Equitisation and Stock-Market Development

The Case of Vietnam

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Proefschrift

ter verkrijging van het doctoraat in de
Economische Wetenschappen
aan de Rijksuniversiteit Groningen
op gezag van de
Rector Magnificus, dr. F. Zwarts,
in het openbaar te verdedigen op
donderdag 6 juli 2006
om 14.45 uur

door

Truong Dong Loc
geboren op 13 december 1972
te Can Tho (Vietnam)

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Acknowledgements

My thanks also are due to Dr. Vo Thanh Danh and Dr. Vo Thi Thanh Loc for sharing useful knowledge and experiences related to statistics and economertrics. I would like to acknowledge my colleagues and friends in Groningen who made my life in Groningen easy and enjoyable. Finally, I would like to thank Mr. Le Nguyen Doan Khoi and Mr. Arthur de Boer who are my two "paranimfen".

Last but not least, I am greatly indebted to my parents and my mother-in-law for their constant love, support and encouragement. I would like to acknowledge my wife, Nguyen Thi Ngoc Diem, and my son, Truong Hoang Phuc, for their patience when I lived away from home. Their loving support has considerably contributed to the completion of the thesis.

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Part I:

Introduction

Chapter 1

Introduction

1.1. Introduction

Vietnam started a programme of comprehensive economic reforms (*doi moi*) in 1986. It marked the end a period of central planning of the econmy. An important component of the transition to a market-oriented economy was measures to reform state-owned enterprises (SOEs), which played an important role in the centrally-planned economy. The aim of these reforms is to improve the performance of SOEs, which was very poor, partly as a legacy of the period of central planning. Among other measures, privatisation (called "equitisation" in Vietnam) is seen as a major instrument to achieve the objective.

The equitisation programme in Vietnam, which started in 1992, can be divided into two stages, namely the pilot stage (from 1992 to 1996) and the expansion stage (from 1996 onwards). During the 12 years of implementation, a total of 2,242 SOEs with a total capital of about VND 17,700 billion (USD 1.12 billion) has been equitised. In 2000 the equitisation programme was accompanied by the creation of a stock market. In July of that year the Securities Trading Centre (STC), located in Ho Chi Minh City, was opened. The stock market has steadily grown although it is still a thin market with only 26 listed companies by the end of 2004. Total market capitalisation at the end of 2004 was about VND 3,945,307 million (USD 250.58 million).

Although privatisation seems to be accepted as a useful method to restructure the economy, it is still not clear under which conditions privatisation is successful, and how it exactly affects firm behaviour and macro-economic performance of a country. Some studies point at success stories (especially in non-transition economies), while others argue that there are major failures, such as the privatisation programme in Russia (for recent surveys see Megginson and Netter,

2001 and Parker and Kirkpatrick, 2005). It is therefore no surprise that a lively debate is taking place on the effectiveness of privatisation. This debate focuses on a long list of issues, such as the optimal preconditions of privatisation, under-pricing of initial public offerings (IPOs), the most appropriate form of privatisation, the effects of privatisation on firm performance and employment, the impact of the economic environment - and especially measures other than privatisation (such as price deregulation) - on the effectiveness of privatisation, the interrelationship between corporate governance and privatisation, and the impact of privatisation on the development of the domestic financial system, especially with regard to the stock market.

Several authors argue that much more research is needed to get a better view of the effectiveness of privatisation (see, *e.g.*, Megginson and Netter, 2001). Among other things, these authors point at the utmost importance of closely examining the process of privatisation by means of country case studies, the importance of precisely calculating the employment effects of privatisation and the need for additional empirical studies on the effects of privatisation on firm performance. In addition, it is believed that there would be a bidirectional relationship between privatisation and stock-market development. Specifically, privatisation might stimulate the development of the stock market by bringing more commodities to the market. Conversely, privatisation cannot be smoothly implemented without an organised stock market that enhances the liquidity of such commodities (stocks).

This thesis aims to contribute to the literature on privatisation in transition economies. More specifically, the study provides a detailed analysis of the impact of privatisation on firm performance in Vietnam. The study also covers stock-market development in Vietnam by, *e.g.*, examining whether the stock market is efficient. Privatisation and stock market development are closely related. Hence, it seems logical to examine both issues in one thesis. To the best of our knowledge, there are no other studies available that deall with the effectiveness of the privatisation programme and the efficiency of the stock market in Vietnam.

