following sections the combined impact of the post-privatisation sectoral environment and the pre-privatisation output experience on post-privatisation performance in the third year of post-privatisation. After that, the study tests the importance of time-effects on competition, by showing the results of the combined impact of the post-privatisation sectoral environment and the pre-privatisation performance on post-privatisation performance, by using actual data for the final year of the study period (year 2004), to explain the effect of competition with the passage of time on post-privatisation performance.
8.3 The impact of the new environment on the privatised firms' performance in the third year following privatisation

To examine the effect of the new environment on the performance of the privatised firms, the study calculates the average value of each performance indicator for 3 years pre-privatisation (years -3 to -1) for 54 privatised firms. Also, APOSPF is calculated for the third year post-privatisation. In addition, the study calculates the actual value of each performance indicator in the third year post-privatisation (year +3) and the actual performance data in the same year for 54 private firms, which together represent the competitor group.

Tables 8-12 to 8-21 show the multiple regression results of the combined impact of the post-privatisation sectoral environment and the pre-privatisation result on post-privatisation performance, by using financial ratios-data in the third year post-privatisation (full details about the results are shown in Appendices 8.3 and 8.4).

Thus, in the following sub-sections, the study provides the empirical results of the combined impact of the post-privatisation sectoral environment and the pre-privatisation output on post-privatisation performance in the third year following privatisation.
8.3.1 Testing the impact of ROS performance pre-privatisation and the new environment on ROS performance in the third year following privatisation

Table 8-12 demonstrates the results of the multiple regression analysis in the third year post-privatisation for real earnings before interest and taxes on sales for the 54 privatised firms, which were privatised through 1991-2004.

**Table 8-12** The results of the regression analysis for the dependent variable: ROS (the third year following privatisation)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.3150</td>
<td>0.2285</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.0326***</td>
<td>0.0913***</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.0880</td>
<td>0.2656</td>
<td></td>
</tr>
<tr>
<td>Performance Pre (Vj)</td>
<td>0.9700*</td>
<td>0.0000*</td>
<td></td>
</tr>
<tr>
<td>Performance Private (Xjt)</td>
<td>-0.0165</td>
<td>0.9077</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td>0.0000*</td>
<td></td>
<td>8.62</td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td></td>
<td>41.30%</td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td></td>
<td>36.51%</td>
</tr>
</tbody>
</table>

**Correlation matrix for coefficient estimates**

<table>
<thead>
<tr>
<th></th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>ROS pre</th>
<th>ROS private</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.3498</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROS pre</td>
<td>0.1303</td>
<td>-0.1227</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>ROS private</td>
<td>-0.1771</td>
<td>0.0847</td>
<td>-0.2902</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

**Correlations between the dependent variable (ROS) and independent variables**

<table>
<thead>
<tr>
<th></th>
<th>ROS post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>ROS pre</th>
<th>ROS pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROS post</td>
<td>1.0000</td>
<td>0.1033</td>
<td>-0.0199</td>
<td>0.6160</td>
<td>0.1864</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

It is clear from Table 8-12 that the p-value of this model (concerning the F ratio) is less than 1%; hence, this model demonstrates a statistically significant relationship between the ROS and the combined independent variables at the 99% confidence level. The R-squared statistic indicates that this model as fitted explains 41.30% of the variability in the performance of ROS in the third year following privatisation; the adjusted R-squared statistic, which is more suitable for comparing models with different numbers of independent variables, is 36.51%.
The correlation matrix between the independent variables (the performance of ROS pre-privatisation ($V_i$), the performance of ROS for private firms ($X_i$), log size of privatised firms, and APOSPF in the third year post-privatisation) is presented, allowing a review of the existence of any high correlations between these variables. Table 8-12 shows low correlations; thus, there are no problems of multicollinearity.

The p-value of the regression coefficient for $V_i$ is less than 1%; also, the p-value of the regression coefficient for the privatised firms' size is 0.0913. So, the study rejects the null hypothesis only for the $V_i$ and the size at the 99% and 90% confidence level, respectively. It means that there is a significant relationship between both $V_i$ and firm size, (independent variables) and the performance of ROS (dependent variable) in the third year following privatisation. Additional to the very low p-value for the regression coefficient, the correlation between the dependent variable (ROS) and independent variable ($V_i$) is 0.6160 and the regression coefficient value for $V_i$ is 0.9700. Hence, the relationship between $V_i$ and the performance of ROS post-privatisation is very strongly positive.

Furthermore, this table illustrates the level of relationships among ROS (as dependent variable) and the performance of ROS for private firms, and APOSPF (as independent variables). The p-value for these independent variables are more than 10%, thus, the null hypothesis for these variables cannot be rejected. It means that the relationship among the performance of ROS and the performance of ROS for private firms, and APOSPF are insignificant at any prescribed level of confidence. These results are consistent with the results for ROS in the first stage. It means that the performance of ROS
following privatisation is affected only by the \( V_i \) and size, whether in the first stage or the second stage.

### 8.3.2 Testing the impact of ROA performance pre-privatisation and the new environment on ROA performance in the third year following privatisation

In this section, the study presents the results of the multiple regression analysis for real earnings before interest and taxes on assets for the 54 privatised firms as shown in Table 8-13. The null hypothesis for this model is that "the new environment for the privatised firm does not impact the performance of ROA in the third year following privatisation". The alternative hypothesis is that "the new environment affects the performance of ROA".

The correlation matrix between independent variables is computed to test the existence of any high correlation between independent variables. Table 8-13 shows the correlations with the performance of ROA pre-privatisation \((V_i)\), the performance of ROA for private firms \((X_i)\), the size of privatised firms in the third year post-privatisation, and APOSPF to be less than 0.5 and more than -0.5; thus, there are no problems of multicollinearity.

The p-value of the regression model (relating to the F ratio) is 1.38 per cent. So, this model demonstrates a statistically significant relationship between the performance of ROA and its new environment in the third year post-privatisation at the 95% confidence level. The adjusted R-squared statistic indicates that this model as fitted explains 15.8% of the variability in the performance of ROA following privatisation.
Table 8-13 The results of the regression analysis for the dependent variable: ROA (the third year following privatisation)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.0615</td>
<td>0.5439</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>-0.0008</td>
<td>0.9156</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.0149</td>
<td>0.6176</td>
<td></td>
</tr>
<tr>
<td>Performance Pre (V_i)</td>
<td>0.6559</td>
<td>0.0008*</td>
<td></td>
</tr>
<tr>
<td>Performance Private (X,rt)</td>
<td>-0.0244</td>
<td>0.7746</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td>0.0138**</td>
<td>3.49</td>
<td></td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td>22.18%</td>
<td></td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td>15.8%</td>
<td></td>
</tr>
</tbody>
</table>

Correlation matrix for coefficient estimates

<table>
<thead>
<tr>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>ROA pre</th>
<th>ROA private</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.3569</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>ROA pre</td>
<td>0.1968</td>
<td>-0.0754</td>
<td>1.0000</td>
</tr>
<tr>
<td>ROA private</td>
<td>0.0631</td>
<td>-0.2095</td>
<td>-0.2096</td>
</tr>
</tbody>
</table>

Correlations between the dependent variable (ROA) and independent variables

<table>
<thead>
<tr>
<th>ROA post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>ROA pre</th>
<th>ROA private</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA post</td>
<td>1.0000</td>
<td>-0.1238</td>
<td>-0.0568</td>
<td>0.4624</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

It is clear from Table 8-13 that the p-value of the regression coefficient for V_i is less than 1 per cent; thus, the study rejects the null hypothesis only for the V_i at the 99% confidence level. It means that there is a significant positive relationship (the coefficient value is 0.6559 and the p-value is very small) i.e. a significant impact upon the performance of the ROA (dependent variable) post-privatisation at the 99% confidence level.

Furthermore, this table illustrates the relationship among ROA (as dependent variable) and the remaining independent variables (size, X_i, and APOSPF) to be insignificant at any prescribed level of confidence. This result is consistent with the previous results in section 8.2.2. It means that the performance of ROA for private firms (competitor group) does not impact the performance of ROA in the third year following privatisation. So the new environment does not affect ROA performance in the third year.

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8.3.3 Testing the impact of ROE performance pre-privatisation and the new environment on ROE performance in the third year following privatisation

The results of the multiple regression analysis for real earnings before interest and taxes on equity for all privatised firms are demonstrated in Table 8-14.

| Table 8-14 The results of the regression coefficient for the dependent variable: ROE (the third year following privatisation) |
|---|---|---|---|
| Independent Variables | Coefficient | P-value | Other statistics |
| Constant | 0.0321 | 0.9243 | |
| SIZE | 0.0093 | 0.7339 | |
| APOSPF | 0.0055 | 0.9592 | |
| Performance Pre \(V_i\) | 0.4073 | 0.0222** | |
| Performance Private \(X_i\) | 0.0641 | 0.6401 | |
| F. Ratio | 0.1430 | 1.80 | |
| R. squared | 12.83% | | |
| R-squared (adjusted for d.f.) | 5.72% | | |

* Correlation matrix for coefficient estimates:

<table>
<thead>
<tr>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>ROE pre</th>
<th>ROE private</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.3213</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>ROE pre</td>
<td>0.0436</td>
<td>-0.2133</td>
<td>1.0000</td>
</tr>
<tr>
<td>ROE private</td>
<td>-0.0264</td>
<td>-0.2131</td>
<td>-0.1474</td>
</tr>
</tbody>
</table>

* Correlations between the dependent variable (ROE) and independent variables:

<table>
<thead>
<tr>
<th>ROE post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>ROE pre</th>
<th>ROE pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROE post</td>
<td>1.0000</td>
<td>0.0744</td>
<td>0.1260</td>
<td>0.3475</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

The correlation matrix for coefficient estimates shows that there are no problems of multicollinearity. This result is due to the values of correlation for independent variables (the performance of ROE pre-privatisation \(V_i\), the performance of ROE for private firms \(X_i\), APOSPF, and the size of privatised firms) are between ± 0.50.

The study tests the null hypothesis that "the new environment for the privatised firm does not impact the performance of ROE in the third year after privatisation". The alternative hypothesis is that "the new environment affects
the performance of ROE". It is clear from Table 8-14 that the p-value associated with F ratio for the full regression model is 14.30%. So, this model shows a statistically insignificant relationship between the ROE and the combined independent variables at any prescribed level of confidence.

There is a significant positive relationship between the performance of ROE in the third year after privatisation and the performance of ROE pre-privatisation. The regression coefficient has a value of 0.4073 with a significant p-value 0.0222 at the 95% confidence level. This means in the multiple regressions that an increase in the performance of ROE in the third year is strongly associated with the performance of ROE pre-privatisation. So, the study rejects the null hypothesis for only this independent variable, namely, the performance of ROE pre-privatisation.

Furthermore, the p-values of the regression coefficient for the remaining independent variables, which are performance of ROE for competitive group, APOSPF, and the size of privatised firms, are more than 10 per cent; thus, the null hypothesis for these variables cannot be rejected. The main conclusion here is that the new environment, statistically, does not affect the performance of ROE in the third year after privatisation.

8.3.4 Testing the impact of EBIT performance pre-privatisation and the new environment on EBIT performance in the third year following privatisation

In this section, the study examines the null hypothesis that "there is no significant impact of the performance of EBIT pre-privatisation and the new
environment of privatised firms on the performance of EBIT in the third year after privatisation". The alternative hypothesis is that "there is a significant impact on the performance of EBIT". Table 8-15 illustrates the results of the multiple regression analysis for EBIT in the third year after privatisation.

Table 8-15  The results of the regression analysis for the dependent variable: EBIT (the third year following privatisation)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-3.3678</td>
<td>0.2070</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>1.1852</td>
<td>0.0368**</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.3660</td>
<td>0.6358</td>
<td></td>
</tr>
<tr>
<td>Performance Pre (Vj)</td>
<td>1.0077</td>
<td>0.0001*</td>
<td></td>
</tr>
<tr>
<td>Performance Private (Xj)</td>
<td>0.0433</td>
<td>0.0858***</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td>0.0000*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td>49.67%</td>
<td></td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td>45.57%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Correlation matrix for coefficient estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
</tr>
<tr>
<td>LOG SIZE</td>
</tr>
<tr>
<td>APOSPF</td>
</tr>
<tr>
<td>LOG EBIT pre</td>
</tr>
<tr>
<td>LOG EBIT private</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Correlations between the dependent variable (EBIT) and independent variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIT post</td>
</tr>
<tr>
<td>EBIT post</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

The correlation matrix for independent variables shows that the correlations have absolute values less than 0.5; thus, there are no problems of multicollinearity. The p-value of this model (pertaining to the F ratio) is less than 1%. So, this model demonstrates a statistically significant relationship between the EBIT and the combined independent variables at the 99% confidence level.

The adjusted R-squared statistic indicates that this model as fitted explains 45.57% of the variability in the performance of EBIT in the third year following privatisation.
The p-values of the regression coefficient for the size, the performance of EBIT pre-privatisation ($V_i$), and the performance of EBIT for private firms ($X_i$) are 3.68%, 0.01%, and 8.58%, respectively. Hence, the study rejects the null hypotheses only for these variables. This means that they have positive significant relationships i.e. higher levels of these attributes are associated with higher levels of EBIT (dependent variable) post-privatisation, at the 95%, 99%, and 90% confidence level, respectively.

Additionally, the relationship between the performance of EBIT pre-privatisation and its performance post-privatisation is very strongly positive (the correlation between both of them is 0.6917 and the regression coefficient value is 1.0077 with a very significant p-value). The same result can be observed for the relationship between the performance of EBIT post-privatisation and their competitors from the private sector. In this context, the p-value of the regression coefficient for APOSPF is 63.58%. So, the null hypothesis cannot be rejected for this variable. It means that there is no significant relationship between the performance of EBIT in the third year following privatisation and the percentage owned by the state in the privatised firm.

The results here are much different from previous findings in this thesis, for by the third year after privatisation the competitor group now has an impact on EBIT performance. The study concludes that the impact of competition on EBIT of privatised firms appears with the passage of time, because previously there was no impact of competition in the earlier stage (i.e. after privatisation directly), but competition really began by the third year. This result is consistent with
Villaloga, (2000) and other previous studies' results, which were presented in Chapter Four, Section 4.4.3

8.3.5 Testing the impact of SAL performance pre-privatisation and the new environment on SAL performance in the third year following privatisation

This section studies the null hypothesis that is "the new environment for the privatised firm does not impact the performance of SAL in the third year after privatisation". The alternative hypothesis is that "the new environment affects the performance of SAL". This is tested by using multiple regressions of the actual data in the third year after privatisation. Table 8-16 shows the regression analysis results for SAL, as dependent variable, for all privatised firms, which were privatised from 1991 to 2004.

In general, the overall results of the regression model show that the p-value of this model (concerning the F ratio) is 0.0021; thus, this model demonstrates a statistically significant relationship between the SAL and the combined independent variables in the third year after privatisation at the 99% confidence level. The adjusted R-squared statistic indicates that this model as fitted explains 22.71% of the variability in the performance of SAL in the third year after privatisation.

It is clear from the correlation matrix for coefficient estimates, as seen in the second part of Table 8-16 that the values of correlation for the performance of SAL pre-privatisation ($V_i$), the performance of SAL for private firms in the third
year after privatisation ($X_i$), APOSPF, and the size of privatised firms (independent variables) lie in the range of ±0.5; so, there are no problems of multicollinearity.

Table 8-16 The results of the regression analysis for the dependent variable: LOG Real Sales (the third year following privatisation)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.5605</td>
<td>0.0095***</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.0630</td>
<td>0.0160**</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.3121</td>
<td>0.0958***</td>
<td></td>
</tr>
<tr>
<td>Performance Pre ($V_i$)</td>
<td>0.6134</td>
<td>0.0002*</td>
<td></td>
</tr>
<tr>
<td>Performance Private ($X_{ij}$)</td>
<td>-0.0570</td>
<td>0.3356</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td>0.0021*</td>
<td>4.69</td>
<td></td>
</tr>
<tr>
<td>R. squared</td>
<td>28.54%</td>
<td>22.71%</td>
<td></td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Correlation matrix for coefficient estimates

<table>
<thead>
<tr>
<th></th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>ADJ SAL pre-</th>
<th>ADJ SAL private</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.3537</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADJ SAL pre-</td>
<td>-0.0068</td>
<td>-0.0325</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>ADJ SAL private</td>
<td>-0.2660</td>
<td>0.1216</td>
<td>0.0586</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Correlations between the dependent variable (SAL) and independent variables

<table>
<thead>
<tr>
<th></th>
<th>LOG SAL post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>LOG SAL pre-</th>
<th>LOG SAL pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SAL post</td>
<td>1.0000</td>
<td>0.2731</td>
<td>-0.0368</td>
<td>0.1572</td>
<td>-0.0335</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

Table 8-16 shows a significant positive relationship between the performance of SAL in the third year after privatisation and the size of the privatised firms. The regression coefficient has a value of 0.063 with p-value 0.0160, significant at the 95% confidence level. This means that an increase in the performance of SAL in the third year after privatisation is associated with an increase in the size. In addition, there is a significant negative relationship between the performance of SAL in the third year after privatisation and APOSPF. The regression coefficient has a value of -0.3121 with p-value 0.0958, significant at the 90% confidence level. This means that an increase in the performance of SAL in the third year after privatisation is associated with a decrease in the APOSPF.
SAL in the third year after privatisation is associated with a decrease in APOSPF and vice versa.

Furthermore, there is a significant positive relationship between the performance of SAL in the third year after privatisation and the performance of SAL pre-privatisation. The regression coefficient has a value of 0.6134 with p-value 0.0002, significant at the 99% confidence level. This means that an increase in the performance of SAL in the third year is associated with the performance of SAL pre-privatisation. So, the study rejects the null hypothesis for all independent variables (apart from the performance of SAL for competitive group). The exception signifies no impact of the new environment on SAL performance in the third year of privatisation.

8.3.6 Testing the impact of SALEFF performance pre-privatisation and the new environment on SALEFF performance in the third year following privatisation

Table 8-17 presents the regression results for sales efficiency for all privatised firms, which are privatised through IPOs. The study tests the null hypothesis that "the new environment for the privatised firm does not impact the performance of SALEFF in the third year after privatisation". The alternative hypothesis is that "the new environment affects the performance of SALEFF".