The case of Vietnam is interesting because this country's privatisation approach differs from that of most other transition and non-transition economies in that residual state ownership after privatisation and the percentage of shares transferred to insiders are quite substantial in Vietnam. For this reason, the privatisation programme in Vietnam is referred to as equitisation. Although the empirical part of the study exclusively deals with Vietnam, the results of the analyses have a broader reach in that they may provide lessons for other transition and developing countries involved in a process of privatisation.

1.2.   Aims of the study

As already indicated the study focuses on two important aspectso of the process of economic reforms in Vietnam, equitisation and stock-market development. More specifically, the study focuses on the following issues:
–   a detailed description of the process of equitisation in Vietnam;
–   the impact of equitisation on firm performance and on employment in Vietnam;
–   the sources of performance changes following equitisation;
–   a detailed description of stock-market development in Vietnam;
–   the efficiency of the Vietnamese stock market;
–   The presence of stock prices anomalies in the Vietnamese stock market.

1.3.   Outline of the dissertation

The thesis is divided into two parts. The first part, from chapter 2 to chapter 6, is devoted to examining the process of equitisation in Vietnam, in general, and the impact of equitisation on firm performance, in particular. The second part deals with the stock market in Vietnam.

Chapter 2 reviews both the theoretical and empirical literature on privatisation. The review provides a background for the empirical study, the results of which are presented in Chapter 4 and Chapter 6. Chapter 2 starts by giving some definitions of privatisation. The chapter proceeds by summarizing some alternative methods of privatisation that have been widely used in transition economies as well as pros and cons of such methods. In addition, Chapter 2 discusses the efficiency of public versus private ownership by reviewing some theoretical arguments regarding this issue. Moreover, this chapter surveys the empirical literature on the impact of privatisation on firm performance. Specifically, the survey focuses on empirical studies that compare pre- to post-privatisation performance, that compare performance of privatised firms to state-owned ones, and that examine the effect of ownership structure and corporate governance on the firm performance. Finally, the chapter briefly reviews some macroeconomic effects of privatisation that are observed in the theoretical literature.

Chapter 3 first provides an overview of developments concerning policies vis-à-vis state-owned enterprises in Vietnam since 1954. Then, the chapter briefly reviews the equitisation process, including the current status, the role of the state in implementing the equitisation process, and some main features of the equitisation programme.

Chapter 4 examines the effect of equitisation and stock-market listing on firm performance by closely examining two cases, namely Cantho Foodstuff, Fruit &

Vegetable Company and Refrigeration Electrical Engineering Corporation (REE Corp.). The reasons to select these companies are that the two companies are different in terms of their size, the sector in which they are involved, ownership structure, and period of equitisation. Therefore, the case studies can show different dimensions of the impact of equitisation on firm performance in Vietnam. In addition, it is expected that the case studies will provide useful and detailed information on the ownership structure, corporate governance, and policy changes after equitisation of individual firms that cannot be found in other chapters.

Chapter 5 presents the data obtained from a questionnaire and other data sources that are used for the empirical study in Chapter 6. First, the chapter provides a detailed description of the surveys, including questionnaire preparation, sample selection and interview process. Then, it gives the descriptive statistics of the sample with a focus on the structure and size of surveyed firms. Finally, the chapter summarizes preliminary results derived from the survey regarding some aspects of the equitisation process.

Chapter 6 is the main chapter of the first part of this thesis. It deals with the quantitative impact of equitisation on firm performance in Vietnam. This chapter starts by presenting the methodology and testable predictions that are used to test for the impact of equitisation on firm performance. Specifically, this section describes in detail the pre-post equitisation performance comparison method that is derived from Megginson *et al*. (1994) and Harper (2002). Next, the chapter presents the empirical results from a pre-post comparison analysis and from regression analyses. It is to be noted here that in the pre-post comparison method the results are separately computed for the full sample and sub-samples by using the nonparametric two-tailed Wilcoxon signed-rank and the Mann-Whitney U tests, respectively. In the regression equations, which are used to detect the sources of performance improvement, the dependent variables represent the percentage changes in performance measures following equitisation while size, state ownership, corporate governance, stock-market listing, sectors, equitisation years and location of firms are employed as independent variables. Finally, to overcome the shortcoming of the pre-post comparison method that is unable to isolate the impact of privatisation on firm performance from that of other determinants, the so-called difference-in-differences (DID) method is also employed. The main characteristic of the DID method is that it helps to measure the impact of a policy or policy programme by comparing the difference in given measures of a treatment group over time - from before the policy was implemented until after its implementation - to the difference in the measures of a control group for the same periods.

The second part of the dissertation starts with Chapter 7, which describes the Vietnamese stock market in detail. First, the chapter provides an overall description

of the organisation and operation of the stock market. Then, it focuses on principles of the calculation and maintenance of VNINDEX (the Vietnamese stock market price index). Finally, the chapter deals with the performance of the stock market by providing some key indicators over the period from 2000 to 2004.

The aim of Chapter 8 is to provide evidence on weak-form market efficiency for the Vietnamese stock market by using daily and weekly return series of the market index and five individual stocks listed on the market. Stock-market efficiency has important implications for investors because, according to Fama (1970), a market is defined as being efficient if prices fully reflect all available information, so that investors cannot make abnormal profits by exploiting publicly available information. Especially, this chapter focuses only on the weak form (the lowest level of market efficiency) since if the evidence fails to support the weak form of market efficiency, it is not necessary to examine the efficient market hypothesis (EMH) at the more demanding levels of semi-strong and strong-form efficiency (Wong and Kwong, 1984). Specifically, the chapter first reviews the theory of the efficient-market hypothesis and provides definitions of different degrees of efficiency. Next, it gives a summary of selected empirical studies on weak-form efficiency in emerging stock markets. In addition, the chapter presents a detailed analysis of the data and the statistical techniques that are used in testing the hypothesis of weak-form efficiency for the market. A special feature of the chapter is that the market efficiency tests are corrected for thin trading (infrequent trading), which is an important feature of the Vietnamese stock market. In this chapter observed returns are corrected for thin (infrequent) trading by adopting the model proposed by Antoniou et al. (1997). Specifically, a AR(1) model which reflects the number of non-trading days is first estimated, and then returns are adjusted accordingly. Finally, empirical findings obtained from the tests are reported in the last section of the chapter.

Chapter 9 deals with two important patterns of stock-price anomalies, namely the day-of-the-week and overreaction effects. It is worth to note here that according to Fama (1991) stock- price anomalies are incompatible with weak-form market efficiency in that investors can earn abnormal returns by using a trading strategy based on information about price patterns in the past. Among the anomalies the day-of-the-week and overreaction effects are seen as the most important patterns. Therefore, it is useful to conduct a further study on these issues for the Vietnamese stock market if there is evidence that this market is inefficient. Specifically, this chapter first investigates the day-of-the-week effect on stock returns and stock-price volatility for the Vietnamese stock market. The hypothesis of overreaction is tested in the following section of the chapter.

Finally, Chapter 10 provides some conclusions based on the findings of the entire study. Also, the chapter tries to point out some limitations of the thesis and on the

basis of that suggests some issues for further research. Finally, some policy advice to the government of Vietnam is presented.

Part II:

The Process of Equitisation in Vietnam

Chapter 2

An Overview of the Literature on Privatisation

2.1. Introduction

Over the last two decades, privatisation has been a key component of structural reform programmes in many countries, especially in developing and transition countries. The objectives of these programmes are to improve microeconomic efficiency, foster economic growth and reduce public debt through the elimination of unnecessary subsidies (Sheshinski and López-Calva, 2003). At the same time, privatisation has become an interesting study subject for many academics. This chapter aims at reviewing both the theoretical and empirical literature on privatisation in order to provide a background for the empirical study on this issue, which will be conducted in Chapter 4 and Chapter 6.

The remainder of this chapter is organised as follows. Section 2.2 gives some definitions of privatisation, while different privatisation methods and their pros and cons are presented in Section 2.3. Section 2.4 discusses the efficiency of public versus private ownership. The empirical literature that measures the impact of privatisation on firm performance is reviewed in Section 2.5. The macroeconomic effects of privatisation are summarised in Section 2.6. Finally, Section 2.7 concludes the chapter.

2.2. Definitions of privatisation

Privatisation is a wide concept, and it has been differently defined in the literature. Some authors narrowly define privatisation as the sale of state-owned assets. Specifically, Weiss (1988) states that privatisation is the process of converting ownership of an asset from the state to the private sector. In addition, Nellis (1998)

defines privatisation as "a transfer of ownership such that a majority of the shares or equity in an enterprise passes from state or public ownership into private hands". Moreover, Ramamurti (2000) stresses that privatisation is any measure that transfers some or all of the ownership and/or control over SOEs to the private sector. Finally, according to the World Bank (1996) privatisation is defined as "the divestiture by the state of enterprises, land or other assets."