The F ratio demonstrates that the p-value of this model is more than 10%; thus, there is not a statistically significant relationship between the performance of
SALEFF in the third year after privatisation and the combined independent variables at the 90% or higher confidence level.

Table 8-17 The results of the regression analysis for the dependent variable: Sales Efficiency (the third year following privatisation)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
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<td>0.5847</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.0164</td>
<td>0.8444</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.4786</td>
<td>0.1084</td>
<td></td>
</tr>
<tr>
<td>Performance Pre (V_i)</td>
<td>0.5007</td>
<td>0.0406**</td>
<td></td>
</tr>
<tr>
<td>Performance Private (X_i)</td>
<td>-0.0080</td>
<td>0.7665</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td>0.1904</td>
<td></td>
<td>1.60</td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td></td>
<td>11.52%</td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td></td>
<td>4.30%</td>
</tr>
</tbody>
</table>

Correlation matrix for coefficient estimates

<table>
<thead>
<tr>
<th></th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>Adj SAEFF pre</th>
<th>Adj SALEFF private</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.3336</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adj SAEFF pre</td>
<td>-0.1160</td>
<td>-0.1240</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>Adj SALEFF private</td>
<td>-0.3522</td>
<td>0.1136</td>
<td>0.0141</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Correlations between the dependent variable (SALEFF) and independent variables

<table>
<thead>
<tr>
<th></th>
<th>SALEFF post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>SALEFF pre</th>
<th>SALEFF pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>SALEFF post</td>
<td>1.0000</td>
<td>-0.0149</td>
<td>-0.1767</td>
<td>0.2517</td>
<td>-0.0263</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

It is clear from Table 8-17 that there is a significant positive relationship between the SALEFF performance in the third year after privatisation and the SALEFF performance pre-privatisation. The regression coefficient has a value of 0.5007 with p-value 0.0406 at the 95% confidence level. This means in the multiple regressions that a higher SALEFF performance in the third year is strongly associated with a higher SALEFF performance pre-privatisation. So, the study rejects the null hypothesis for only the SALEFF performance pre-privatisation as an independent variable.

Furthermore, the p-values of the regression coefficient for the remaining independent variables, which are performance of SALEFF for private firms, APOSPF, and the size of privatised firms, are more than 10 per cent; thus, the null hypothesis for these variables cannot be rejected. So, the study accepts the
null hypothesis. It means that the new environment, statistically, does not affect the performance of SALEFF in the third year after privatisation.

8.3.7 Testing the impact of INEFF performance pre-privatisation and the new environment on INEFF performance in the third year following privatisation

This section tests the null hypothesis that "the new environment for the privatised firm does not impact the performance of income efficiency in the third year after privatisation". The alternative hypothesis is that "the new environment affects the performance of INEFF by using multiple regressions of the actual data of the third year following privatisation". Table 8-18 shows the regression results for INEFF (as dependent variable).

Table 8-18 The results of the regression analysis for the dependent variable: Net Income Efficiency (the third year following privatisation)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-1.4577</td>
<td>0.4012</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.1563</td>
<td>0.0978***</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-1.3240</td>
<td>0.0164**</td>
<td></td>
</tr>
<tr>
<td>Performance Pre (V)</td>
<td>1.2384</td>
<td>0.0000*</td>
<td></td>
</tr>
<tr>
<td>Performance Private (X)</td>
<td>0.1040</td>
<td>0.0033*</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td>0.0000*</td>
<td></td>
<td>29.79</td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td>70.85%</td>
<td></td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td>68.47%</td>
<td></td>
</tr>
</tbody>
</table>

Correlation matrix for coefficient estimates

<table>
<thead>
<tr>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>ADJINEFF pre</th>
<th>ADJINEFF private</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.3744</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>ADJ INEFF pre</td>
<td>-0.1610</td>
<td>0.1729</td>
<td>1.0000</td>
</tr>
<tr>
<td>ADJINEFF private</td>
<td>-0.2080</td>
<td>0.1666</td>
<td>0.0630</td>
</tr>
</tbody>
</table>

Correlations between the dependent variable (INEFF) and Independent variables

<table>
<thead>
<tr>
<th>INEFF post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>INEFF pre</th>
<th>INEFF pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>INEFF post</td>
<td>1.0000</td>
<td>0.1346</td>
<td>-0.2910</td>
<td>0.7705</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

The values of correlation for the independent variables, which are presented in Section 8.2.7 are less than 0.5 and more than -0.5; so, there are no problems of
multicollinearity. The p-value of this model, related to the F ratio, is 0.000%, thus this model provides a statistically significant relationship between the INEFF and the combined independent variables at the 99% confidence level. The adjusted R-squared statistic indicates that this model as fitted explains 68.47% of the variability in the performance of INEFF in the third year following privatisation.

It is clear from Table 8-18 that there is a positive and strongly significant relationship between the performance of INEFF pre-privatisation and its performance post-privatisation. The regression coefficient has a value of 1.2384 with p-value 0.0000, significant at the 99% confidence level. In addition, there is a significant positive relationship between the performance of INEFF in the third year post-privatisation and the performance of INEFF for private firms (competitive group). The regression coefficient has a value of 0.1040 with p-value 0.0033, significant at the 99% confidence level. This means that an increase in the performance of INEFF in the third year post-privatisation is associated with an increase in the performance of INEFF for private firms, and vice versa.

Furthermore, there is a significant negative relationship between the performance of INEFF in the third year post-privatisation and APOSPF. The regression coefficient has a value of -1.3240 with p-value 0.0164, significant at the 95% confidence level. This means that an increase in the performance of INEFF in the third year post-privatisation is associated with a decrease in APOSPF, and vice versa. Additionally, there is a significant positive relationship between the performance of INEFF in the third year post-privatisation and the
size of the privatised firm. The regression coefficient has a value of 0.1563 with p-value 0.0978, significant at the 90% confidence level. This means that higher levels of performance of INEFF in the third year post-privatisation are associated with large privatised firms. So, the study rejects the null hypothesis for all independent variables. This means that the new environment for privatised firms do impact the performance of income efficiency in the third year after privatisation. These results are interestingly consistent with Megginson (2004) who agree that the new environment do not affect the income efficiency of privatised firm through less than 2 years following privatisation but become more effect on the income efficiency after three year following privatisation.

8.3.8 Testing the impact of TDTA performance pre-privatisation and the new environment on TDTA performance in the third year following privatisation

In this section, the study examines the null hypothesis that "the new environment for privatised firms does not impact the performance of total debts to total assets in the third year after privatisation". The alternative hypothesis is "the new environment affects the performance of TDTA". Table 8-19 provides the results of the multiple regression analysis for total debts to total assets for the 54 privatised firms in the third year following privatisation.

Table 8-19 shows low correlations among the performance of TDTA pre-privatisation, the performance of TDTA for private firms, the size of privatised firms in the third years post-privatisation, and APOSPF (as independent variables); thus, there is no problem of multicollinearity.
In general, the overall results of the full regression model show that, the p-value (concerning the F ratio) is less than 1%; thus, this model demonstrates a statistically significant relationship between the TDTA and the combined independent variables in the third year after privatisation at the 99% confidence level. The adjusted R-squared statistic indicates that this model as fitted explains 28.47% of the variability in the performance of TDTA in the third year after privatisation.

Table 8-19 The results of the regression analysis for the dependent variable: Total Debt to Total Assets (the third year following privatisation)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.0040</td>
<td>0.9910</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.0056</td>
<td>0.8566</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.0963</td>
<td>0.0858***</td>
<td></td>
</tr>
<tr>
<td>Performance Pre (V)</td>
<td>0.7621</td>
<td>0.0000*</td>
<td></td>
</tr>
<tr>
<td>Performance Private (X)</td>
<td>0.0469</td>
<td>0.7371</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td></td>
<td>0.0004*</td>
<td></td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td></td>
<td>6.28</td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td></td>
<td>33.87%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>28.47%</td>
</tr>
</tbody>
</table>

Correlation matrix for coefficient estimates

<table>
<thead>
<tr>
<th></th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>TDTA pre-</th>
<th>TDTA private</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.3315</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TDTA pre-</td>
<td>-0.3227</td>
<td>0.0380</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>TDTA private</td>
<td>-0.2686</td>
<td>0.0541</td>
<td>0.1841</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Correlations between the dependent variable (TDTA) and independent variables

<table>
<thead>
<tr>
<th></th>
<th>TDTA post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>TDTA pre-</th>
<th>TDTA private</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDTA post</td>
<td>1.0000</td>
<td>0.1662</td>
<td>-0.0601</td>
<td>0.5706</td>
<td>-0.0171</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

The p-value of the regression coefficient for APOSPF is 0.0858. In addition, the p-value of the regression coefficient for the performance of TDTA pre-privatisation is less than 1%; hence, the study rejects the null hypothesis only for both APOSPF at the 90% confidence level and the performance of TDTA pre-privatisation at the 99% confidence level. Meanwhile, the p-values of the regression coefficient for the remaining independent variables, which are
performance of TDTA for private firms and the size of privatised firms, are more than 10 per cent; thus, the null hypothesis for these variables cannot be rejected.

There is very strongly positive relationship between the TDTA performance following privatisation and the TDTA performance pre-privatisation (i.e. the correlation between TDTA post-privatisation and TDTA pre-privatisation is 0.5706, with regression coefficient value 0.7621 and a very significant p-value).

Also, there is a negative significant relationship between the performance of TDTA post-privatisation and APOSPF. In the meantime, there is no significant relationship between the TDTA performance in the third year following privatisation and the TDTA performance for their counterparts from private firms. Therefore, the main null hypothesis is not rejected; the new environment has not affected TDTA performance in the third year of privatisation.

8.3.9 Testing the impact of TDTE performance pre-privatisation and the new environment on TDTE performance in the third year following privatisation

The results of the multiple regression analysis for total debts to total equity for all privatised firms in the third year after privatisation are shown in Table 8-20. The study examines the null hypothesis that "there are not significant impacts for the ownership structure, the competition, the TDTE performance pre-privatisation, and the size, respectively, on the TDTE performance in the third year following privatisation". The alternative hypothesis is that "there are
significant impacts for the ownership structure, the competition, the performance of TDTE pre-privatisation, and the size, respectively, on the performance of TDTE".

The correlation matrix shows no problems of multicollinearity. This result is due to the values of correlation for independent variables (the TDTE performance pre-privatisation, the TDTE performance for private firms, APOSPF, and the size of privatised firms) in the range of ± 0.50.

Table 8-20 The results of the regression analysis for the dependent variable: Total Debt to Total Equity (the third year following privatisation)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.3705</td>
<td>0.6465</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>-0.0409</td>
<td>0.5434</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>0.7021</td>
<td>0.0050*</td>
<td></td>
</tr>
<tr>
<td>Performance Pre (Vj)</td>
<td>0.2621</td>
<td>0.0002*</td>
<td></td>
</tr>
<tr>
<td>Performance Private (Xj)</td>
<td>-0.0565</td>
<td>0.5551</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td>0.0001*</td>
<td>7.10</td>
<td></td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td>36.69%</td>
<td></td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td>31.52%</td>
<td></td>
</tr>
</tbody>
</table>

The p-value of the regression model (pertaining to the F ratio) is less than 1%; thus, this model demonstrates a statistically significant relationship between the TDTE and the new environment at the 99% confidence level. The adjusted R-squared statistic indicates that this model as fitted explains 31.52% of the variability in the TDTE performance in the third year following privatisation.

<table>
<thead>
<tr>
<th>Correlation matrix for coefficient estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
</tr>
<tr>
<td>LOG SIZE</td>
</tr>
<tr>
<td>APOSPF</td>
</tr>
<tr>
<td>TDTE pre-</td>
</tr>
<tr>
<td>TDTE private</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Correlations between the dependent variable (TDTE) and Independent variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDTE post</td>
</tr>
<tr>
<td>TDTE post</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.
Table 8-20 presents a significant positive relationship between the TDTE performance in the third year post-privatisation and APOSPF. The regression coefficient has a value of 0.7021 with p-value 0.0050, significant at the 99% confidence level. This means that an increase in the TDTE performance is associated with an increase in APOSPF. Also, there is a significant positive relationship between the TDTE performance of privatised firms in the third year after privatisation and their performance pre-privatisation. The regression coefficient has a value of 0.2621 with p-value 0.0002, significant at the 99% confidence level. Hence, the study rejects the null hypothesis for both APOSPF and the TDTE performance pre-privatisation at the 99% confidence level. Meanwhile, the p-value of the regression coefficients for the remaining independent variables, which are: the TDTE performance for private firms and the size of privatised firms are more than 10 per cent; thus, the null hypothesis for these variables cannot be rejected.

8.3.10 Testing the impact of the pre-privatisation and post-privatisation environments upon EMPL in the third year following privatisation

This section provides the regression results for employment level (as dependent variable). The study examines the null hypothesis that "the new environment for privatised firm does not impact the employment level in the third year after privatisation". The alternative hypothesis is that "the new environment affects the employment level". This is tested by using multiple regressions of the (LOG) actual data of the number of employees in the third year following privatisation.

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The correlation matrix between independent variables is computed to test the existence of any high correlation between independent variables. Table 8-21 shows the correlations between the employment level before privatisation ($V_i$), employment level for private firms ($X_{it}$), the size of privatised firms in the third year post-privatisation, and APOSPF lie in the range of ± 0.5, thus, there are no problems of multicollinearity.

The p-value of full regression model (related to the F ratio) is less than 1%, thus this model demonstrates a statistically significant relationship between the EMPPL and the combined independent variables at the 99% confidence level. The adjusted R-squared statistic indicates that this model as fitted explains 90.66% of the variability in the performance of EMPPL following privatisation.

**Table 8-21 The results of the regression analysis for the dependent variable: LOG Number of Employees (the third year following privatisation)**

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-1.2398</td>
<td>0.0335**</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.0774</td>
<td>0.1123</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.0003</td>
<td>0.9984</td>
<td></td>
</tr>
<tr>
<td>Employment level Pre ($V_i$)</td>
<td>1.0230</td>
<td>0.0000*</td>
<td></td>
</tr>
<tr>
<td>Employment level Private ($X_{it}$)</td>
<td>-0.0192</td>
<td>0.6698</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td>0.0000*</td>
<td></td>
<td>129.68</td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td></td>
<td>91.36%</td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td></td>
<td>90.66%</td>
</tr>
</tbody>
</table>

**Correlation matrix for coefficient estimates**

<table>
<thead>
<tr>
<th></th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>LOG EMPL pre-</th>
<th>LOG EMPL private</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.1879</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOG_EMPL pre-</td>
<td>-0.4206</td>
<td>-0.1468</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>LOG_EMPL private</td>
<td>0.0228</td>
<td>-0.2659</td>
<td>-0.2899</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

**Correlations between the dependent variable (EMPPL) and independent variables**

<table>
<thead>
<tr>
<th></th>
<th>EMPPL post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>EMPPL pre</th>
<th>EMPPL pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMPPL post</td>
<td>1.0000</td>
<td>0.5380</td>
<td>0.3565</td>
<td>0.9532</td>
<td>0.3697</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.
Table 8-21 reveals that the p-value of the regression coefficient for $V_i$, which refers to the EMPL pre-privatisation, is less than 1 per cent, which means that there is a significant relationship at the 99% confidence level. Additionally, this relation is very strongly and positive (also the correlation between the dependent variable (EMPL) and independent variable ($V_i$) is 0.9532 and the regression coefficient value is 1.0230). In this context, the p-values of the regression coefficient for the remaining independent variables are more than 10 per cent. So, the study rejects the null hypothesis only for $V_i$ but the null hypothesis for the remaining variables cannot be rejected.

This result is consistent with the results presented in Chapter Seven, Section (7-3-5) and other previous studies, such as those by Ramamurti (1997), and LaPorta and Lopez-de-Silanes (1999). Thus, privatisation did not have a significant impact on the level of employment in privatised firms. Additionally, the new environment did not affect the level of employment whether in the first stage through three years or in the second stage for the third year. So, the only variable that affects the level of employment is the performance of the privatised firm pre-privatisation.

8.3.11 Review of factors affecting performance in the third year of privatisation

It has been demonstrated that in the third year of privatisation, the values of the performance indicators for EBIT and INEFF are at a competitive level. So, there is a successful implementation of measures, which provides an additional incentive to extend this research to cover beyond this point in time. In the next
section, a similar statistical process is used to shed some light on the relationships between the performance of privatised firms in year 2004 and their new environment.

8.4 The impact of the new environment on the privatised firms' performance in the year 2004

In the previous sub-sections, the study examined the combined impact of the pre-privatisation and post-privatisation environments upon the post-privatisation performance through two stages; the first stage included the three years pre- and post-privatisation, and the second stage represents the third year following privatisation only. The study has concluded that the performance of privatised firms' post-privatisation is not affected by their new environment in the first stage.

However, the impact of competition appeared significant in the third year after privatisation on the EBIT and INEFF only. Therefore, the multiple regression analysis technique will be used for the final year of the study period (year 2004) to evaluate any significant relationship between the post-privatisation performance (dependent variable) and the new environment. At the time of collecting data, 2004 was the most recent date for a full set of financial reports. So, the new environment is represented by the performance of private firms in the year 2004 (which represent the competitor group). Control variables are the size of privatised firms in the year 2004 and the actual percentage of ownership by the state in the privatised firm (APOSPF). In addition, there is an independent variable for the performance of the privatised firms' pre-
privatisation. For this purpose, the study calculates the average value of each performance indicator for 3 years pre-privatisation (years -3 to -1) for 54 privatised firms. Also, APOSPF is calculated for year 2004. In addition, the study calculates the actual value of each performance indicator in the year 2004 and the actual performance data in the same year for the 54 private firms.

Tables 8-22 to 8-31 show the multiple regression results for the combined impact of the post-privatisation sectoral environment and the pre-privatisation result on post-privatisation performance, by using financial ratios data in the year 2004 (full details about the results are shown in Appendices 8.5 and 8.6). In the following sub-sections, the study presents the empirical results of the combined impact of the post-privatisation sectoral environment and the pre-privatisation output on post-privatisation performance in the year 2004.

8.4.1 Testing the impact of ROS performance pre-privatisation and the new environment on ROS performance in the year 2004

This section examines the null hypothesis that "the new environment for privatised firms does not impact the performance of the real earnings before interest and taxes on sales for the 54 privatised firms in the year 2004". The alternative hypothesis is that "the new environment affects the performance of ROS". This is tested by using multiple regressions using actual data up to the year 2004. Table 8-22 shows the regression results for the ROS (as the dependent variable).