In a broad sense, privatisation is seen as a phenomenon encompassing interconnected activities that reduce government ownership and control of enterprises and that promote private- sector participation in the management of state-owned enterprises. Specifically, according to Ramamurti (2000), privatisation is any measure that increases the role of the private sector in the economy - for example, through deregulation, which permits private entry into markets previously reserved for SOEs, economic liberalisation, which exposes SOEs to greater competition, or institution building, which improves the functioning of private firms and markets. Similarly, Hartley and Parker (1991) define privatisation as "the introduction of market forces into an economy in order to make enterprises work on a more commercial basis". Furthermore, Cook and Kirkpatrick (1988) define privatisation as "a range of different policy initiatives intended to change the balance between the public and private sector and the services they provide". Specifically, they distinguish three main approaches to privatisation: a change in the ownership of the enterprise, liberalisation or deregulation, and a transfer of goods or services from the public to the private sector even if the government retains ultimate responsibility for supplying the service. Weiss (1988) defines privatisation as the general removal of state control on economic activities. This policy consists of not only changes of ownership but also actions to remove regulatory constraints and general attempts to expose more economic activities to the rigours of market forces.

From a transition point of view, Blommestein et al. (1993) define privatisation as "any transfer of ownership of a state enterprise to other agents, which results in their effective private control of the business". They argue that privatisation does not require a majority stake to be held by any private owner or group of owners; it is also compatible with some shares being retained by the state. This definition is used in this study because it is very close to the definition of the Vietnamese version of privatisation (equitisation) that will be covered in the next chapter.

2.3.   Methods of privatisation: pros and cons

This section summarizes some alternative methods of privatisation that have been widely used in transition economies. Specifically, these methods include

restitution, sales to outsiders, management-employee buyouts, leasing and management contracts, and voucher privatisation. The pros and cons of these methods are briefly reviewed later in this section.

2.3.1. *Restitution*

Restitution involves the return of state assets (buildings, real estate, and agricultural land) to their rightful owners where the prior acquisition of the property is deemed unjust. Bornstein (1997) argues that on moral grounds, it is necessary to redress the worst examples of past injustices. Moreover, restitution could rebuild public confidence in a country's legal enforcement of property rights. However, certain claims of restitution can be complicated, thereby prolonging the privatisation process unnecessarily. Accordingly, it could deter the overall privatisation process by creating an atmosphere of uncertainty about ownership rights (Havrylyshyn and McGettigan, 1999).

2.3.2. *Sales to outsiders*

Sales to outside investors can be classified as direct sales and equity offerings. Practically, direct sales have been employed in most transition economies while equity offerings have been extensively used in developed countries.

Direct sales

At the start of the transition process, most countries intended to privatise by selling state enterprises case by case as going concerns (Gray, 1996). Specifically, direct sales involve the outright sale of state assets through auctions. This technique is likely to be suitable in transition economies because it helps to overcome the problem of the underdeveloped state of domestic capital market in theses countries. The initial advantage of direct sales is that corporate governance is likely to be more effective with outside owners. Moreover, this method can help the government to select good investors, who evaluate the firms at the highest value and have the best skills to manage the companies. Finally, this approach can raise revenue for the government that usually faces a budget deficit in the early years of transition.

However, this method has several drawbacks. First of all, the sales can be stalled due to lack of domestic capital, reluctance of foreign investors and poor quality of company information in transition countries (Havrylyshyn and McGettigan, 1999). In addition, this method tends to be costly and time-consuming because of the complex administrative tasks. For instance, the difficulty in firm evaluation, for

reasons of inadequate accounting system and general political and economic uncertainty, makes the process complicated. Moreover, the power of pre-existing stakeholders, such as workers and managers, usually prevents the consideration of privatisation through direct sales (Pohl et al., 1996). Finally, Earle and Telegdy (2002) argue that, due to lack of an objective criterion and non-transparency of the process, selection decision can be easily manipulated, creating the appearance of corruption.

Equity offerings

The second form of sales to outsiders involves equity offerings on stock exchanges (share-issue privatisation). Share-issue privatisation can be defined as a method of selling state-owned enterprises by offering some or all of the government's equity in a state-owned enterprise to investors. The objective of this method is to involve small individual and larger institutional shareholders in the purchase of state-owned assets. This approach has been widely used in the developed economies, but rarely in transition economies (Havrylyshyn and McGettigan, 1999). This can be explained by the fact that availability of highly-developed financial markets in the developed economies makes share-issue privatisation easier than in transition economies where stock markets are mostly in an underdeveloped state.

The advantage of this method is that it can be used to promote wide share-ownership as all members of the public are invited to participate in the offerings. However, privatisation solely conducted through public offerings has some disadvantages. Indeed, according to Jenkinson (1998), pricing the shares in public offerings could be difficult due to lack of information. Moreover, because the aim of share issues is to encourage broad participation, the state can incur large marketing costs to advertise the offer.

2.3.3. *Management-employee buyouts (insider privatisation)*

Management-employee buyouts involve the sale, at a highly discounted price, or donation of the relevant SOEs' shares to a combination of managers and employees. Since most employees in transition countries have low incomes, and hence low savings, it is often arranged that they can borrow some money from state commercial banks for buying their state-owned company, usually at a preferred interest rate. In this case a repayment schedule is usually designed by the banks on the basis of expected profits of the company.

Insider privatisation has advantages in terms of speed and ease of implementation. Also, it is the closest to the communist ideology, saying that workers should own the assets of production. Moreover, Earle and Telegdy (2002) argue that employee

ownership results in increased work incentives of employees, which lead to a high effort level and small costs of monitoring. Finally, a benefit of employee ownership is the acceptance of lower wages if the firm is close to failure (Earle and Estrin, 1996).

On the other hand, management-employee buyouts have some risks and disadvantages, particularly in large-scale buyout programmes that include many unprofitable companies in need of restructuring (World Bank, 1996). The first disadvantage is that the benefits of public assets are unfairly distributed. For instance, employees in good firms enjoy valuable assets while those in money-losers receive little or nothing of value. Another disadvantage of insider privatisation is that it may lead to granting excessive wage increases, maintaining above-optimal employment levels and insufficient investment. Most importantly, according to World Bank (1996), management-employee buyouts would weaken corporate governance, particularly in transition economies where control of managers is less developed than in a full market economy, and capital markets cannot be counted on to enforce discipline. Moreover, insiders are generally unable to bring in new skills and capital, but may block subsequent outsider participation in the company. Finally, insiders-dominated enterprises face large difficulties in obtaining funds for investment due to information asymmetries and risks.

2.3.4. Leasing and management contracts

Leasing is a method in which the state signs a contract to lease the state-owned enterprise to the private sector. In this way, the lessee takes over the management of SOEs in return for lease payments. The principal objective of this method is to increase the role of outsiders in using state-owned assets. Moreover, the lease could immediately relax the burden on the public budget from current operating losses of SOEs, and even generate income for the government. Furthermore, leasing is usually used as an interim step towards full privatisation later. However, it has some problems in the sphere of enforcing the contracts and negotiating a proper fee.

In the management-contract method, the state signs a contract with external managers, giving them responsibility and power to manage state-owned companies. The rationality of this method is that the contract managers will improve the operating performance for the SOEs. However, payments to the external managers could become an additional burden on the government budget in the case where SOEs' performance would not be improved.

2.3.5.   Voucher privatisation (mass privatisation)

Voucher privatisation was a popular privatisation method in Central and Eastern European countries. Voucher privatisation is a form of privatisation in which all citizens receive vouchers for free or at nominal fee from the government that can be used to purchase shares in any state-owned company. Voucher privatisation has both advantages and disadvantages.

Voucher privatisation is seen as the fastest way to transform state-ownership into private ownership. In addition, this method can help to overcome major problems of privatisation in transition economies, such as a shortage of domestic capital due to low savings and reluctance of foreign investors. Moreover, voucher privatisation is more transparent and fairer than privatisation by direct sales. Especially, the valuation problem of SOEs to be privatised, which is very common in the case of direct sales, can be avoided by using this method. Furthermore, according to Lipton and Sachs (1990), the fast pace of reform facilitated by voucher privatisation would add to the credibility of the reform programme, thereby bolstering its chance of success. Also, this speed does not give existing stakeholders enough time to form an effective opposition to the privatisation process. Besides, the widespread participation of a country's citizens under this method fosters a greater understanding of reform and creates the new "owner" class in favour of the reform process.

However, mass privatisation has some drawbacks. First of all, voucher privatisation can result in dispersed ownership that can have negative impact on corporate governance. In addition, voucher privatisation yields no revenue to the government. In Vietnam, equity offerings have been mainly used as the method to privatise SOEs (equitisation). Moreover, direct sales, management-employee buyouts, leasing, and management contracts have been employed for very small and/or permanently loss-making SOEs.

2.4.   The efficiency of state versus private ownership: theoretical review

Is public or private ownership more likely to be efficient? This question has induced a fair amount of debate in the literature on privatisation. Specifically, the literature on this issue can be divided into two branches: the social view and the agency view (LaPorta and López-De-Silanes, 1999). The social view is in favour of public ownership while the agency view supports private ownership. The theoretical arguments supporting these views are briefly summarised in subsections 2.4.1 and 2.4.2.