The correlation matrix for the independent variables can reveal the existence of any high correlations among these variables. Table 8-22 shows low correlations
among the independent variables. Thus, there are no problems of multicollinearity.

As seen from Table 8-22, there is a significant positive relationship between the performance of ROS pre-privatisation and its performance in year 2004. The regression coefficient has a value of 1.5151 with p-value 0.0335, significant at the 95% confidence level.

Table 8-22 The results of the regression analysis for the dependent variable: ROS (year 2004)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.2308</td>
<td>0.8704</td>
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</tr>
<tr>
<td>SIZE</td>
<td>0.0142</td>
<td>0.8970</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.5585</td>
<td>0.0222**</td>
<td></td>
</tr>
<tr>
<td>Performance Pre (V_i)</td>
<td>1.5151</td>
<td>0.0335**</td>
<td></td>
</tr>
<tr>
<td>Performance Private (X_i)</td>
<td>-0.5410</td>
<td>0.5406</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td></td>
<td>0.0881***</td>
<td>2.15</td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td></td>
<td>27.47%</td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td></td>
<td>23.56%</td>
</tr>
</tbody>
</table>

Correlation matrix for coefficient estimates

<table>
<thead>
<tr>
<th></th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>ROS pre</th>
<th>ROS pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.1661</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROS pre</td>
<td>0.0214</td>
<td>-0.0992</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>ROS pr</td>
<td>0.0754</td>
<td>0.0649</td>
<td>0.0093</td>
<td>1.0000</td>
</tr>
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</table>

Correlations between the dependent variable (ROS) and independent variables

<table>
<thead>
<tr>
<th></th>
<th>ROS post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>ROS pre</th>
<th>ROS pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROS post</td>
<td>1.0000</td>
<td>-0.0064</td>
<td>-0.1532</td>
<td>0.1926</td>
<td>-0.0754</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

In addition, there is a significant negative relationship between the performance of ROS in year 2004 and APOSPF. The regression coefficient has a value of -0.5585 with p-value 0.0222, significant at the 95% confidence level. This means that an increase in the performance of ROS is associated with a decrease in APOSPF in the year 2004, and vice versa.
Furthermore, this table demonstrates the relationship among ROS (as dependent variable), the performance of ROS for private firms (competitive group), and the size of privatised firms in the year 2004 (as independent variables). The p-values for these independent variables are more than 10%. Thus, the null hypothesis for these variables cannot be rejected. It means that the relationship among the performance of ROS and the performance of ROS for private firms, and size are insignificant at any prescribed level of confidence. These results are consistent with the results for ROS in the first and second stages.

8.4.2 Testing the impact of ROA performance pre-privatisation and the new environment on ROA performance in the year 2004

Table 8-23 shows the results of the multiple regression analysis for real earnings before interest and taxes on assets in the year 2004 for the 54 privatised firms. The study examines the null hypothesis that "the new environment for privatised firm does not impact the ROA performance in the year 2004". The alternative hypothesis is that "the new environment affects the ROA performance".

It is clear from Table 8-23 that the values of correlation among independent variables are between 0.5 and -0.5; hence, there are no problems of multicollinearity. The p-value of full regression model (pertaining to the F ratio) is 3.39 per cent. So, this model demonstrates a statistically significant relationship between the ROA and the combined independent variables at the 95% confidence level. The adjusted R-squared statistic indicates that this model
as fitted explains 12.19% of the variability in the performance of ROA in the year 2004.

Table 8-23 The results of the regression analysis for the dependent variable: ROA (year 2004)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
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<td>Constant</td>
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<td>0.1184</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>-0.0143</td>
<td>0.1672</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.0184</td>
<td>0.6385</td>
<td></td>
</tr>
<tr>
<td>Performance Pre (V)</td>
<td>0.4369</td>
<td>0.0952***</td>
<td></td>
</tr>
<tr>
<td>Performance Private (X)</td>
<td>0.2924</td>
<td>0.0680***</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td>0.0339**</td>
<td>2.84</td>
<td></td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td>18.82%</td>
<td></td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td>12.19%</td>
<td></td>
</tr>
</tbody>
</table>

Correlation matrix for coefficient estimates

<table>
<thead>
<tr>
<th></th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>ROA pre</th>
<th>ROA pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.2067</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROA pre</td>
<td>0.1213</td>
<td>-0.0083</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>ROA pr</td>
<td>0.2244</td>
<td>-0.1913</td>
<td>-0.0395</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Correlations between the dependent variable (ROA) and independent variables

<table>
<thead>
<tr>
<th></th>
<th>ROA post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>ROA pre</th>
<th>ROA pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA post</td>
<td>1.0000</td>
<td>-0.2796</td>
<td>-0.0590</td>
<td>0.2636</td>
<td>0.2936</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

The results of the regression coefficient for ROA in the year 2004 show a significant positive relationship between the performance of ROA and the performance of ROA for the competitive group. The regression coefficient has a value of 0.2924 with a p-value of 0.0680, significant at the 90% confidence level. This means that a higher performance of ROA in year 2004 is associated with a higher performance of ROA for private firms. So, the main null hypothesis is rejected in favour of the alternative, which is that the new environment affects ROA performance.

In addition, there is a significant positive relationship between the performance of ROA in year 2004 and the performance of ROA pre-privatisation. The regression coefficient has a value of 0.4369 with p-value 0.0952, significant at
the 90% confidence level. Thus, the study rejects the null hypothesis for the above independent variables, which are the competitive group and the performance of ROA pre-privatisation. Meanwhile, the p-values of the regression coefficients for the size of privatised firms and APOSPF are more than 10 per cent; thus, the null hypothesis for these variables cannot be rejected.

### 8.4.3 Testing the impact of ROE performance pre-privatisation and the new environment on ROE performance in the year 2004

The following section examines the null hypothesis that "the new environment for the privatised firm does not impact the ROE performance in year 2004". The alternative hypothesis is that "the new environment affects the ROE performance". Table 8-24 illustrates the results of the multiple regression analysis for ROE for the all privatised firms, which were privatised from 1991 to 2004 by IPOs.

In general, the overall results of the regression model show that the p-value of this model (concerning the F ratio) is 0.5435; thus, this model demonstrates a statistically insignificant relationship between the ROE performance and the new environment in the year 2004 at any prescribed level of confidence. The R-squared statistic indicates that this model as fitted explains only 5.98% of the variability in the ROE performance in year 2004.
Table 8-24 The results of the regression analysis for the dependent variable: ROE (year 2004)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.9933</td>
<td>0.0722***</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>-0.1242</td>
<td>0.1436</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>0.1111</td>
<td>0.7401</td>
<td></td>
</tr>
<tr>
<td>Performance Pre (V)</td>
<td>-0.5512</td>
<td>0.3593</td>
<td></td>
</tr>
<tr>
<td>Performance Private (X₁)</td>
<td>0.0918</td>
<td>0.8768</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td></td>
<td>0.5435</td>
<td></td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td>0.78</td>
<td></td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td>5.98%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.00%</td>
<td></td>
</tr>
</tbody>
</table>

Correlation matrix for coefficient estimates

<table>
<thead>
<tr>
<th></th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>ROE pre</th>
<th>ROE pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.1830</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROE pre</td>
<td>0.0315</td>
<td>-0.2788</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>ROE pr</td>
<td>0.1691</td>
<td>-0.0530</td>
<td>-0.0877</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Correlations between the dependent variable (ROE) and independent variables

<table>
<thead>
<tr>
<th></th>
<th>ROE post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
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<th>ROE pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROE post</td>
<td>1.0000</td>
<td>-0.2078</td>
<td>-0.0239</td>
<td>-0.1189</td>
<td>0.0446</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

Also, the p-values associated with all independent variables are more than 10%; thus, the relationship between ROE in year 2004 and independent variables is statistically insignificant at any level of confidence. So, the study does not reject the null hypothesis for all independent variables. It means that the new environment does not impact the ROE performance in the year 2004. So, this result is consistent with the previous results in section 8.3.3.

8.4.4 Testing the impact of EBIT performance pre-privatisation and the new environment on EBIT performance in the year 2004

This section studies the null hypothesis that "there is no significant impact of the performance of EBIT pre-privatisation and the new environment of privatised firms on their performance of EBIT in the year 2004". The alternative hypothesis is that "there is a significant impact on the performance of EBIT". Table 8-25 provides the results of the multiple regression analysis for EBIT in year 2004 for all privatised firms, which were privatised from 1991 to 2004 by IPOs.
Table 8-25 The results of the regression analysis for the dependent variable: EBIT (year 2004)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.1925</td>
<td>0.9254</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.6774</td>
<td>0.0001*</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.1311</td>
<td>0.8201</td>
<td></td>
</tr>
<tr>
<td>Performance Pre (V)</td>
<td>0.1099</td>
<td>0.0992***</td>
<td></td>
</tr>
<tr>
<td>Performance Private (X_{ij})</td>
<td>0.1229</td>
<td>0.0591***</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td>0.0001*</td>
<td></td>
<td>7.74</td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td></td>
<td>38.71%</td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td></td>
<td>33.70%</td>
</tr>
</tbody>
</table>

**Correlation matrix for coefficient estimates**

<table>
<thead>
<tr>
<th></th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>LOG EBIT pre.</th>
<th>LOG EBIT pr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>0.0456</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOG EBIT pre</td>
<td>-0.4881</td>
<td>-0.3884</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>LOG EBIT pr</td>
<td>0.1268</td>
<td>-0.0714</td>
<td>0.0201</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

**Correlations between the dependent variable (EBIT) and independent variables**

<table>
<thead>
<tr>
<th></th>
<th>EBIT post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>EBIT pre.</th>
<th>EBIT pr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBIT post</td>
<td>1.0000</td>
<td>0.6138</td>
<td>0.1654</td>
<td>0.3947</td>
<td>0.5547</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

Table 8-25 shows that the correlations among the independent variables are between 0.5 and -0.5. Thus, there are no problems of multicollinearity. Additionally, the correlations between the EBIT as dependent variable and all independent variables show that there are strong correlations between the dependent variable and both the size of the firm and the performance of EBIT for the competitive group.

The p-value of this model (pertaining to the F ratio) is less than 0.01 per cent. So, this model demonstrates a statistically significant relationship between the EBIT and the combined independent variables at the 99% confidence level. The adjusted R-squared statistic indicates that this model as fitted explains 33.70% of the variability in the performance of EBIT in year 2004.

As seen from Table 8-25, there is a significant strong positive relationship between the performance of EBIT in the year 2004 and the performance of
EBIT for the competitive group. The regression coefficient has a value of 0.1229 with p-value 0.0591, significant at the 90% confidence level. This means that a higher performance of EBIT in year 2004 is associated with a higher performance of EBIT for private firms. In addition, there is a significant strong positive relationship between the performance of EBIT in the year 2004 and the size of the privatised firms. The regression coefficient has a value of 0.6774 with p-value 0.0001, significant at the 99% confidence level. This means that a greater performance of EBIT in the year 2004 is associated with large firms. Furthermore, there is a significant positive relationship between the performance of EBIT in the year 2004 and the performance of EBIT pre-privatisation. The regression coefficient has a value of 0.1099 with p-value 0.0992, significant at the 90% confidence level. Thus, the study rejects the null hypothesis for only three independent variables, which are the competitive group, the size, and the performance of EBIT pre-privatisation.

In addition to that, the previous table exhibits the relationship between EBIT (as dependent variable) and APOSPF (as independent variable). This relationship (pertaining to P-value) is insignificant at any prescribed level of confidence; so, the study does not reject the null hypothesis only for the APOSPF variable.

According to the results above, and taking into account the previous regressions for different time-scenarios, the study shows that the impact of competition on EBIT of privatised firms increased through the passage of time. Although there was no impact of competition after privatisation directly (through three years), the competition on EBIT appeared at the beginning of the third year following privatisation (the correlations between the EBIT and competitive
group were 0.5022 in the third year and 0.5547 in year 2004). This result is consistent with the previous results showed in Section 8.3.4 and other studies, which were presented in Chapter Four, Section 4.4.3 (see, for example, Otchere, 2002; Chirwa, 2004; and Bortolotti, D'Souza, Fantini, and Megginson, 2002).

8.4.5 Testing the impact of SAL performance pre-privatisation and the new environment on SAL performance in the year 2004

In this section, the study tests the null hypothesis that "the new environment for the privatised firm does not impact the performance of SAL in year 2004". The alternative hypothesis is that "the new environment affects its performance of SAL by using LOG value of real sales for all privatised firms".

It is clear from the correlation matrix for independent variables in Table 8-26 that the correlations between independent variables are in the range of ± 0.5. So, there is no problem of multicollinearity.

In general, the P-value of the full regression model in year 2004 (related to the F ratio) is 0.0161, thus this model demonstrates a statistically significant relationship between the SAL and the combined independent variables at the 95% confidence level. The adjusted R-squared statistic indicates that this model as fitted explains 15.21% of the variability in the performance of SAL in the year 2004.
Table 8-26 The results of the regression analysis for the dependent variable: LOG Real Sales (year 2004)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-2.8445</td>
<td>0.0085*</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.1992</td>
<td>0.0195**</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.3645</td>
<td>0.2530</td>
<td></td>
</tr>
<tr>
<td>Performance Pre (V)</td>
<td>1.9891</td>
<td>0.0043*</td>
<td></td>
</tr>
<tr>
<td>Performance Private (X)</td>
<td>0.2173</td>
<td>0.0908***</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td></td>
<td>0.0161**</td>
<td>3.38</td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td></td>
<td>21.61%</td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td></td>
<td>15.21%</td>
</tr>
</tbody>
</table>

Correlation matrix for coefficient estimates

<table>
<thead>
<tr>
<th></th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>log SAL pre</th>
<th>log SAL pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.2061</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>log SAL pre</td>
<td>0.1842</td>
<td>-0.1771</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>log SAL pr</td>
<td>0.1925</td>
<td>-0.0837</td>
<td>0.1046</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Correlations between the dependent variable (SAL) and independent variables

<table>
<thead>
<tr>
<th></th>
<th>LOG SAL post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>LOG SAL pre</th>
<th>LOG SAL pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SAL post</td>
<td>1.0000</td>
<td>0.2455</td>
<td>-0.0423</td>
<td>0.3262</td>
<td>0.1173</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

As seen from Table 8-26, the p-value of the regression coefficients for the SAL pre-privatisation, the size of the privatised firm, and the SAL for the competitive group are 0.0043, 0.0195, and 0.0908, respectively. So, there are significant positive relationship among SAL in year 2004 and the SAL pre-privatisation, the size of privatised firm, and the SAL for competitive group at the 99%, 95%, and 90% confidence level, respectively. This means that a higher performance of SAL in year 2004 is associated with a higher performance of SAL for private firms, the size of privatised firms, and the SAL pre-privatisation. Additionally, this table shows an insignificant relationship (pertaining to the p-value of 0.2530) between the performance of SAL in year 2004 and APOSPF. The most important conclusion is that the new environment affects the 2004 SAL performance of privatised firms.
8.4.6 Testing the impact of SALEFF performance pre-privatisation and the new environment on SALEFF performance in the year 2004

This section examines the null hypothesis that "the new environment for the privatised firm does not impact the SALEFF performance in year 2004". The alternative hypothesis is that "the new environment affects the SALEFF performance". This is tested by using multiple regressions of the actual data in year 2004. Table 8-27 shows the regression analysis results for sales efficiency, as the dependent variable, for all privatised firms, which were privatised from 1991 to 2004.

Table 8-27 The results of the regression analysis for the dependent variable: Sales Efficiency (year 2004)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-1.6436</td>
<td>0.3667</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.2192</td>
<td>0.0858***</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.8937</td>
<td>0.0986***</td>
<td></td>
</tr>
<tr>
<td>Performance Pre (V)</td>
<td>0.3287</td>
<td>0.4945</td>
<td></td>
</tr>
<tr>
<td>Performance Private (X)</td>
<td>0.2115</td>
<td>0.0992***</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td></td>
<td>0.0932***</td>
<td></td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td></td>
<td>2.09</td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td></td>
<td>13.29%</td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td></td>
<td>6.22%</td>
</tr>
</tbody>
</table>

Correlation matrix for coefficient estimates

<table>
<thead>
<tr>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>Adj SAEFF pre</th>
<th>Adj SALEFF pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.1771</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>Adj SAEFF pre</td>
<td>0.0303</td>
<td>-0.2449</td>
<td>1.0000</td>
</tr>
<tr>
<td>Adj SALEFF pr</td>
<td>-0.2520</td>
<td>0.0476</td>
<td>-0.0366</td>
</tr>
</tbody>
</table>

Correlations between the dependent variable (SALEFF) and Independent variables

<table>
<thead>
<tr>
<th>SALEFF post</th>
<th>SALEFF</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>SALEFF pre</th>
<th>SALEFF pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>SALEFF post</td>
<td>1.0000</td>
<td>0.1938</td>
<td>-0.1739</td>
<td>0.0449</td>
<td>0.0889</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

It is clear from the correlation matrix for coefficient estimates, as seen in second part of Table 8-27 that the values of correlation for the SALEFF performance pre-privatisation, the SALEFF performance for private firms in year 2004,
APOSFP, and the size of privatised firms in year 2004 (independent variables) are between 0.5 and -0.5; hence, there are no problems of multicollinearity.

In general, the overall results of the regression model show that the p-value (for the F ratio) is 0.0932; thus, this model demonstrates a statistically significant relationship between the SALEFF in 2004, and the combined independent variables at the 90% confidence level. The R-squared statistic indicates that this model as fitted explains 13.29% of the variability in the performance of SALEFF in the year 2004.

It is obvious from Table 8-27 that there is a significant positive relationship between the SALEFF performance in the year 2004 and the SALEFF performance for competitor group. The regression coefficient has a value of 0.2115 with p-value 0.0992 at the 90% confidence level. This means that an increase in the SALEFF performance in year 2004 is associated with an increase in the SALEFF performance for their competitor group, and vice versa. In addition, there is a significant negative relationship between the SALEFF performance in year 2004 and APOSFP. The regression coefficient has a value of -0.8937 with p-value 0.0986, which is at the 90% confidence level. This means that an increase in the SALEFF performance in year 2004 is related to a decrease in APOSFP, and vice versa.