2.4.1. The social view

The social view argues that public ownership has several advantages over private ownership. Traditionally, state-owned enterprises are viewed as instruments capable of curing market failures by implementing pricing policies that take social marginal costs and benefits of production into account (Shapiro and Willig, 1990). Additionally, state-owned enterprises are controlled by governments, maximising social welfare and improving decisions of private firms when monopoly power or externalities lead to a divergence between private and social objectives (Shleifer and Vishny, 1994). For example, under non-competitive conditions, efficiency requires a single company to exist, but with the profit maximising objective, a private company will exploit monopoly power to charge too high a price and produce too low a quantity. This potential inefficiency can be solved by public ownership.

2.4.2. The agency view

Under perfect competition, more recent economic literature has taken a much less flattering view of public ownership and a more favourable view of private ownership. This literature stresses that principal reasons for privatisation are the existence of information asymmetries and incomplete contracting problems, leading to severe incentive problems and therefore serious inefficiency of state-owned enterprises. This is referred to as the agency view. Within this view there are two complementary strands of literature depending on whether the critical agency conflict is with the manager or with the politician (LaPorta and López-De-Silanes, 1999). The first, termed the managerial view, argues that SOE managers may lack high-powered incentives or are not properly monitored (Vickers and Yarrow, 1988). The second, termed the political view, stresses that political interference in the firm results in excessive employment, poor choices of product and location, lack of investments, and ill-defined incentives for managers (Shapiro and Willig, 1990; Shleifer and Vishny, 1994).

The managerial view

According to the managerial view, poor monitoring and lack of high-powered incentives result in inefficiency of state-owned enterprises. Managers (agents) in both private and state-owned firms are assumed to maximise their own utility, rather than that of the organisation or its owners (principals). In private companies, this divergence is reduced through both external mechanisms, such as markets for managers, the capital market and corporate control, and internal mechanisms, such

as managerial participation in ownership, reward systems, and the board of supervisors. However, these mechanisms are virtually absent in state-owned companies. Moreover, the owner-manager relationship is, in fact, broken-down into two agency relationships: the public as owners to politicians and politicians to managers, which effectively reduces the incentive for monitoring managers' behaviour.

The essence of privatisation and monitoring incentives is discussed in Yarrow (1986), Vickers and Yarrow (1991). Specifically, they argue that privatisation leads the manager to focus on profit goals because under private ownership management is directly supervised by shareholders. However, under public ownership, management is monitored by the government, which in turn can be viewed as an agent of the voting population. In addition, based on the assumption that shareholders expect the firm to maximize profits, Yarrow (1986) notes that managerial incentives depend on the separation of ownership and control, the availability of performance information to shareholders, the effectiveness of the takeover mechanism and legal constrains. Moreover, Laffont and Tirole (1991) analyse a specific trade-off between a public company and a private regulated one. The authors argue that benefits of private ownership stem from the assumption that shareholders will not expropriate investments of manager in the company's assets while the government could redeploy investments to serve social goals. Thus, the manager's investment incentives are better under private ownership. However, the cost of private ownership, according to this study, is that the company's manager has to report to two different parties: the regulators and the shareholders. Therefore, conflicts between the regulators' and the shareholders' objectives would create an incentive problem to induce inefficiency of the company.

The political view

The political view argues that poor performance of state-owned enterprises is caused by distortions in both the objective function that managers seek to maximise and the constraints they face, the so-called soft budget constraints. Specifically, managers of SOEs pursue strategies, such as excessive employment, that satisfy the political objectives of politicians who control them (Boycko et al., 1996). Moreover, politicians impose objectives on these firms that would help them to gain votes, but might conflict with efficiency (Buchanan, 1972; Niskanen, 1971). The reason why managers are able to do this without facing the threat of bankruptcy relates to the second distortion, the soft budget constraints. In any situation in which the firms have been engaged in unwise investments, it will be in the interest of the central government to bail the firm out using the public budget. The rationale for this rests on the fact that the bankruptcy of companies would have

a high political cost, the burden of which would have to be carried by a well-defined group, like unions. On the other hand, the cost of the bailout can be spread over the taxpayers, a less organised and larger group in society, with diversified interests and preferences. Therefore, the threat of bankruptcy is non-credible under public ownership (Sheshinski and López-calva, 2003).

Shapiro and Willig (1990) argue that the government is better informed about the firm under nationalisation than under privatisation. The reason is that ownership of the firm gives privileged access to its accounting system. From a welfare-maximising point of view, if the government is less informed, it is more difficult for the government to pursue its private agenda. Hence, privatisation is seen as a constraint on the "malevolent" government.

Further, Boycko et al. (1996) develop a model of privatisation to explain the relative inefficiency of state-owned companies and their performance improvements after privatisation. The assumption of their model is that performance of SOEs is poor because these companies pursue the objectives of politicians, such as excessive employment levels, rather than maximise efficiency. Indeed, the politicians prefer high employment levels because it helps them to gain votes. In addition, the manager of the SOE in this model is assumed to represent private shareholders. By allowing for corruption, the manager can bribe politicians for lower employment, and in some cases corruption can improve efficiency. However, a corruption contract is usually illegal and non-enforceable, so inefficiency of SOEs is not necessarily cured in this way. In the private company, the manager will set employment on the basis of efficiency considerations because the company's objective is to maximise profit. In this case politicians can use government subsidies to convince the manager to keep-up employment. It is likely that providing employment subsidies is politically more costly to the politicians than using foregone profits for this purpose because the flow of subsidies is more easily observable than foregone profits of a firm. This model explains why privatisation would lead to firm restructuring, even if subsidies remain to exist after privatisation.

2.5. The impact of privatisation on firm performance: a survey of the empirical literature

With the increase in privatisations over the last decades, the empirical literature concerning privatisation has also grown. Most empirical studies related to privatisation focus on examining the effect of privatisation on firm performance (for recent surveys, see Megginson and Netter, 2001 and Parker and Kirkpatrick, 2005). This section reviews the main empirical evidence on the impact of

privatisation on firm performance. It is important to note here that the survey is updated from Megginson and Netter (2001) and Parker and Kirkpatrick (2005). The survey concentrates on three categories of empirical studies involved in this field. Specifically, the first compares pre to post-privatisation performance of selected privatised companies while the second compares the performance of privatised firms to state-owned enterprises under reasonably similar conditions. The final category focuses on examining the effect of ownership structure on privatised firm performance.

2.5.1. *Empirical studies comparing pre and post-privatisation performance*

The empirical studies that examine the impact of privatisation on firm performance by comparing post to pre-privatisation financial and operating performance are summarised in Tables 2.1 and 2.2. Generally, all of these studies provide empirical evidence to support the proposition that privatisation improves the financial and operating performance of divested firms. Specifically, profitability, output (sales), operating efficiency and investment significantly increase following privatisation. In addition, these studies report that leverage significantly decreases after privatisation. It is important to note here that the effect of privatisation on employment is not unambiguous. Indeed, Boubakri and Cosset (1998) documents significant increases in employment while Megginson et al. (1994), D'Souza and Megginson (1999) and D'Souza *et al.* (2001) find insignificant changes in employment after privatisation. On the other hand, La Porta and López-de-Silanes (1999) and Harper (2002) report significant declines in employment during the post-privatisation period.

2.5.2. *Empirical studies comparing performance of privatised firms with state-owned firms*

Results of three empirical studies, which compare performance of privatised firms with state-owned firms under reasonably similar conditions, are summarised in Table 2.3. These studies employ a large sample of privatised and state-owned firms in Central and Eastern Europe to measure the impact of privatisation on sales revenues, productivity, and employment of firms. The empirical evidence obtained from these studies reveals that privatised firms generally outperform state-owned enterprises in terms of sales revenues, productivity, and cost per unit of revenue. Specifically, Pohl, Anderson, Claessens and Djankov (1997) document that privatised firms that have been private for four years increase productivity, on average, 3-5 times more than similar firms still owned by the state. In addition, Frydman, Gray, Hessel and Rapaczynski (1999) report that in the early stage of

transition, the performance of both privatised and state-owned firms declines, but privatised firms outperform state-owned ones. Moreover, Claessens and Djankov (2002) find that privatised firms experience greater improvements in annual sales and annual labour productivity growth than state-owned enterprises. In fact, the mean annual sales growth of privatised firms increases by 0.11 percent, but annual sales growth of state-owned enterprises decreases by 0.63 percent. Similarly, annual labour productivity growth of privatised firms increases by 6.24 percent while annual sales growth of state-owned firms increases only by 1.12 percent. Remarkably, privatised firms have a significantly lower rate of labour shedding than state-owned enterprises. For privatised firms the decrease is 6.11 percent while it is 7.42 percent for state-owned enterprises.