Also, there is a significant positive relationship between the SALEFF performance in year 2004 and the size of these privatised firms. The regression coefficient has a value of 0.2192 with p-value 0.0858, significant at the 90% confidence level. This means that any increase in the SALEFF performance in
year 2004 is associated with an increase in the size of the private firms, and vice versa.

According to that discussed in the above section, the study rejects the null hypothesis for all independent variables (apart from the SALEFF performance pre-privatisation). It means that the new environment for the privatised firm has an impact on the performance of sales efficiency in the year 2004.

8.4.7 Testing the impact of INEFF performance pre-privatisation and the new environment on INEFF performance in the year 2004

Table 8-28 presents the results of the multiple regression analysis for INEFF (as dependent variable) for all privatised firms, which were privatised from 1991 to 2004 by IPOs. The study tests the null hypothesis that "the new environment for privatised firm does not impact the performance of INEFF in year 2004". The alternative hypothesis is that "the new environment affects the performance of INEFF". This is tested by using multiple regressions of the actual data in the year 2004.

The correlation matrix between independent variables is computed to test the existence of any high correlation between independent variables. The value of correlation for the independent variables is between ± 0.5, as shown in the second part of Table 8-28. So, there are no problems of multicollinearity.

In general, the overall results of the full regression model show that, the p-value (concerning the F ratio) is 0.0000; thus, this model demonstrates a statistically significant relationship between the INEFF in 2004 and the combined
independent variables at the 99% confidence level. The adjusted R-squared statistic indicates that this model as fitted explains 45.57% of the variability in the performance of INEFF in the year 2004.

Table 8-28 The results of the regression analysis for the dependent variable: Net Income Efficiency (year 2004)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.4951</td>
<td>0.9214</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.2024</td>
<td>0.6155</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-1.739</td>
<td>0.0992***</td>
<td></td>
</tr>
<tr>
<td>Performance Pre (V)</td>
<td>0.0019</td>
<td>0.9963</td>
<td></td>
</tr>
<tr>
<td>Performance Private (X_{it})</td>
<td>0.0897</td>
<td>0.0853***</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td>0.0000*</td>
<td></td>
<td>12.24</td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td></td>
<td>49.67%</td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td></td>
<td>45.57%</td>
</tr>
</tbody>
</table>

Correlation matrix for coefficient estimates

<table>
<thead>
<tr>
<th></th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>ADJ INEFF pre</th>
<th>ADJINEFF pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.1967</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADJ INEFF pre</td>
<td>-0.1047</td>
<td>0.0906</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>ADJINEFF pr</td>
<td>-0.1179</td>
<td>0.1930</td>
<td>0.0080</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Correlations between the dependent variable (INEFF) and independent variables

<table>
<thead>
<tr>
<th></th>
<th>INEFF post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>INEFF pre</th>
<th>INEFF pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>INEFF post</td>
<td>1.0000</td>
<td>0.0544</td>
<td>-0.1675</td>
<td>0.0209</td>
<td>0.1446</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

It is clear from Table 8-28 that there is a significant positive relationship between the performance of INEFF in the year 2004 and the performance of INEFF for private firms. The regression coefficient has a value of 0.0897 with p-value 0.0853, significant at the 90% confidence level. This means that an increase in the performance of INEFF in year 2004 is associated with an increase in the performance of INEFF for private firms, and vice versa. In addition, there is a significant negative relationship between the performance of INEFF in the year 2004 and APOSPF. The regression coefficient has a value of -1.739 with p-value 0.0992, significant at the 90% confidence level. This means that an increase in the performance of INEFF in the year 2004 is associated with a decrease in APOSPF, and vice versa. Thus, the study rejects the null
hypothesis for only two independent variables, which are the competitor group and APOSPE.

Furthermore, this table demonstrates moderately strong relationships between INEFF (as dependent variable) and the performance of INEFF pre-privatisation, and the size of privatised firms in the year 2004 (as independent variables). The p-values for these independent variables are more than 10%; thus, the null hypothesis for these variables cannot be rejected. It means that the relationship between the performance of INEFF and the performance of INEFF pre-privatisation, and its size are insignificant at any prescribed level of confidence.

8.4.8 Testing the impact of TDTA performance pre-privatisation and the new environment on TDTA performance in the year 2004

Table 8-29 shows the results of the multiple regression analysis for total debt to total assets for the 54 privatised firms. The study examines the null hypothesis that "there are no significance impacts of the ownership structure, the competition, the TDTA performance pre-privatisation, and the size of privatised firms on the TDTA performance in the year 2004". The alternative hypothesis is that "there are significance impacts of the ownership structure, the competition, the TDTA performance pre-privatisation, and the size on the TDTA performance".

The correlation matrix between independent variables is computed to examine the existence of any high correlation between independent variables. Table 8-29 shows the correlations between the performance of TDTA pre-privatisation,
the performance of TDTA in the year 2004 for private firms, the size of
privatised firms in the year 2004, and APOSPF are between 0.5 and -0.5. Thus,
there are no problems of multicollinearity.

Table 8-29 The results of the regression analysis for the dependent
variable: Total Debt to Total Assets (year 2004)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.3046</td>
<td>0.5566</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>-0.0071</td>
<td>0.1436</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.0820</td>
<td>0.3593</td>
<td></td>
</tr>
<tr>
<td>Performance Pre (V)</td>
<td>0.6423</td>
<td>0.0155**</td>
<td></td>
</tr>
<tr>
<td>Performance Private (X)</td>
<td>-0.1066</td>
<td>0.2530</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td>0.0498**</td>
<td></td>
<td>2.60</td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td></td>
<td>17.29%</td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td></td>
<td>14.21%</td>
</tr>
</tbody>
</table>

Correlation matrix for coefficient estimates

<table>
<thead>
<tr>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>TDTA pre</th>
<th>TDTA pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.1793</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>TDTA pre</td>
<td>-0.2283</td>
<td>0.0341</td>
<td>1.0000</td>
</tr>
<tr>
<td>TDTA pr</td>
<td>-0.0902</td>
<td>0.2056</td>
<td>0.2015</td>
</tr>
</tbody>
</table>

Correlations between the dependent variable (TDTA) and Independent variables

<table>
<thead>
<tr>
<th>TDTA post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>TDTA pre</th>
<th>TDTA pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDTA post</td>
<td>1.0000</td>
<td>0.0397</td>
<td>-0.0479</td>
<td>0.3528</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

In general, the p-value of the full regression model (pertaining to the F ratio) is
4.98%; so, this model demonstrates a statistically significant relationship
between the TDTA and the combined independent variables at the 95%
confidence level. The adjusted R-squared statistic indicates that this model as
fitted explains 14.21% of the variability in the performance of TDTA in the year
2004.

The p-value of the regression coefficient for the performance of TDTA pre-
privatisation is 1.55%; so, the study rejects the null hypothesis only for the
performance of TDTA pre-privatisation. It means that the relationship between
the performance of TDTA in the year 2004 and its performance pre-privatisation
is significant at the 95% confidence level. However, the p-value of the regression coefficient for the remaining independent variables, which are performance of TDTA for private firms, APOSPF, and the size of privatised firms, is more than 10%; thus, the null hypothesis for these variables cannot be rejected. It means that there is no significant relationship among the performance of TDTA in the year 2004 and the size of privatised firms, APOSPF, and the performance of TDTA for their competitive group.

8.4.9 Testing the impact of TDTE performance pre-privatisation and the new environment on TDTE performance in the year 2004

This section studies the null hypothesis that "the new environment for all privatised firm does not impact upon the TDTE performance in year 2004 after privatisation". The alternative hypothesis is that "the new environment affects the TDTE performance.

Table 8-30 presents the multiple regression results for total debt to total equity for all the privatised firms in the year 2004. The correlation matrix for coefficient shows no problems of multicollinearity. This result is due to the value of correlation among independent variables (the performance of TDTE pre-privatisation, the performance of TDTE for competitive group, APOSPF, and the size of privatised firms in the year 2004) is between 0.50 and -0.50.

The p-value of this model (relating to the F ratio) is 3.54%, so this model shows a statistically significant relationship between the TDTE and the combined independent variables at the 95% confidence level. The adjusted R-Squared
statistic indicates that this model as fitted explains 12.01% of the variability in the performance of TDTE in the year 2004.

Table 8-30 The results of the regression analysis for the dependent variable: Total Debt to Total Equity (year 2004)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.6790</td>
<td>0.1436</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>-0.0527</td>
<td>0.2530</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>0.2773</td>
<td>0.0977***</td>
<td></td>
</tr>
<tr>
<td>Performance Pre (V)</td>
<td>0.3875</td>
<td>0.0022*</td>
<td></td>
</tr>
<tr>
<td>Performance Private (X)</td>
<td>0.0356</td>
<td>0.0744***</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td>0.0354**</td>
<td></td>
<td>2.81</td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td></td>
<td>18.65%</td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td></td>
<td>12.01%</td>
</tr>
</tbody>
</table>

Correlation matrix for coefficient estimates

<table>
<thead>
<tr>
<th></th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>TDTE pre</th>
<th>TDTE pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.1583</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TDTE pre</td>
<td>-0.1605</td>
<td>-0.0616</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>TDTE pr</td>
<td>0.0182</td>
<td>-0.0054</td>
<td>0.0113</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Correlations between the dependent variable (TDTE) and independent variables.

<table>
<thead>
<tr>
<th></th>
<th>TDTE post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>TDTE pre</th>
<th>TDTE pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDTE post</td>
<td>1.0000</td>
<td>0.0223</td>
<td>0.1155</td>
<td>0.4191</td>
<td>0.0204</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

It is clear from Table 8-30 that there is a significant positive relationship between the performance of TDTE in the year 2004 and the performance of TDTE pre-privatisation. The regression coefficient has a value of 0.3875 with p-value 0.0022, significant at the 99% confidence level. This means that an increase in the performance of TDTE in the year 2004 is associated with the performance of TDTE pre-privatisation.

Also, there is a significant positive relationship between the performance of TDTE in the year 2004 and the performance of TDTE for the competitive group. The regression coefficient has a value of 0.0356, with p-value 0.0744, significant at the 90% confidence level. This means that an increase in the performance of TDTE in the year 2004 is associated with an increase in the
performance of TDTE for private firms and vice versa. In addition, there is a significant positive relationship between the performance of TDTE, in year 2004 and APOSPF. The regression coefficient has a value of 0.2773 with p-value 0.0977, significant at the 90% confidence level. This means that an increase in the performance of TDTE in year 2004 is associated with an increase in APOSPF, and vice versa.

Furthermore, this table presents the p-value (0.2530) for the relationship between TDTE as dependent variable in the year 2004 and the size of privatised firms as independent variables. It means that the relationship between the performance of TDTE and its size is insignificant at any prescribed level of confidence. So, the study rejects the null hypothesis for all independent variables, (apart from the size of privatised firms).

8.4.10 Testing the impact of the pre-privatisation and post-privatisation environments upon EMPL in the year 2004

The results of the regression for the employment level in the year 2004 (as dependent variable) are discussed in the following paragraphs. The study tests the null hypothesis that "the new environment for the privatised firm does not impact upon the employment level in year 2004". The alternative hypothesis is that "the new environment affects the employment level". This is examined by using multiple regressions of the (LOG) actual data of the number of employees in the year 2004.
The correlation matrix between independent variables is computed to test the existence of any high correlation between independent variables. Table 8-31 shows that the correlations between the employment level before privatisation, the employment level for private firms, the size of privatised firms in year 2004, and APOSPF are in the range of ± 0.5; so, there are not problems of multicollinearity.

Table 8-31 The results of the regression analysis for the dependent variable: LOG Number of Employees (year 2004)

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Coefficient</th>
<th>P-value</th>
<th>Other statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-1.6941</td>
<td>0.1097</td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.1922</td>
<td>0.0104**</td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.0450</td>
<td>0.8715</td>
<td></td>
</tr>
<tr>
<td>Employment level Pre (V_i)</td>
<td>0.8427</td>
<td>0.0000*</td>
<td></td>
</tr>
<tr>
<td>Employment level Private (X_i)</td>
<td>0.0225</td>
<td>0.7107</td>
<td></td>
</tr>
<tr>
<td>F. Ratio</td>
<td>0.0000*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R. squared</td>
<td></td>
<td>73.80%</td>
<td></td>
</tr>
<tr>
<td>R-squared (adjusted for d.f.)</td>
<td></td>
<td>71.66%</td>
<td></td>
</tr>
</tbody>
</table>

Correlation matrix for coefficient estimates

<table>
<thead>
<tr>
<th></th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>LOG.EMPL. pre.</th>
<th>LOG.EMPL pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG SIZE</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APOSPF</td>
<td>-0.0010</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOG.EMPL. pre.</td>
<td>-0.3811</td>
<td>-0.3734</td>
<td>1.0000</td>
<td></td>
</tr>
<tr>
<td>LOG.EMPL pr</td>
<td>0.1032</td>
<td>0.0105</td>
<td>0.0202</td>
<td>1.0000</td>
</tr>
</tbody>
</table>

Correlations between the dependent variable (EMPL) and independent variables

<table>
<thead>
<tr>
<th></th>
<th>EMPL post</th>
<th>LOG SIZE</th>
<th>APOSPF</th>
<th>EMPL pre</th>
<th>EMPL pr</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMPL post</td>
<td>1.0000</td>
<td>0.5237</td>
<td>0.3288</td>
<td>0.8366</td>
<td>-0.0558</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

In general, the overall results of the full regression model show that the p-value (concerning to the F ratio) is 0.000; so, this model shows a statistically significant relationship between the EMPL in the year 2004 and the combined independent variables at the 99% confidence level. The adjusted R-squared statistic indicates that this model as fitted explains 71.66% of the variability in the performance of EMPL.

As seen from Table 8-31, there is a significant strong positive relationship between the number of employees' pre-privatisation and the number of
employees in year 2004. The regression coefficient has a value of 0.8427 with p-value 0.0000, significant at the 99% confidence level (the correlation between EMPL post-privatisation and the EMPL pre-privatisation is 0.8366).

In addition, there is a significant positive relationship between the number of employees in the year 2004 and the size of firm. The regression coefficient has a value of 0.1922 with p-value 0.0104, significant at the 95% confidence level. This means that an increase in the size of firm is associated with an increase in the number of employees in the year 2004, and vice versa. In this context, the p-values of the regression coefficient for the remaining independent variables are more than 10 %. So, the study rejects the null hypothesis only for the number of employees' pre-privatisation and the size of firm. In the mean-time, the null hypothesis for the remaining independent variables cannot be rejected.

8.5 Summary

The aim of this chapter is to examine the impact of the post-privatisation environment upon the post-privatisation performance. In this chapter the third hypothesis for this thesis, which is "there is an environmental impact on the performance of the firms after privatisation" has been investigated by examining the impact of the post-privatisation environment upon the post-privatisation performance by applying regression models. The analysis is divided into three stages. In the first stage, the study presented the results of the combined impact of the post-privatisation sectoral environment and the pre-privatisation experience on post-privatisation performance by using three years pre- and post-privatisation. In the second stage, the study presented the results of the
combined impact of the post-privatisation sectoral environment and the pre-privatisation experience on post-privatisation performance by using only the third year post-privatisation. In the final stage, the study used the final year of the study period (year 2004) to present the results of the effect of competition with the passage of time on post-privatisation performance.

The results of examining the impact of the post-privatisation environment upon the post-privatisation performance for all performance indicators demonstrate that there is no impact of the performance of private firms, which represent competitor group, on all performance indicators of privatised firms after privatisation directly, but with the passage of time, the competitive environment affected EBIT and INEFF only in the third year following privatisation. After the passage of more time, the competitive environment impacted most of the performance indicators; in addition to the findings from regression analysis, the study concluded that the reducing of the state ownership-stakes in privatised firms is associated with better performance.

To complete the evaluation of the Egyptian privatisation programme, the study will discuss the results of the relationship among the ownership structure, the performance for privatised firms pre-privatisation, the size of privatised firms, the performance of private firms (competitor group), and the performance of privatised firms following privatisation in the next chapter. Beside that, the study will provide full discussion on all results that associated with both comparative analysis of pre- and post-privatisation performance and comparative analysis of the performance of privatised and private firms, which presented in Chapters Six and Seven, respectively.
CHAPTER 9  REFLECTIVE DISCUSSION ON THE IMPACT OF PRIVATISATION ON PERFORMANCE

9.1 Introduction

To evaluate the performance of Egyptian privatised firms, the study investigated three main hypotheses, which are: firstly, privatisation leads to improvement in the performance of privatised firms following privatisation; secondly, the performance of privatised firms following privatisation is similar to the performance of their counterpart from the private sector; and thirdly, there is an environmental impact on the performance of the firms after privatisation.

In chapter Six, the first hypothesis for this thesis has been tested by using the same methodology of MNR1994. This chapter presented the results of the comparison between the pre- and post-privatisation performance of Egyptian privatised firms that privatised through IPOs during 1991-2004 and concluded that the performance of Egyptian privatised firms had improved after transferring from state ownership to private ownership. Most performance indicators increased significantly after divestiture of privatised firms.

In chapter seven, the second hypothesis has been investigated by testing the performance changes of privatised Egyptian firms after matching them to their counterparts from the private sector, according to size and industry. In this chapter, the study employed the Mann-Whitney test to find out whether the performance changes in privatised firms are different from those of private firms.
by using the absolute and relative values for all performance indicators; and concluded that most results of performance indicators for privatised firms showed a significant difference when compared with those of the private firms; in addition, these indicators were approaching the performance indicators for private firms, which are similar in size and industry.

In chapter eight, the third hypothesis has been examined by investigating the impact of the post-privatisation environment upon the post-privatisation performance. In this chapter, the study employed regression models in three stages. In the first stage, the study presented the results of the combined impact of the post-privatisation sectoral environment and the pre-privatisation experience on post-privatisation performance by using three years pre- and post-privatisation. In the second stage, the study presented the results of the combined impact of the post-privatisation sectoral environment and the pre-privatisation experience on post-privatisation performance by using only the third year post-privatisation. In the third stage, the study used the final year of the study period (year 2004) to present the results of the effect of competition with the passage of time on post-privatisation performance.

In this chapter, the study will report and discuss the empirical results that related to evaluate the performance of 54 Egyptian privatised firms (whether partially or fully privatisation), which privatised during 1991-2004 through IPOs. The remainder of this chapter is organised as follows. Section two articulates the reflective discussion on the empirical results that related to the performance of privatised firms pre- versus post-privatisation. A reflective discussion on the empirical results that related to the performance of privatised firms post-
privatisation versus private firms as control group are presented in the third section. Section four provides a reflective discussion on the empirical results that related to the impact of ownership structures, pre-privatisation experience, and/or competitive environment on the post-privatisation performance. The summary chapter is set out in section five.

9.2 A reflective discussion on the empirical results that related to the performance of privatised firms pre- versus- post-privatisation

In this section, the study will evaluate and discuss the change in the performance indicators of privatised firms pre- and post-privatisation through comparing the values of the performance indicators post-privatisation with the values of performance indicators pre-privatisation; starting with profitability measures, then, operating efficiency measures, output measures, leverage ratios, and employment levels, respectively.

9.2.1 Profitability measures

For the earnings before interest and taxes, the first four rows in Tables 6-3, 6-4, and 6-5 demonstrate that 70% of the privatised firms had significant improvement in their EBIT after privatisation as the study predicted, although small in absolute terms following privatisation. The researcher believes that this slight improvement is due to three reasons: First, the privatisation programme is arguably still mysterious to many decision-makers who work in the privatised
firms; Second, privatised firms did not take enough time to convert their policies to open markets; and Third, privatised firms have a private management with clear responsibilities for decision-making. This management does not only care about achieving revenues, but also they do care about revenue collection. This implies that credit standards are expected to be more restricted after the privatisation programme.

This result is consistent with Megginson, Nash, and Van Randenborgh (1994) and Sun and Tong (2003), who agree that the performance of privatised firms is similar to the performance of SOEs through less than 2 years following privatisation but becomes an outperformance after that. Also, the results indicated that although the state owns the largest share (more than 51%) of the shares of the partially privatised firms, the partially privatised firms achieved profits higher than fully privatised firms. The reason for that is arguably that most partially privatised firms operate in the medicine and health sector, and still are operating under the umbrella of a monopoly because the pharmaceutical industry in Egypt was limited to public sector companies until the end of the 90s. This result is consistent with Dewenter and Malatesta (2001) and Omran (2001), who noticed that privatised firms achieved more profitability, in cases where they were working under a monopoly environment, than privatised firms, which were working in a competitive environment.

For the earnings before interest and taxes on sales, according to the results in rows 5-7, in Tables 6-3, 6-4, and 6-5, the study concluded that, by comparing pre- and post-privatisation, there is an improvement in ROS after privatisation,
and in general, the partially privatised firms achieved a greater improvement than the fully privatised firms. This could be explained by three reasons from the point of view of the researcher. First, there was a high stock of goods in the privatised firms as a result of cumulative activities of the firms pre-privatisation; in addition, this inventory\textsuperscript{66} had been accumulating, and that was mainly due to production and marketing problems. Thus, the privatised firms were expected to get rid of that stagnant inventory by any means. Second, their pricing policy became subject to market forces. Third, the privatised firms shifted from being product-oriented to being market-oriented. These results tend to be partially consistent with the literature, namely, MNR (1994), BC (1998), and DM (1999), who agree that there is a significant improvement in ROS when the privatised firms transfer from a monopoly to a competitive environment.

*For the earnings before interest and taxes on assets*, the goal of return on assets is to assess the effectiveness of firm's asset-utilisation. Rows 10-12, in Tables 6-3, 6-4, and 6-5 show 62% from privatised firms achieved a statistically significant improvement in the use of their assets. This result might be due to deterioration in fixed assets for privatised firms after privatisation, as a result of cumulative activities pre-privatisation, but through the passage of time, the privatised firms may have replaced the old assets with new assets or maintained them, which led to an increase in their ROA. This result is consistent with Megginson, Nash, and Van Randenborgh (1994) and Laurin and Bozec (2001), who noticed that there is a significant improvement in the ROA of

\textsuperscript{66} Which can be classified as raw materials, work in process, and finished goods.
privatised firms through the passage of time especially when replacing old assets with new ones.

For the earnings before interest and taxes on equity, it is clear from rows 14-16, in Tables 6-3, 6-4, and 6-5 that all statistical tests showed the increase in ROE for the whole sample of privatised firms is not significant at the any chosen level, whether fully or partially privatised. The researcher believes that the low level of improvement in ROE for partially privatised firms is due to possessing a big share of capital by the state. Hence, these firms are subject to the objectives of the state, which may be social objectives rather than the profit. Another reason is that partially privatised firms still enjoy debt-guarantees from the government, but fully privatised firms do not have these debt-guarantees from the government. Thus, the fully privatised firms achieved better changes in ROE than the partially privatised firms. This is consistent with study of D'Souza and Megginson (1999) who observed that, in the case of partial privatisation, the government still has a significant influence on firms, so it might consider social objectives in favour of business objectives.

As shown from Table 6-3, the results reveal that all profitability ratios, apart from ROE, increased significantly after privatisation, for the sample of privatised firms. All statistical tests pass the critical values of significance at the 1 per cent to 10 per cent levels for most profitability ratios. The increase in the profitability measures is equally significant at as low as 60 per cent and as high as 70 per cent of the sample firms. Such findings are consistent with what Megginson, Nash, and Van Randenborgh (1994), Boubakri and Cosset (1998), D'Souza and
Megginson (1999), Laurin and Bozec (2001), Dewenter and Malatesta (2001), Omran (2001), and Sun and Tong (2003) have documented

It is clear that the improvement in the profitability ratios of privatised firms can be justified based on the following: (1) the switch to wealth-maximisation goals, (2) the exposure to market forces, and (3) the decline in the agency cost of equity due to the existence of private ownership. In addition, exposure to the benefits and penalties of the open market was expected to motivate employees to raise revenues and lower costs.

9.2.2 Efficiency measures

For the sales efficiency, rows 18-20, Tables 6-3, 6-4, and 6-5 show that 61% of privatised firms had dropped in SALEFF after privatisation. There is no statistically significant change in SALEFF performance following privatisation. Also, all statistical tests showed that privatisation has a negative sales efficiency effect on 81% of the partially privatised firms. The drop in the SAEFF was probably due to two reasons; (i) the fully privatised firms have marketing problems as a result of a high stock of goods; and (ii) the state has the greatest share in ownership of the partially privatised firm (more than 51%). These results, in fact, tend to be consistent with Boubakri and Cosset (2003) and Omran (2004). They documented an insignificant change in sales efficiency directly after privatisation.

For the income efficiency, rows 22-24, Tables 6-3, 6-4, and 6-5 show that 71% of privatised firms had significant increases in their INEFF of around
25.7%. This result is probably due to the new managers in privatised firms being concerned about decreasing their expenses more than increasing their sales, given the fact that the denominator for the income efficiency and sales efficiency ratios is the number of employees.

According to the above, the results in Section 6.3.2 in Chapter Six reveal that all performance changes in SALEFF of privatised firms are not statistically significant, while they are highly significant for INEFF. The increase in operating efficiency ratios is equally significant for as low as 39% and as high as 71% of the sample firms. An important point here is that the differences between the performance changes in both SALEFF and INEFF could be due to the success of new management in controlling and reducing expenses more than increasing sales, as INEFF grows more than SALEFF. These results tend to be partially consistent with the literature, as Megginson, Nash, and Van Randenborgh (1994), Boubakri and Cosset (1998), Boardman et al (2003), D'Souzua and Megginson (2001), and Omran (2001), who document significant increases not only in income efficiency but also in sales efficiency.

9.2.3 Output measures

For the real sales, the results in rows 26-28, Tables 6-3, 6-4, and 6-5 show that privatisation has a statistically significant negative impact on the performance of output for forty privatised firms (around -23.7%). Although these results tend to contradict the expectation of an increase in output following privatisation, the results are consistent with Boycko, Shleifer, and Vishny's (1996), and Boubakri and Cosset, (2003), who argue that effective privatisation
will lead to a reduction in output, since the government can no longer entice management through subsidies to maintain inefficiently high output levels. It is important to note that this huge and significant decline in output contributed to the significant decrease in sales efficiency, but not to the decrease in the level of employment.

9.2.4 Leverage ratios

For the total debt to total assets, rows 30-32, Tables 6-3, 6-4, and 6-5 show that 57% of privatised firms had decreased in TDTA after privatisation. ALL statistical tests show an insignificant decrease in both mean and median at any given level.

For the total debt to total equity, rows 34 and 35 in Tables 6-3, 6-4, and 6-5 show that 78% of privatised firms achieved results as the study predicted. ALL statistical tests show a significant impact of privatisation on the TDTE of privatised firms whether fully or partially privatised firms.

In the light of the results of TDTA and TDTE, the study concludes that most firms achieved a statistically significant change in their mean (median) value of leverage. The significant decline in the leverage ratio for fully privatised firms is due to many reasons, such as: 1- these firms do not have the advantage of borrowing funds at a lower rate because the government removal of debt-guarantees leads to higher borrowing costs; 2- the privatisation programme allows the firms to access the public equity market, which means that alternative sources of finance will be available for privatised firms; 3- the fully
privatised firms, now having a private management with clear responsibilities for the decision-making process, are likely to be more alert when acquiring new forms of debt to finance the firm, and more thoroughly prepared in their assessment of the debt-paying ability and the degree of default-risk embedded in the decision. These results tend to be consistent with the literature, as D’Souza and Megginson (1999), Sun and Tong (2003), Boardman, Laurin, and Vining (2003), MNR (1994), Omran (2001). They too documented a significant change in leverage through the passage of time after privatisation.

An important point here is that these results become understandable for fully privatised firms, but the question here is how to explain the significant decline in the leverage ratio for partially privatised firms, which are still under the control of the government (the government has more than 51% in the ownership structure) and are still enjoying the debt-guarantees, which are provided by the government. One possibility is that the government would like to prepare these firms for sale, as fully privatised, to investors. Hence, improving some accounting measures, such as leverage, would make firms more attractive for investors and bring higher selling prices to the government.

9.2.5 Employment level

For the employment level, rows 38-40 in Tables 6-3, 6-4, and 6-5 show that 84% of privatised firms had decreased the level of employment, as the study predicted. ALL statistical tests show a significant negative impact of privatisation on the employment level of privatised firms whether they are fully or partially privatised firms. The initial interpretation of this result is that the reduction in the
size of employment in privatised firms is due to two reasons: first, there may be some waves of downsizing in the privatisation of SOEs as an effort to restructure these companies before selling them; and second, the Egyptian government provided an early-retirement programme to employees, who took the opportunity to retire from the civil service, and establish their own small businesses. These results tend to be consistent with Ramamurti (1997), LaPorta and Lopez-de-Silanes (1999), Boubakri and Cosset (1998), D'Souza and Megginson (1999), Boardman, Laurin, and Vining (2003), Dewenter and Malatesta (2001), Bortolotti, D'Souza, Fantini, Megginson (2002) Boubakri, Cosset, and Guedlhami (2005), Omran (2004), and Li and Xu (2004), who have documented a significant decrease in the level of employment after privatisation.

9.3 A reflective discussion on the empirical results that related to the performance of privatised firms post-privatisation versus private firms as control group

In this section, the study will evaluate and discuss the results deriving from a comparison between the performance in Egyptian privatised firms (test group), that experienced full or partial privatisation between 1991 and 2004 through IPOs, and counterparts from private firms (control group), starting with profitability measures, then, operating efficiency measures, output measures, leverage ratios, and employment levels, respectively.
9.3.1 Profitability measures

9.3.1.1 Earnings before interest and taxes

Table 9-1 and Chart 9-1 provide a summary for all statistical results of EBIT for the whole privatised firms, whether they are fully or partially privatised firms.

Table 9-1 A summary of statistical tests for earnings before interest and taxes

<table>
<thead>
<tr>
<th># of Firms</th>
<th>Pre-and Post-Privatisation</th>
<th>Post-Privatisation including Private Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Parametric t-test</td>
<td>Wilcoxon test</td>
</tr>
<tr>
<td></td>
<td>(P-value)</td>
<td>(P-value)</td>
</tr>
<tr>
<td>Partially privatised firms</td>
<td>16</td>
<td>0.990</td>
</tr>
<tr>
<td></td>
<td>(0.384)</td>
<td>(0.423)</td>
</tr>
<tr>
<td>Fully privatised firms</td>
<td>38</td>
<td>1.11</td>
</tr>
<tr>
<td></td>
<td>(0.274)</td>
<td>(0.169)</td>
</tr>
<tr>
<td>All privatised firms</td>
<td>54</td>
<td>1.513</td>
</tr>
<tr>
<td></td>
<td>(0.138)</td>
<td>(0.08)**</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance level, respectively.

Chart 9-1 The percentage for the performance of EBIT for privatised firms pre- and post-privatisation, and private matched firms post-privatisation

The study concludes that, although the comparison between pre-and post-privatisation shows the significant impact of EBIT on the performance of
privatised firms post-privatisation, the comparison of EBIT between privatised firms and their counterparts shows a significant difference in performance of EBIT at the 99% confidence level.

The significant difference in performance of EBIT between privatised firms and their counterparts might be due to three reasons: first, the privatised firms after privatisation directly focus on higher labour productivity, while private firms focus on higher level of profits; second, the new management might need to shift their thinking from concentrating on ownership only to considering the effects of market-structure and the power of competition as well; and third, although the Egyptian government provided an early-retirement programme, the privatised firms might not have enough funds to pay for their employees; thus, these firms are unable to get rid of excess labour.

An explanatory point here is that before privatisation, the employment policy was based on permanent contracts. Hence, the cost of labour is transferred from variable to fixed cost. In other words, the fixed cost (salaries’ costs) for these firms is very high.

This result is consistent with Villalonga (2000), who suggested the importance of time-effects on the profitability of privatised firms, where she noticed the profitability increase in efficiency in the long-term when competition replaced monopoly.
9.3.1.2 Earnings before interest and taxes on sales

It is clear from Chart 9-2 that the performance of ROS for privatised firms increased following privatisation, but is still less than the performance of ROS for private firms.

Chart 9-2 The percentage of the performance of ROS for privatised firms pre- and post-privatisation, and private matched firms post-privatisation

Table 9-2 summarises the results for all statistical tests, regarding ROS. The improvement in the performance of ROS for privatised firms after privatisation is similar to the performance of ROS for their private ones. Since the p-value for Wilcoxon and proportion tests is less than 1% (testing pre- and post-privatisation), the change in ROS as a result from privatisation, is significant at the 99% confidence level.
Table 9-2  A summary of statistical tests for return on sales

<table>
<thead>
<tr>
<th></th>
<th>Pre-and Post-Privatisation</th>
<th>Post-Privatisation including Private Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of Firms</td>
<td># of parametric firms</td>
</tr>
<tr>
<td></td>
<td></td>
<td>t-test</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(P-value)</td>
</tr>
<tr>
<td>Partially privatised firms</td>
<td>16</td>
<td>4.012</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0011)*</td>
</tr>
<tr>
<td>Fully privatised firms</td>
<td>38</td>
<td>0.017</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.986)</td>
</tr>
<tr>
<td>All privatised firms</td>
<td>54</td>
<td>1.059</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.294)</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

In the meantime, the comparison of ROS after privatisation with the ROS of private firms showed an insignificant difference in the performance of ROS for both of them. In addition, the performance of ROS for partially privatised firms is better than for the fully privatised ones. These results might be due to most privatised firms still working according to product-orientation not market-orientation; thus, the privatised firms must be market-oriented, not product-oriented. It means that the privatised firms must try to produce what the market wants, and not to sell what is produced. These results are consistent with Boardman and Vining (1989), who observe that state-owned and mixed firms are significantly less profitable and productive than privately owned firms; and contrast with Ehrlich, Gallais-Hamonno, Liu, and Lutter (1994), who find that the partial change from state ownership to private ownership has little effect on long run productivity growth.
9.3.1.3 Earnings before interest and taxes on assets

As seen from Chart 9-3 the performance of ROA for privatised firms increased after privatisation, but almost approached the performance of ROA for their counterparts from the private sectors.

Chart 9-3 The percentage of the performance of ROA for privatised firms pre- and post-privatisation, and private matched firms post-privatisation

Although the statistical Wilcoxon and proportion tests showed significant improvement at the 90% confidence level for performance of ROA after privatisation, it is still less than the performance of ROA for private firms, which are similar in size and industry, as shown in Table 9-3.

In addition, the change in the performance of ROA following privatisation for fully privatised firms is insignificant at any chosen level; and the difference in the performance of ROA is insignificant between the fully privatised firms and their
counterparts. For partially privatised firms, there is a significant change in the performance of ROA after privatisation at the 95% confidence level for a change in the mean, and at the 90% confidence level for the median.

Table 9-3 A summary of statistical tests for return on assets

<table>
<thead>
<tr>
<th>Firms</th>
<th># of Firms</th>
<th>Pre-and Post-Privatisation</th>
<th>Post-Privatisation including Private Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Absolute Method</td>
<td>Relative Method</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(P-value)</td>
<td>(P-value)</td>
</tr>
<tr>
<td>Partially privatised</td>
<td>16</td>
<td>t-test</td>
<td>MW test</td>
</tr>
<tr>
<td></td>
<td></td>
<td>t-test</td>
<td>t-test</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(P-value)</td>
<td>(P-value)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.401</td>
<td>0.9370</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.029)**</td>
<td>(0.3562)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.75</td>
<td>16-16</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.090</td>
<td>-0.448</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.081)**</td>
<td>(0.9543)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.9370</td>
<td>18-14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0364)**</td>
<td>(0.6576)</td>
</tr>
<tr>
<td>Fully privatised firms</td>
<td>38</td>
<td>t-test</td>
<td>MW test</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Av-Rank</td>
<td>Av-Rank</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(P-value)</td>
<td>(P-value)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.836</td>
<td>-1.347</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.408)</td>
<td>35-41</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.811</td>
<td>-1.530</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.417)</td>
<td>40-36</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.17</td>
<td>(0.195)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.24)</td>
<td>(0.1308)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-1.347</td>
<td>(0.4383)</td>
</tr>
<tr>
<td>All privatised firms</td>
<td>54</td>
<td>t-test</td>
<td>MW test</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Av-Rank</td>
<td>Av-Rank</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(P-value)</td>
<td>(P-value)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.40</td>
<td>-0.665</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.169)</td>
<td>51-57</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.65</td>
<td>-2.014</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.099)**</td>
<td>51-57</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.80</td>
<td>(0.046)**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0724)**</td>
<td>(0.372)</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

These results might be due to deterioration in fixed assets of privatised firms. The deterioration in the asset-utilisation of the privatised firms can be justified, based on the increase in the level of assets used in operations. Four reasons may explain the increased use of assets in operations, which are: (1) the need for extensive maintenance of the existing machines, (2) the need for larger investment spending to be competitive, (3) the switch from labour to capital intensive production, and (4) the greater access to private debt and equity markets after privatisation. This result is consistent with Ehrlich, Gallais-Hamonno, Liu, and Lutter (1994), who demonstrated that privatised firms achieved higher rates of productivity growth and declining costs in the long run through replacing old fixed assets with new assets, which can lead to a competitive advantage. The insignificant difference in the performance of ROA between the fully privatised firms and their counterparts is broadly consistent with Omran (2007), who found that the relative performance changes of
privatised banks were similar to the matched adjusted performance changes of private-owned banks and with the majority-privately owned banks.

9.3.1.4 Earnings before interest and taxes on equity

Chart 9-4 clearly indicates that the performance of ROE for privatised firms improved after privatisation, but is still less than the performance of ROE for their counterparts from private sectors.

Chart 9-4 The percentage of the performance of ROE for privatised firms pre- and post-privatisation, and private matched firms post-privatisation

Table 9-4 shows a summary for all statistical results of ROE for the whole sample and for fully and partially privatised firms. All statistical tests (parametric, Wilcoxon, and proportion tests), which are used to compare the performance of ROE pre- and post-privatisation, showed no significant change at any level. In this context, the performance of ROE following privatisation is still less than the performance of ROE for private firms, which are similar in size and industry.
### Table 9-4 A summary of statistical tests for return on equity

<table>
<thead>
<tr>
<th>Pre-and Post-Privatisation</th>
<th>Post-Privatisation including Private Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of Firms</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Partially privatised firms</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Fully privatised firms</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>All privatised firms</td>
<td>54</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

All statistical tests (parametric, and Mann-Whitney statistical tests), which are used to compare the performance of ROE following privatisation for the whole sample of privatised firms with their counterparts, show a significant difference between each of them. As well as this, the change in performance of ROE post-privatisation for fully privatised firms is insignificant. In addition, the difference in the performance of ROE is significant between both the mean and median of fully privatised firms and their counterparts.

For partially privatised firms, there is an insignificant change at any chosen level in the performance of ROE after privatisation. In addition, Table 9-7 shows no significant difference in performance of ROE between partially privatised firms and their counterparts.

The significant difference in performance between privatised firms and counterparts might be because the Egyptian government retains a stake in privatised firms, and total private ownership does not exist. An important point here is that the changing ownership structure has no quick effect on privatised firm performance, but in the future might yield greater rewards, when
competition replaces monopoly. This result is consistent with Boubakri, Cosset, and Guedlhami (2005), who argue that private ownership of a privatised firm's stock tends to grow over time.

### 9.3.2 Efficiency measures

#### 9.3.2.1 Sales efficiency

The study provides all statistical tests, which are used to test the first two hypotheses for the performance of sales efficiency in Table 9-5. Although the statistical tests to compare the change of SALEFF for fully private firms show non-significant changes in the mean and median at any level of confidence after privatisation, they show significant changes in the mean and median at the 95% confidence level for partially privatised firms.

<table>
<thead>
<tr>
<th></th>
<th>Pre-and Post-Privatisation</th>
<th>Post-Privatisation including Private Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of Firms</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Parametric t-test</td>
</tr>
<tr>
<td></td>
<td>n</td>
<td>(P-value)</td>
</tr>
<tr>
<td>Partially privatised firms</td>
<td>16</td>
<td>-2.72</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.015)**</td>
</tr>
<tr>
<td>Fully privatised firms</td>
<td>38</td>
<td>0.952</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.346)</td>
</tr>
<tr>
<td>All privatised firms</td>
<td>54</td>
<td>0.0456</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.963)</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

Additionally, the result of the Mann-Whitney statistical test is an indicator that there is a significant difference in the median for partially privatised firms. In the meantime, there is an insignificant difference in the median for fully privatised firms. Also, the parametric t-test provides an insignificant difference in the mean for all partially and fully privatised firms.
It is clear from Chart 9-5 that there is no change in the mean of SALEFF between pre- and post-privatisation. Furthermore, the performance of SALEFF for private firms is better than the performance of privatised firms. From the researcher's point of view, this difference in the performance may be due to two reasons: first, the new management may concentrate on reducing expenditures more than increasing their sales; in this context, the privatisation obliges the privatised firm with all obligations and expenditures pre-privatisation; hence, controlling and reducing expenses represent the primary goal of the privatised firm following privatisation; and second, the privatised firm may have been accumulating inventory, probably mainly due to production and marketing problems. This result is consistent with Megginson, Nash, and Van Randenborgh (1994) and Sun and Tong (2003), who agree that the performance of privatised firms is similar to the performance of SOEs through
less than 2 years following privatisation, but contrast with Laurin and Bozec (2001), who document that the total productivity of SOEs is lower than for privately owned firms, but becomes just as efficient directly after privatisation period, then exceeds it through the passage the time.

9.3.2.2 Income efficiency

As seen from Chart 9-6, the performance of INEFF for privatised firms improved following privatisation, but it has not yet reached the level of performance of their counterparts.

Chart 9-6 The percentage of the performance of INEFF for privatised firms pre- and post-privatisation, and private matched firms post-privatisation

Although the statistical tests to compare performance pre- and post-privatisation showed no significant improvement at the 99% confidence level for the median of the INEFF following privatisation, it is still less than the performance of the INEFF for their counterparts from private firms, as shown in Table 9-6.
Table 9-6 A summary of statistical tests for income efficiency before interest and taxes

<table>
<thead>
<tr>
<th></th>
<th>Pre-and Post-Privatisation</th>
<th>Post-Privatisation including Private Ones</th>
<th>Absolute Method</th>
<th>Relative Method</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of Firms</td>
<td>Parametric t-test (P-value)</td>
<td>Wilcoxon test (P-value)</td>
<td>Proportion test (P-value)</td>
</tr>
<tr>
<td>Partially privatised firms</td>
<td>16</td>
<td>1.182 (0.255)</td>
<td>1.75 (0.080)**</td>
<td>1.887 (0.059)**</td>
</tr>
<tr>
<td>Fully privatised firms</td>
<td>38</td>
<td>0.443 (0.660)</td>
<td>2.334 (0.01)*</td>
<td>2.262 (0.0023)*</td>
</tr>
<tr>
<td>All privatised firms</td>
<td>54</td>
<td>0.239 (0.477)</td>
<td>3.129 (0.0017)*</td>
<td>2.996 (0.0027)*</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance level, respectively.

Also, the change in the mean of INEFF post-privatisation for fully privatised firms is significant; in the mean-time, the difference in the median of INEFF is insignificant between the fully privatised firms and their counterparts. For partially privatised firms, there is a significant change in both the mean and the median of INEFF, following privatisation at the 90% confidence level. Also, Table 9-6 shows no significant difference in the INEFF between partially privatised firms and their counterparts.

There are four reasons to explain the asymmetry of performance for privatised firms with private companies. First, although the government retains a stake (less than 51%) in the fully privatised firm, it still dominates the board of management for the fully privatised firm. The reason for this is that the government sells the SOE through an IPO, and so this method has led to a fragmentation in the ownership through the sale of the firm to a large number of subscribers. Hence, the government owns the largest share. Second, the privatised firms need to pay more attention toward building and developing regulatory capabilities after privatisation, which are necessary for the market to function, and to help the privatised firms to perform efficiently as well. Third, for
more competition, the government should retain control over specific industries, and allow the private sector to compete with SOEs, since the competition between both of them should encourage privatised firms to shift their management-style toward maximising efficiency and profitability. Four, the relatively high level of unqualified employees and the obsolete equipment would hinder the privatised firms from competing with the private firms.

The results suggest that the privatised firms' performance change is better than for SOEs as a whole and better than for partially privatised firms. Also, no significant differences in performance changes between the privatised and private firms have been found for INEFF. This result, in fact, tends to be consistent with Hutchinson's (1991) and Chirwa's (2004), findings, in which privatised firms in the UK generate higher labour productivity, while private firms are more profitable.

9.3.3 Output measures

9.3.3.1 Real sales

The study expected that privatisation would lead to an increase in the output of privatised firms. The increase in output would be due to the competition-presures and better financing opportunities, but the results were disappointing.

It is clear from Table 9-7 and Chart 9-7 that the drop in the performance of SAL between pre- and post-privatisation for the whole sample of privatised firms is statistically significant at the 99% confidence level, by using all statistical tests,
namely, parametric, Wilcoxon and proportion tests. The same result can be observed for both the fully and partially privatised firms.

### Table 9-7 A summary of statistical tests for real sales

<table>
<thead>
<tr>
<th># of Firms</th>
<th>Pre-and Post-Privatisation</th>
<th>Post-Privatisation including Private Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Parametric t-test</td>
<td>Wilcoxon test</td>
</tr>
<tr>
<td></td>
<td>(P-value)</td>
<td>(P-value)</td>
</tr>
<tr>
<td>Partially privatised firms</td>
<td>-3.299</td>
<td>2.25</td>
</tr>
<tr>
<td></td>
<td>(0.004)*</td>
<td>(0.024)**</td>
</tr>
<tr>
<td></td>
<td>(0.0009)*</td>
<td>(0.0058)*</td>
</tr>
<tr>
<td>All privatised firms</td>
<td>-4.7507</td>
<td>3.4020</td>
</tr>
<tr>
<td></td>
<td>(0.0000)*</td>
<td>(0.0006)*</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

### Chart 9-7 The percentage of the performance of SAL for privatised firms pre- and post-privatisation, and private matched firms post-privatisation

![Chart showing the percentage performance of SAL for different types of firms](image)
In this context, all statistical tests, which are used to compare the relative performance of SAL for whole privatised firms following privatisation with their counterparts, show a statistically significant difference in the mean (median) at the 99% confidence level.

The reduction in output of privatised firms following privatisation is arguable due to the government no longer enticing management (through subsidies) to maintain inefficiently high output levels. Furthermore, the privatisation programme is still mysterious to many decision-makers, who work in the privatised firms. In the meantime, privatised firms did not take enough time to convert their policies to those of open markets. Another reason for the decline in output for privatised firms after privatisation is that there have been high stocks of goods in the privatised firms, as a result of the firms' cumulative activities pre-privatisation.

9.3.4 Leverage ratios

9.3.4.1 Total debt to total assets

Table 9-8 presents a summary of all main statistical results, regarding TDTA. It is clear from this table and Chart 9-8 that the decrease in the median of leverage one (TDTA) after privatisation is insignificant at any prescribed level. In the mean-time, the change in the mean of TDTA pre- and post-privatisation (apart from partially privatised firms) is insignificant at any prescribed level.
Table 9-8 A summary of statistical tests for total debt to total assets (Lve1)

<table>
<thead>
<tr>
<th># of Firms</th>
<th>Pre-and Post-Privatisation</th>
<th>Post-Privatisation and Private Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>t-test</td>
<td>Wilcoxon test</td>
</tr>
<tr>
<td></td>
<td>(P-value)</td>
<td>(P-value)</td>
</tr>
<tr>
<td>Partially privatised firms</td>
<td>16</td>
<td>-2.113</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.050)**</td>
</tr>
<tr>
<td>Fully privatised firms</td>
<td>38</td>
<td>0.099</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.9210)</td>
</tr>
<tr>
<td>All privatised firms</td>
<td>54</td>
<td>-0.2303</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.8187)</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

Furthermore, the results clearly indicate that the difference in the mean and the median between the relative values of TDTA is significant at the 99% confidence level for fully privatised firms and their counterparts, and at the 90% confidence level for partially privatised firm and their counterparts.

Chart 9-8 The percentage of the performance of TDTA for privatised firms pre- and post-privatisation, and private matched firms post-privatisation

![Chart](chart.png)
9.3.4.2 Total debt to total equity

It is clear from Table 9-9 and Chart 9-9 that the TDTE ratio decreased after privatisation. All statistical tests for comparison of the performance between pre- and post-privatisation (parametric, Wilcoxon and proportion tests) demonstrate a statistically significant impact on the change of mean and median for TDTE; hence, privatisation has a positive effect on the TDTE, as the study predicted.

Table 9-9 A summary of statistical tests for total debt to total equity (Lve2)

<table>
<thead>
<tr>
<th></th>
<th>Pre-and Post-Privatisation</th>
<th>Post-Privatisation and Private Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of Firms</td>
<td>Pre-Privatisation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Parametric t-test</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(P-value)</td>
</tr>
<tr>
<td>Partially privatised</td>
<td>16</td>
<td>-3.255</td>
</tr>
<tr>
<td>firms</td>
<td></td>
<td>(0.005)*</td>
</tr>
<tr>
<td>firms</td>
<td></td>
<td>(0.0107)*</td>
</tr>
<tr>
<td>All privatised</td>
<td>54</td>
<td>-3.4674</td>
</tr>
<tr>
<td>firms</td>
<td></td>
<td>(0.0010)*</td>
</tr>
</tbody>
</table>

*; **; and *** refer to 1%, 5%, and 10% significance levels, respectively.

Chart 9-9 The percentage of the performance of TDTE for privatised firms pre- and post- privatisation, and private matched firms post-privatisation
According to the values of relative performance, the p-values for all statistical tests (parametric and Mann-Whitney statistical tests) are more than 10%; thus, the differences in TDTE of the mean and median are insignificant at any given level for the wholly privatised firms, whether they are fully or partially privatised firms.

In the light of the results that presented in Tables 9-8 and 9-9, the study concludes that most firms achieved a statistically significant improvement in their mean (median) of their leverage, but the improvement (i.e. decline) in the leverage for privatised firms is still less than the performance of leverage for their counterparts from private firms.

The significant difference in the leverage ratio between privatised firms and counterparts may be due to another two reasons\textsuperscript{67}: First, a firm's capital structure might change significantly in response to moving from the public to the private sector. Hence, firms will no longer have the advantage of borrowing funds at a lower rate, but they have opportunities to access the equity markets to obtain additional funds to finance capital assets required; and second, some firms suffer from their budget deficit, meaning that the sources of funds are less than their uses of funds. This may be due to the fact that the firm still continues to work by the old thinking, which is focusing on increasing sales without concentrating on collecting the value of these sales. The result of that is that the liquidity of the firm will be reduced.

\textsuperscript{67} In addition to reasons, which are discussed on section 9.2.4, page 303.
An important point here is that firms should keep a high enough level of liquid assets to cover their short-term obligations. Also, the firms should not keep very large amounts of liquid assets, as they are perceived as idle assets, which represent a negative signal regarding the company's performance. A high level of liquid assets would reflect that the firm is lacking profitable investment opportunities.

These results tend to be consistent with the literature, as documented by D’Souza and Megginson (1999), Sun and Tong (2003), Boardman, Laurin (2003). They demonstrated significant change in leverage through passage of time after privatisation; whilst Dewenter and Malatesta (2000), show that private firms have significantly less debt and less labour-intensive production processes.

### 9.3.5 Employment level

Although the statistical tests to compare the changes in the level of employees for privatised firms pre- and post-privatisation showed a significant change at the 99% confidence level for the mean and median of EMPL following privatisation, the level of employees for privatised firms is still more than the level of employees for their counterparts from private firms, as shown in Table 9-10 and Chart 9-10.
Table 9-10 A summary of statistical tests for employees level

<table>
<thead>
<tr>
<th></th>
<th>Pre-and Post-Privatisation</th>
<th>Post-Privatisation including Private Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of Firms</td>
<td>Parametric t-test (P-value)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(P-value)</td>
</tr>
<tr>
<td>Partially privatised</td>
<td>16</td>
<td>-1.724</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.110)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0000)*</td>
</tr>
<tr>
<td>All privatised</td>
<td>54</td>
<td>-5.07058</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0000)*</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

The study concluded from this table that at the 99% confidence level, there is a significant difference in the level of employees between privatised firms (wholly, fully, and partially) and their counterparts.

Chart 9-10 The employment level for privatised firms pre- and post-privatisation, and private matched firms post-privatisation
The results show that there is a significantly larger decline in the number of employees in privatised firms compared with counterparts from private firms. In this context, these results would add further proof to the previous findings that the significant difference in performance change between privatised firms and their counterparts, in terms of SALEFF is mainly because privatised firms cut the level of employment more than private firms do. Furthermore, the management of the privatised firm may have provided an early-retirement policy to its employees, who take the opportunity to retire from the civil service, and establish their own small businesses.

An interesting point here is that, when the firm is privatised, it is loaded with all the employees since all of them are transferred with it. Hence, most privatised firms have been over-staffed, where pre-privatisation the appointment policy of employment was concerned with employing as many as it can, because of social reasons, more than having been concerned with the objectives of the firm.

In the light of the above, human resources are one of the most important resources to the success of an organisation, and restructuring the privatised firm's human resources is especially important in fully privatised firms, where these firms were over-staffed, often with non-qualified and non-motivated employees. Furthermore, employees must be motivated by clear and challenging, but achievable, objectives. An important point here is that the rehabilitation of employment needs to take a long time to transform their thinking from work in the public sector to work in private sector; hence, employees' behaviour must be modified, for example, by the systematic use of
rewards and punishments, training and retraining, and better quality of work-life. This result is consistent with Bortolotti. D'Souza, Fantini, Megginson (2002) who have demonstrated a significant decrease in the level of employment after privatisation; and with Laurin and Bozec (2001), who show that the total employment for Canadian privatised SOEs declined by more than 34% versus 18% for private firms.

9.4 A reflective discussion on the impact of the pre-privatisation experience and post-privatisation environments upon the post-privatisation performance

In this section, the study discusses the impact of the new environment with the passage of time on the performance of privatised firms through comparing the performance at the first stage (3 years pre- and post-privatisation, panel A) with the performance in the second stage (the third year following privatisation, panel B) and the third stage (year 2004, panel C). Table 9-11 presents the regression coefficients of independent variables through the three stages that are shown in Chapter Eight.
Table 9-11 Comparative across the three stages for the regression coefficient

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Panel A</th>
<th>Panel B</th>
<th>Panel C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(3 year pre- and post-privatisation)</td>
<td>(third year post-privatisation)</td>
<td>(year 2004)</td>
</tr>
<tr>
<td>Coefficient value for independent variables</td>
<td>Coefficient value for independent variables</td>
<td>Coefficient value for independent variables</td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>APOSFP</td>
<td>$V_i$</td>
<td>$X_{it}$</td>
</tr>
<tr>
<td>1</td>
<td>Profitability</td>
<td>0.038*</td>
<td>-0.061</td>
</tr>
<tr>
<td>2</td>
<td>ROS</td>
<td>0.004</td>
<td>-0.013</td>
</tr>
<tr>
<td>3</td>
<td>ROA</td>
<td>0.045**</td>
<td>-0.026</td>
</tr>
<tr>
<td>4</td>
<td>ROE</td>
<td>0.487**</td>
<td>-0.270</td>
</tr>
<tr>
<td>5</td>
<td>EBIT</td>
<td>0.051*</td>
<td>-0.125**</td>
</tr>
<tr>
<td>6</td>
<td>Output</td>
<td>0.029</td>
<td>-0.716*</td>
</tr>
<tr>
<td>7</td>
<td>SAL</td>
<td>0.317***</td>
<td>-1.305**</td>
</tr>
<tr>
<td>8</td>
<td>Operating</td>
<td>0.013</td>
<td>-0.103***</td>
</tr>
<tr>
<td>9</td>
<td>Efficiency</td>
<td>-0.029</td>
<td>0.592*</td>
</tr>
<tr>
<td>10</td>
<td>Leverage</td>
<td>0.04***</td>
<td>0.067</td>
</tr>
</tbody>
</table>

*, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.
9.4.1 Profitability measures

For the earnings before interest and taxes on sales, the first row in Table 9-11 demonstrates that the size of privatised firms has affected the performance of the earnings before interest and taxes on sales in the first and second stages (panel A and B) but did not affect the EBIT on sales in year 2004 (panel C). In addition, the performance of ROS pre-privatisation has a significant effect on the performance of ROS following privatisation, no matter in which of the three panels (A, B, and C). Additionally, there is no significant impact for competition on the performance of ROS after privatisation. This result may be due to two reasons (i) most privatised firms have a high stock of goods as a result of cumulative activities pre-privatisation; (ii) most privatised firms (whether partially or fully) are still working according to a product-oriented not market-oriented pattern. So, this result contradicts most previous studies that notice there is a significant impact of the competition on the performance of ROS following privatisation (see, for example, Vining and Boardman, 1992; Chirwa, 2004; Bortolotti, D’Souza, Fantini, Megginson, 2002; and Li and Xu, 2004). Furthermore, the percentage of state ownership in the privatised firm has a significant negative impact only in the third stage; so, this result contradicts the most previous studies that observe that there is a significant negative impact of APOSPF on the performance ROS following privatisation, such as Boardman and Vining (1989); Gregorian (2000); Kwoka (2002); Kocenda and Svejnar (2003); and Boubakri, Cosset, and Guedilhami (2005) in the first and second stages; but it is consistent with these studies in the third stage.
For the earnings before interest and taxes on assets, the second row in Table 9-11 illustrates no impact of post-privatisation environments upon the performance of ROA post-privatisation through the first stage and second stage. The impact of the competitive environment upon the ROA post-privatisation appeared through the third stage. This result might be due to deterioration in fixed assets for privatised firms after privatisation directly as a result of cumulative activities pre-privatisation but by the passage of time, the privatised firms may have replaced the old assets with new assets, which led to an increase in their competitive ability. Additionally, there may have been a greater focus on achieving a more competitive return on assets. This result is consistent with Villalonga (2000), who shows the importance of time-effects on the performance. In general, the performance of ROA pre-privatisation has a significant impact upon their performance of ROA post-privatisation. Additionally, the performance of ROA after privatisation is not affected by the size of the privatised firm, nor the ownership structure.

For the earnings before interest and taxes on equity, the third row in Table 9-11 demonstrates that the performance of ROE pre-privatisation has a significant impact upon their performance of ROE after privatisation in the first stage and second stage; but has no significant impact in the year 2004 (third stage). Also, the post-privatisation environments have insignificant impact upon the post-privatisation performance (apart from the size of the privatised firm in the first stage). This result might be due to the transfer from SOEs to private ownership has no quick effect on the performance, but it needs more of time to transfer from a monopoly environment to a competitive environment.

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For the earnings before interest and taxes, the fourth row in Table 9-11 shows that the performance of EBIT pre-privatisation has a significant effect on the performance of EBIT post-privatisation in the all stages (see panels A, B and C). The same result can be observed for the size of privatised firms. As well, the percentage of state ownership in the privatised firm has an insignificant impact on the performance of EBIT post-privatisation. Furthermore, there is no significant impact of competition on the performance of EBIT following privatisation directly (panel A). The impact of a competitive environment upon the EBIT post-privatisation appeared in the third year after privatisation and by 2004 (panel A and C). This result might be due to the privatised firms not having taken enough time to convert their thinking to open markets; but by the passage of time, the privatised firms now have private management responsible for the decision-making. This management does not only care about achieving revenues, but also is responsible for reducing costs and expenses; so, the impact of the pre-privatisation and post-privatisation environments (apart from APOSPF) upon the performance of EBIT is clearly beginning in the third year after privatisation. This result is consistent with Li and Xu (2004), who notice that competition and privatisation are complements, in that competition increases the gains from privatisation.

9.4.2 Output measures

For the real sales, the fifth row in Table 9-11 confirms that the performance of SAL pre-privatisation and the size of privatised firms have a significant positive effect on the performance of SAL post-privatisation whether in the three year following privatisation directly, or the third year after privatisation, or in the year
2004. The percentage of state ownership in the privatised firm has a significant negative impact on the performance of SAL post-privatisation in the first and second stages; and has insignificant impact in the year 2004. Additionally, there is no significant impact of competition on the performance of SAL through three years after privatisation (as seen in panels A and B).

The only impact of the competitive environment upon the SAL appeared in year 2004 (see panel C). This result is consistent with Jones and Mygind (2002) and Li and Xu (2004) who observe that through the passage of time, privatisation had a significantly positive impact on output growth, and total factor productivity.

9.4.3 Efficiency measures

For the sales efficiency, the sixth row in Table 9-11 corroborates that the size of privatised firms has no significant effect on the performance of the sales efficiency in the first and second stages, but has a significant effect in the year 2004 only (see panel C). Additionally, the performance of SALEFF pre-privatisation has a significant positive effect on their performance post-privatisation in the first two stages. As well, the percentage of state ownership in the privatised firm has a significant negative impact only in the first and the third stage.

Also, there is no significant impact of competition on the performance of SALEFF in both the first and second stages. The impact of a competitive environment upon the SALEFF appeared in the year 2004 only. This result might be due to the reasons that were discussed in Section 9-2-2. So, the
impact of the new environment upon the SALEFF post-privatisation appeared through the passage of time (year 2004) as seen in panel C. This result tends to be consistent with those findings by Otts (1991), who noticed that the competition status in Egypt seems to have changed over time.

For the income efficiency, the seventh row in Table 9-11 shows that the performance of INEFF pre-privatisation has a significant positive impact on the performance of INEFF post-privatisation whether in the three years following privatisation directly or in the third year after privatisation, but did not have a significant effect in the year 2004. The same result can be observed for the size of privatised firms. The percentage of state ownership in the privatised firm has a significant negative impact on the performance of INEFF post-privatisation in all stages.

The negative impact of the ownership structure might be due to fully private ownership in most privatised firms, as a result of privatisation, not existing, because the state retains a stake in privatised firms. So, these firms are subject to the objective of the state that may stress social aims more than earnings. This result is consistent with Boubakri, Cosset, and Guedilhami (2005), who agree that there is a significant negative impact on the firm's performance in the firms that have mixed-ownership. Furthermore, there is no significant impact of competition on the performance of INEFF in the first stage. The impact of a competitive environment upon the INEFF appeared in the third year onwards following privatisation (see panel B and C). So, there was an impact of the performance of INEFF pre-privatisation (until the last stage) and the new

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Footnote 68: Only 16 firms from 54 privatised firms have fully private ownership.
environment (after the first stage) upon the INEFF post-privatisation. This result is consistent with Dewenter and Malatesta (2000), who noticed that there is a significant relationship among private ownership, the ability of competition, and a firm's rate of productivity growth. Also, Villalonga (2000) suggested the importance of time-effects on the performance, where she noticed that privatisation leads to a decrease in efficiency in the intermediate term (for 5 and 6 years after being privatised); conversely, in the long term it leads to an improvement in efficiency (for 7-8 years).

9.4.4 Leverage ratios

For the total debt to total assets, the eighth row in Table 9-11 illustrates that the performance of TDTA pre-privatisation has a significant impact upon their performance post-privatisation from the privatisation date till now. The percentage of state ownership in the privatised firm has a significant negative impact on the performance of TDTA post-privatisation in the first and second stages; and has an insignificant impact in the year 2004. In addition, there is no significant relationship among the performance of TDTA post-privatisation, the performance of TDTA for their counterparts, and the privatised firms' size in all stages.

For the total debt to total equity, the ninth row in Table 9-11 reveals that the performance of TDTE pre-privatisation and the percentage of state ownership in the privatised firm have a significant positive impact on the performance of TDTE following privatisation (see panels A, B, and C). The size of privatised firms has an insignificant negative effect the performance of TDTE after
privatisation in the all stages. Additionally, there is no significant impact of competition on the performance of TDTE in the first two stages. The only impact of a competitive environment upon the TDTE appeared in the year 2004 (see panel C). An important point here is that the significant positive impact of state ownership in the privatised firms on the leverage ratios is most likely due to debt guarantees, which are provided by the government; thus, the firm can borrow at a lower rate (an advantage of borrowing funds).

9.4.5 Employment level

For the employment level, the tenth row in Table 9-11 shows clearly that there is no significant relationship between the ownership structure and level of employment in privatised firms. It means that state ownership of part of the privatised firms does not affect the level of employment. So, the level of employment in privatised firms are not affected by the ownership structure (state-owned or privately owned); this result belies the claim that privatisation leads to dismissal of labour. This result is consistent with the results presented in Section 9-2-5 and other previous studies, such as by Ramamurti (1997), Bos and Nett, (1991), LaPorta and Lopez-de-Silanes (1999), and Megginson (1994), who show that no significant change in the employment level after privatisation. Thus, privatisation did not have a significant impact on the level of employment in privatised firms; furthermore, the new environment did not affect the level of employment in all stages. So, the only variables that affect the level of employment are the number of employees before privatisation (in all three stages) and the size of the privatised firm (in the first and third stage).
9.5 Summary

The aim of this chapter is to discuss the empirical results that presented in Chapters Six, Seven, and Eight. This chapter consists of three main parts: Part One provided a reflective discussion on the implications of the results that related to the performance of privatised firms pre- versus post-privatisation. Part Two presented a reflective discussion on the empirical results that related to the performance of privatised firms post-privatisation versus private firms as control group. Part Three discussed the impact of time on the performance through a reflective discussion on the impact of the pre-privatisation experience and post-privatisation environments upon the post-privatisation performance through three stages. The results of investigating the three main hypotheses can be summarised in the following:

the (partially or fully) privatised firms have experienced significant improvements in profitability and operating efficiency with significant declines in leverage and employment; while no significant change in output is observed. Most of these findings for privatised firms seem to be consistent with studies in the literature in terms of changes in profitability, operating efficiency, and leverage such as Megginson, Nash, and Van Randenborgh (1994), Ramamurti (1997), LaPorta and Lopez-de-Silanes (1999), Boubakri and Cosset (1998), D'Souza and Megginson (1999), Boardman, Laurin, and Vining (2003), Dewenter and Malatesta (2001), Bortolotti, D'Souza, Fantini, Megginson (2002) Boubakri, Cosset, and Guedlhami (2005), Omran (2004), and Li and Xu (2004). Some other results tend to contrast against these studies in terms of output and
employment, as the study documents an insignificant change for the former and a significant decrease for the latter.

In general, by using 54 privatised firms with a matched number of private firms, the study shows that after the date of privatisation, the (partially or fully) privatised firms experience significant improvements in the most performance indicators. However, by using adjusted data and considering the performance changes of privatised firms, the results demonstrated that in all measures - apart from return on sales, income efficiency, and leverage two - there are significant differences in performance changes between privatised firms and their counterparts from private firms.

The results of the multiple regression analyses for all performance indicators illustrate that there is no impact of the performance of private firms, which represent competitor group, on all performance indicators of privatised firms after privatisation directly, but with the passage of time, the competitive environment affected EBIT and INEFF only in the third year following privatisation. After the passage of more time, the competitive environment impacted most of the performance indicators. In addition, the results in the three stages recap that APOSPF has a negative impact on several performance measures of privatised firms following privatisation. These results provide further evidence that private ownership is associated with better performance. In conclusion, there is a great support that ownership structure really matters and that the performance of privatised firms depends on the degree of state ownership involvement. Additionally, the results of the multiple regressions for all performance indicators confirmed that the size of the firm has a positive
impact on most of the performance indicators of privatised firms in the early years after privatisation.

Furthermore, the results of the multiple regressions in the three stages provided further evidence that the performance of post-privatisation is associated with the performance pre-privatisation for each performance indicator in the first two stages and for many performance indicators in the last stage. This is consistent with the idea that "past performance is the main key to future performance". The study recommends that the government need to upgrade the performance of SOEs prior to submission of privatisation in order to achieve two advantages: (i) selling the firm with a high price, (ii) improving the performance of the privatised firms after privatisation.

These results are consistent with previous theoretical and empirical research by Boardman and Vining (1989), Gregorian (2000), Kwoka (2002), Kocenda and Svejnar (2003), Boubakri, Cosset, and Guedlhami (2005), and Omran (2007), who show that there is a significant negative relation between mixed ownership and the firms' performance (state and private ownership structure). There is also consistency with Dewenter and Malatesta (2000), Otts (1991), Villalonga (2000), and Li and Xu (2004), who show the importance of time-effects on the competition; through the passage of time, the competition and privatisation are complements, in that competition increases the gains from privatisation. In addition, there is consistency with Ramamurti (1997), and LaPorta and Lopez-de-Silanes (1999), who have found that privatisation did not affect the level of employment in privatised firms. Also, this result is consistent with previous empirical research by Peter and Sarah (2004), Ram and Mayank
(2002), and Moen (1999), who show that there is a positive relationship between the size of the firm and their performance measurements.

It is important to note that these results should be treated with caution for four reasons: First, the private firms (the control group) are usually more profitable and more efficient than privatised firms directly after privatisation, so any mismatch between both of them might be explained against privatised firms. Second, since Egypt adopted a successful economic reform programme in late 1990, improved performance changes in privatised firms might have resulted because credible reform can improve, to some extent, the performance of privatised firms by reducing the gap between privatised and private firms' performance. Third, the power of the non-parametric\textsuperscript{69} test used is less than the power of the parametric one; thus, the findings of significant differences in performance between privatised firms and their counterparts from private firms could simply be due to the power of the test and/or the small sample size. Fourth, the evidence of this study could be attributed to the fact that the privatised firms, following privatisation, restructure their policies according to the new environment; consequently, these firms try to achieve the same performance as for the private firms. Indeed, a study over a longer period is needed before these results could be considered conclusive.

Nevertheless, with all due respect to the findings of the statistical tests, the interpretation of the evidence of this study could mean that privatisation improves the performance of SOEs, which have become privatised.

\textsuperscript{69} The non-parametric test is more accurate than parametric test in the case of difference between mean and median.
According to discussed in this chapter, this research completed the gabs in the literature that related to evaluate the performance indicators of privatised firms according to the type of privatisation in a developing country (Egypt) that has been neglected in the literature through comparing the performance indicators post- with pre-privatisation. In addition to compare the performance indicators for privatised firms with the performance indicators for counterparts from private sector. Furthermore, this study represents a first step towards a complete analysis of the combined impact of the pre-privatisation and post-privatisation environments upon the post-privatisation performance in Egypt. It might be fruitful to re-examine these results and do further research when privatised firms have a longer post-privatisation period, also it will be helpful to increase the sample of privatised firms.
10.1 Summary and concluding remarks

In this thesis, 15 year observations have been used to examine the relationship between the privatisation programme and the performance of privatised firms with special emphasis on Egypt, which cover the period 1990/1991 to 2004/2005. Many issues related to privatisation have been discussed, an extensive literature review has been undertaken to highlight the conceptual framework for the performance variables and many empirical studies have been presented regarding the previous work in this field. Additionally, statistical and econometric techniques have been employed to assess the operating and financial performance of the newly privatised Egyptian firms through initial public offering.

Although most empirical studies have examined the impact of privatisation programmes on the performance of privatised firms following privatisation, the researcher tested also the performance indicators of the newly privatised Egyptian firms after matching them with control firms from the private sector according to size and industry. Therefore, this study focuses on Egypt as a country in the Middle East and North Africa region, which has been neglected in the literature, and contributes to the work on privatisation by comparing the performance indicators of privatised firms to those of already private ones.
In chapter two, an overview of privatisation was conducted in order to understand the concept and the importance of this phenomenon, as it is a quite recent issue within the last decade. In this chapter, the study concluded that there is no single definition of privatisation, but for the purpose of this research, privatisation refers to the provision of publicly funded services and activities by non-governmental entities.

One method of thinking about privatisation is to consider two separate but related dimensions: first, the change in the degree of market competition; and second, the role of the public sector vis-à-vis other sectors. Governments need a privatisation programme for many reasons, such as: (i) privatisation should ensure the availability of goods and services of appropriate quality and cost through the use of contractual performance measurements; (ii) privatisation of SOEs would help to use the latest techniques and best management practices that lead to successful projects; and (iii) privatisation of SOEs should make projects more flexible and helps to provide solutions for financing problems.

The main objective of any privatisation programme is widening the ownership base. Hence, the study explained the four categories of privatisation objectives, which are: a) financial goals, such as increasing government revenues; b) social goals, such as increasing employment opportunities; c) political goals, such as supporting domestic and foreign capital to invest locally; and finally, d) economic goals, such as improving efficiency and providing cost-efficient services. Within this context, privatisation includes many forms: which are deregulation and decontrol, contracting out, vouchers, management contracts, operating lease contracts, joint ventures, private infrastructure development and
operation, asset sale or long-term lease, and financing contracts. Furthermore, the study explained all ways that a government can use to privatise SOEs, such as mass privatisation, direct sale to the private sector through public subscription, sale to a principal investor, public offer of shares, tender, small-scale privatisation by auction, and offering the enterprise for sale to its employees. The researcher believes that there are many forms of privatisation and each form serves a particular objective; and the government's goal of privatisation should determine the method of privatisation.

As mentioned in chapter two, privatisation is an umbrella term, which includes all methods or policies implemented to increase the role of market forces within the national economy. It refers to: (i) reducing local government activities by involving the participation of the private sectors; (ii) reducing local government ownership, when SOEs are divested to unregulated private sectors; and (iii) reducing local government ownership, when local government agencies are commercialised. However, the approach, which should be followed to implement the privatisation programme, was not determined, as there is not an optimal way. Mainly, there are two approaches: shock-therapy and gradualism, and a comparison between the costs and benefits of a direct, sudden and large-scale change versus those of on-going and piecemeal change, was the main factor in choosing between the two of them.

Furthermore, privatisation is a process that does not end with the transfer of ownership from the public to the private sector. The privatisation programme began as one of the corner-stones of a much broader macro-economic reform and structural adjustment programme; it can be concluded that the United
Kingdom and the South and Eastern Asia regions were the most successful when compared with other regions.

Chapter three concentrated on the history of the Egyptian economy and the privatisation programme in Egypt. With regard to this chapter, it can be concluded that starting from the mid 1980s, Egypt faced a crisis in managing her economy as all the economic indicators pointed out that Egypt needed a revolution to overcome its problems. In turn in mid 1990, Egypt adopted a programme of economic reform with the full support from the International Monetary Fund and the World Bank, in addition to many creditor countries.

The Egyptian economy, since 1952 after the revolution, witnessed three major systems: first, socialism and nationalism; second, an open door policy; and third, an economic reform programme. Egypt's economic reform programme was started by the late 1990 as a result of the bad economic situation after the oil price collapse in the mid 1980s and the Gulf war in 1990. Egypt chose the gradualism approach and to go step by step in implementing her programme in order to reduce any side-effects.

Under the economic reform programme umbrella, Egypt enjoyed a positive economic climate as her total external debt had decreased from $ 49.2 billion in 1990 to $ 26.6 in 1998. In the meantime, the ratio of total external debt to GDP decreased from 150% to 37% within the same period. In addition, the real interest rates changes from - 6% in 1990 to 5% in 1998. Also, the inflation rate declined from 23% to 4% within the same period. But the Egyptian reform programme has been slowed over the period 1998-2003. This is due to
economic reasons, such as a shortage in liquidity, a high rate of unemployment, a high deficit in balance of trade, reductions in revenues from the Suez Canal, tourism and oil, the foreign currency crisis, and the overall negative performance of the Egyptian stock market.

The privatisation programme actually started in 1994 with a slow movement at the beginning, but it becomes quicker by the middle of 1996. The number of firms, which had been privatised, reached 226 firms by the middle of 2006, with a total value of L.E 17,997 billion. The Egyptian's government has used several privatisation methods, which are: (1) the public offerings method (25% of SOEs were privatised through the sale of IPOs); (2) sale to the Employee Shareholders Association (15% of SOEs were privatised through the sales to ESA); (3) sale to anchor investors (39% of SOEs were privatised through the sales to anchor investors); and finally (4) liquidation and asset sales (21% of SOEs were privatised by the means of liquidation and asset sales). Privatisation faced difficulties in the late 1990s, which led to a reduction in the number of privatised firms in this period, such as the South East Asian crisis in July 1997; the terrorists' attack that took place in Luxor in 1998; and US September events in 2001. It seems that the privatisation programme has been slowed over the period 1998-2003, but in the recent times the scope of privatisation has been widened to include infrastructure.

The study listed the main impediments that face the privatisation programme, which include the problem of financial restructuring, unemployment concerns, the vested interest of some the HC board members to continue with the status quo, and the limited role of the securities market.
Following the literature review in chapter four, and the methodology in chapter five; chapters six, seven, and eight provided the results of the investigation of the three main hypotheses for this thesis; following that, full discussion on these results, as shown in chapter nine.

Chapters six and seven empirically examined the first two hypotheses behind this research, which were stated in terms of a significant change in the performance of privatised firms following privatisation, as well as suggesting significant hypothesised relationships between the performance of privatised firms and the performance of private firms.

In these chapters, the study documents the critical performance changes of Egyptian firms that experienced full or partial privatisation between 1991 and 2004. As a result, Egypt had adopted a programme of economic reform by late 1990, a structural break in the economic environment did indeed exist between the pre- and post-privatisation period. To evaluate such an event, the study does not depend only on unadjusted accounting performance measures, but extends the research by matching each privatised firm (test group) to private firms (control group) with similar size and industry.

With regard to the results in chapter six and the discussion of these results in chapter nine, it can be concluded, for privatised firms following privatisation, that there are significant increases in profitability (as measured by four proxies: real earnings before interest and tax; return on sales; return on assets; and return on equity) and operating efficiency (as measured by two ratios: sales efficiency ratio and income efficiency ratio) as well as significant declines in leverage (as
measured by two ratios: debt to total assets and total debt to total equity) and employment (as measured by the total number of employees); while no significant change in output is observed (as measured by real sales ratio). For the same study period, private firms show higher performance than the privatised firms.

Most of these findings for privatised firms seem to be consistent with the academic studies, such as those by Megginson, Nash and Van Randebogh (1994), Boubakri and Cosset (1998), D'Souza and Megginson (1999), Omran (2001), Boubakri and Cosset (2003), El- Shahat (2003), Boardman, Laurin, and Vining (2003), Farinós, C.Jose and Ana (2007) in the terms of changes in profitability, operating efficiency, and leverage. However, some other results tend to be in contrast to some previous empirical findings, in terms of employment and output, as the study documents significant decreases for the former and insignificant changes for the latter.

In chapter seven, the study extends the analysis by matching privatised firms to control firms based on industry and size. However, using adjusted data and considering the performance changes of privatised firms, the results demonstrate that in all performance indicators - apart from return on sales, income efficiency, and leverage two - there are significant differences in performance indicators between privatised firms and their counterparts from private firms. Thus, the results show significant differences in performance indicators between privatised firms and private firms in most accounting performance measures.
Furthermore, the results indicate that privatised firms tend to operate in a competitive environment, and thus, it is not surprising that privatised firms perform at levels approaching those of private firms. Such results support the previous findings, such as those by Sun, Jia, and Tong (2002), Li and Xu (2004), and Otchere (2002), which suggest that under competitive environments, ownership does not matter, and both privatised and private firms will yield similar performance.

To complete the evaluation of the Egyptian privatisation programme, the study in chapter eight examined the third hypothesis by presenting the empirical results of the combined impact of the post-privatisation sectoral environment and the pre-privatisation output experience on post-privatisation performance, by using multiple regression models to test the relationships between the ownership structure, the performance pre-privatisation for privatised firms, the size of privatised firms, the performance of the competitor group and the performance of privatised firms following privatisation. The study applied these models by using actual data of the performance indicators for privatised firms and their counterparts through three stages, to show the impact of the new environment with the passage of time on post-privatisation performance. The first stage applied the model by using three years pre- and post-privatisation. The second stage applied the model by using the third year post-privatisation only. The third stage applied the model by using the final year of the study period (year 2004).

The results of the multiple regression analysis for all performance indicators, at the first two stages, and for nearly all performance indicators at the third stage,
demonstrate a significant positive relationship between the pre-privatisation performance experience and the post-privatisation performance. Additionally, these results have supported the view that the size of the privatised firm has a positive impact on most of the performance indicators immediately following privatisation, and of several performance indicators thereafter.

The competition does not have a significant immediate impact on the performance of privatised firms' post-privatisation directly, but through the passage of time, the competition affected the majority of performance output-indicators of privatised firms, especially when a monopoly was replaced by a competitive environment.

The discussion on the results in all regression stages supported the view that ownership structure can really matter and the performance of privatised firms can depend on the degree of state ownership involvement. Also, these results present further evidence that private ownership is associated with better performance.

These results are consistent with previous theoretical and empirical research that was presented in chapter four, such as by Boardman and Vining (1989); Ott (1991), Gregorian (2000), Dewenter and Malatesta (2000), Villalonga (2000), Kwoka (2002), Kocenda and Svejnar (2003), Peter and Sarah (2004); Boubakri, Cosset, and Guedlhami (2005), Li and Xu (2004), and Omran (2007).

According to what has been discussed in chapter nine, here the study recaps the results of the empirical study in Table 10-1, linking them with the first two hypotheses in Figure 10-1, and the third hypothesis in Figure 10-2.
Table 10-1 Summary results of assessing the performance of the privatised Egyptian firms during 1991-2004 through IPOs

This table presents summary results of the comparison between the pre- and post-privatisation performance by using three techniques: (i) the parametric t-test, (ii) the non-parametric Wilcoxon signed-rank test, and (iii) the proportion test. Also, this table shows the results of comparison of performance changes between privatised firms and their counterparts in private firms by using two techniques: (i) the parametric t-test, and (ii) the non-parametric Mann-Whitney test. Additionally, this table provides the regression results that seek to explain changes in the performance from pre- to post-privatisation by applying this model, \( Y_{i,t} = \alpha + \beta_1 \text{LOG (SIZE)}_{i,t} + \beta_2 \text{APSOF} \;_{i,t} + \beta_3 V_{i,t} + \beta_4 X_{i,t} + \varepsilon_{i,t} \), on three stages: (i) through three years pre- and post-privatisation, (ii) in the third year following privatisation, and (iii) in the year 2004.

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<tr>
<th>Performance variable</th>
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* *, **, and *** refer to 1%, 5%, and 10% significance levels, respectively.

- In comparison section: + increase - decrease
- In regression section: + positive relationship - negative relationship

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Figure 10-1Hypotheses tested by Univariate Analyses

H1: privatisation leads to improvement in the performance of privatised firms following privatisation

H2: the performance of privatised firms following privatisation is similar to the performance of their counterpart from the private sector
Figure 10-2 Hypotheses tested by Multiple Regressions**

H3: there is an environmental impact on the performance of the firms after privatisation

** P1 the first stage (three years pre- and post-privatisation)
P2 the second stage (the third year following privatisation).
P3 the third stage (year 2004).
Figure 10-2 Cont

Ownership structure
H3/3

Pre-privatisation experience H2/3

P3 Accept
P2 Accept
P1 Accept

Private competition H1/3

Output

Firm' size H4/3

P3 Reject
P2 Accept
P1 Accept

Private competition H1/3

Pre-privatisation experience H2/3

P3 Accept
P2 Accept
P1 Accept

Private competition H1/3

Leverage

Pre-privatisation experience H2/3

P3 Accept
P2 Accept
P1 Accept

Private competition H1/3

Employment level

Firm' size H4/3

P3 Reject
P2 Reject
P1 Reject

Private competition H1/3

Pre-privatisation experience H2/3

P3 Accept
P2 Accept
P1 Accept

Private competition H1/3
It is clear from Table 10-1 and Figure 10-1 that, most of the performance indicators of privatised firms have a significant improvement after transferring from SOEs to private firms; but the performance of privatised firms post-privatisation are not similar to the performance of their counterparts in the private sector for all performance indicators (apart from ROS, ROA, TDTE, and INEFF).

As shown in Table 10-1 and Figure 10-2, the performance of privatised firms after privatisation is usually associated with the performance of privatised firms pre-privatisation; thus, the study accepted H2/3 that is "there is a significant association between the performance of pre-privatisation firms and their performance following privatisation". Additionally, the percentage of the ownership of the state in the privatised firm has a negative impact on the performance following privatisation. The competition has no effect after privatisation directly; thus, the study rejected H1/3 following privatisation directly, but through the passage of time, the competition has a significant impact on the performance of privatised firms; thus the study accepted H1/3 for most performance indicators in year 2004.

From this study, can be drawn three certain policy-implications from the findings of this research, which are: (i) the policy-makers must realise that changing ownership structure per se has no instant "magical" effect on firm performance, but in time would yield greater rewards when competition replaces the monopoly; (ii) although the Egyptian government must retain control over specific industries, they should also allow the private sector to compete with
their SOEs, which would encourage these SOEs to shift their management-style toward maximising efficiency and profitability in order to survive; and (iii) the policy-makers do not consider privatisation as a vehicle for economic development. On the other hand, the policy-makers might need to shift their thinking from concentrating on ownership only to considering the effects of market structure or the power of competition as well. Finally, the privatisation programme as a policy could motivate private, privatised, and public firms to face better any future changes in the economic system.

This thesis represents the first study in Egypt to evaluate and compare the performance of privatised firms with the performance of private firms, rather than SOEs. The researcher focuses on Egypt as a country in the Middle East and North Africa region, which has been neglected in the literature and contributes to the work on privatisation by comparing the performance changes of privatised firms to those of already private ones.

To sum up, this study has managed to achieve the research objectives by assessing the success of the privatisation programme in Egypt, by examining the performance of privatised firms with their counterparts from the private sector, and by evaluating the relationships between the performance of the privatised firms post-privatisation, their new environment and their performance pre-privatisation.

The researcher can conclude that the privatisation programme met most of its substantive goals and the Egyptian privatisation programme has made a significant positive contribution in the Egyptian economy.
10.2 The contribution and originality

This thesis contributes to the existing literature in three ways:

- the study looks at a country in the Middle East and North Africa region, a part of the world that has been neglected in the literature;

- the study evaluates the performance changes of newly privatised Egyptian firms versus the performance changes of existing private firms of similar industry and of a similar size; and

- the study evaluates the combined effect of the pre-privatisation experience and the post-privatisation competitive environment upon the post-privatisation performance of privatised firms.

10.3 Limitation of Study

There are four limitations to this research, which are:

1- The research concentrated only on privatised firms that are listed in the Egyptian Stock Exchange (CASE). This ensures that privatised firms in the Stock Exchange are comparable, especially in terms of disclosure requirements, liquidity and size. The researcher selected all privatised firms that were listed during the years 1991 to 2004 and have at least one annual financial accounting statement in the years -2 to -1 and the years +1 to +2 where the year of privatisation is defined as year 0.
2- To avoid delisting bias in generated a sample, the analysis was limited to those firms that were sold via a public flotation through a share issue. This is because the companies that are sold to the public remained independent and continue to generate comparable financial and accounting information. In addition, the largest companies and most economically significant SOEs usually can only be privatised through public share issues.

3- In addition, insurance companies and banking were excluded from this research, because their operating and financial reports vary relatively from firms from the real sector.

4- The time that the research covered was limited (1994-2004) because Egypt's privatisation programme had actually fully started in 1994 and the data-set for privatised firms must be collected for at least 2 years of both pre- and post-privatisation data to allow time for the programme to stabilise.

10.4 Recommendations to the Egyptian government to ensure the success of the privatisation programme

- The government should work to solve the problem of workers who become redundant in privatised firms\textsuperscript{70}, as evidenced by the declining number of employees following privatisation. At the same time, the government should not constrain the privatised firms' management, but give them the ability to succeed through the following:

\textsuperscript{70} Indeed employment levels, a key variable evaluated in this research generally was shown to decrease following privatisation.
Use part of the proceeds of selling privatised firms in the creation of new productive investment projects to employ the workers, who were redundant from privatisation; after that, transfer all or part of the ownership of these projects gradually to these workers.

Use the surplus of the revenue proceeds to pay monetary compensation to workers, who have been dispensed with or who decided optionally to leave their jobs, to contribute in solving the problem of excess employment.

Prepare to transfer these workers to Rehabilitation programmes in order to offer new opportunities for them in the future.

Establish a new system of an early retirement framework to absorb these workers, who retired early from their jobs. In addition, establish small projects to generate income to help them meet the cost of living.

Although this research has demonstrated a negative relationship between performance post-privatisation and the actual percentage owned by the state in the privatised firm, nevertheless the government must support the idea of the golden share\footnote{Britain was the first to support the idea of the golden share, followed France. Golden share protects the national interest of foreign ownership of shares where the state gives the right to intervene immediately regarding the voting power and management of the privatised firm. The British government has used the golden share when the government of Kuwait gained 22\% of shares of the British Petroleum Company during 1987-88. The logic of the British government was that the possession by Kuwait of any percentage of the control would lead to a bad effect on the competitiveness of the industry in which British Petroleum operated in the market. (Salama, 1998 and Hijazi, 1999).} to protect national interests.
and prevent any foreign controlling of investments in privatised firms. Meanwhile, the state must settle the rules and controls to ensure the success of this idea, such as:

- The government has to determine an expiry date for the golden share. After this date, there is no authority for the government in these firms. The golden share is not used as a means of intervening in the affairs of the privatised firms.

- The golden share must be used only in vital projects, which have strategic importance.

- The government uses its authority of the golden share only in cases of necessity and when making strategic decisions.

- This study recommends the formation of a government fund (public or private), such as the National Enterprise Board (NEB) in England. The main objective of this fund is to face the risks of the failure of the privatised firms in achieving their objectives. This fund will be owned by the state and the trade unions.

- To ensure the success of the privatisation programme, the government has to regulate the competition to prevent monopolistic practices and has to develop rules to protect consumers (the need to activate consumer protection law).
• Managers in privatised firms must shift their thinking from concentrating on ownership only to consider the effects of market structure or the power of competition as well.

10.5 Directions for further research studies

Although this research can be considered as an extensive study of the Egyptian experiment concerning its privatisation programme and the implication of that for the competitiveness of Egyptian firms following privatisation, there are some other studies that can be undertaken following the results and the theoretical framework stated in this thesis.

One extension to this research would be to compare the Egyptian privatisation experiment with other developing countries, which have experienced the same situation, and to evaluate the differences between these various experiments and the outcome of each one.

Another suggestion is to study other variables not examined in this research, as the research cannot cover all performance variables, such as the impact on dividends, liquidity ratios, capital expenditures, foreign direct investment, and so on.

Another potential extension to this research would be to conduct a study of qualitative criteria to measure the performance of insurance companies and banking, which have been privatised in Egypt.
From the literature review, it can be noticed that most empirical studies, which dealt with assessing the performance of privatised firms, concentrated on these firms in the most developed countries, such as East Asia, UK, and Latin American; and little attention has been paid to the Arab countries. Therefore, one possibility is to use the same methodology, which is used in this thesis, to examine the Arab countries' privatisation experiments.
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