2.5.3. Empirical studies examining the effect of ownership structure and corporate governance on firm performance

Since the collapse of the communist political system in 1989, large-scale privatisation programmes have been launched in the transition economies of Central and Eastern Europe and the former Soviet Union. These countries have employed various methods of privatisation, including sales to outsiders (asset sales, share offerings), management-employee buyouts (insider privatisation), leasing and management contracts, and voucher privatisation. Practically, different privatisation methods result in different ownership structures in privatised firms, and in turn they would affect firm performance. To test for the effect of different privatisation methods or ownership structures on performance of newly privatised firms, a number of studies have been undertaken. Some of these studies are briefly summarised in Table 2.4.

First of all, these studies document that concentrated ownership after privatisation generates greater improvements in the performance of firms than diffuse ownership (Weiss and Nikitin, 1998; Claessens and Djankov, 1999a; Dean and Andreyeva, 2001; and Pivovarsky, 2001). Additionally, Weiss and Nikitin (1998) find that ownership concentration through large individual shareholders is associated with improvements in all performance measures, but that concentrated ownership by funds does not improve firm performance. In addition, Pivovarsky (2001) reports that concentrated ownership by foreign companies and banks results in better performance than concentrated domestic ownership. Contrary to these findings, Dean and Andreyeva (2001) argue that concentrated ownership by insiders exhibits the best results in terms of firm performance. Secondly, it is found that foreign ownership is associated with greater performance improvements than entirely domestic ownership (Smith et al., 1997 and Claessens and Djankov, 1999a). Further, Walsh and Whelan (2001) document that firms with majority outside

ownership outperform firms with majority inside ownership or state-owed enterprises. However, Estrin and Rosevear (1999) find that firms with outsider-dominated ownership do not outperform firms with insider-dominated ownership or even state-owed enterprises. Finally, according to Claessens and Djankov (1999b), the appointment of new managers is associated with improvements in profit margins and labour productivity, especially if such managers are appointed by private owners.

To sum up, the impact of privatisation on firm performance has extensively been studied in both developed and developing countries over the last decades. The empirical evidence derived from these studies strongly supports the proposition that privatisation is associated with significant improvements in the financial and operating performance of the firms in question. Specifically, these studies document statistically significant increases in profitability, output (sales), operating efficiency, capital expenditure as well as significant decreases in leverage following privatisation. However, the findings regarding employment are mixed. Indeed, some studies report significant increases in employment and few find insignificant changes while the remaining studies document significant declines in employment. Moreover, the empirical results reveal that ownership structure plays an important role in performance improvements of firms. Specifically, concentration ownership is associated with better performance than diffuse ownership. Additionally, outside ownership is likely to be superior to inside ownership in terms of performance improvement, and foreign ownership, where allowed, performs better than entirely domestic ownership.

2.6. Macroeconomic effects of privatisation

In the literature the macroeconomic impact of privatisation has not been discussed as much as the microeconomic effects (the impact on firm performance). Privatisation has been one policy among a set of measures of structural reform, such as trade liberalisation, deregulation, financial- sector restructuring, and opening-up to foreign direct investment. Therefore, it is very difficult to isolate the effect of privatisation from the effect of other measures. This difficulty explains why the work in this area is limited. The present study focuses on the effect of privatisation on firm performance. However, with the aim of giving an overall picture of the impact of privatisation, this section briefly summarizes the macro-economic effects of privatisation.

Table 2.1: Summary of empirical studies comparing pre and post-privatisation performance of privatised firms

Study	Sample description	Methodology	Main findings
Megginson, Nash, and Randenborgh (1994)	Using data of 61 firms from 18 countries and 32 industries, full or partial privatisation through public share offerings, over the period 1961-1990	Comparing three-year pre- to three-year post-privatisation financial and operating performance Employing profitability, operating efficiency, capital investment, output (real sales), employment, leverage and dividend as the financial and operating performance measures. Testing for the significance of median changes in ratio values between the post- and pre-privatisation period, and for the percentage of firms changing as predicted	Profitability, operating efficiency, real sales, investment spending, dividend payments, and leverage significantly improve following privatisation. Employment also increases after privatisation, but insignificantly
Boubakri and Cosset (1998)	Employing data of 79 newly privatised firms headquartered in 21 developing countries that were privatised over the period 1980 to 1992	Using the same measures and methodology as Megginson, Nash, and Randenborgh (1994)	Profitability, operating efficiency, real sales, investment spending, dividend payments, and employment significantly increase while leverage significantly decreases during the post- privatisation period
D'Souza and Megginson (1999)	Obtaining data of 85 firms in 28 countries and 21 industries that were privatised through public share offerings for the period 1990 to 1996.	Using the same measures and methodology as Megginson, Nash, and Randenborgh (1994)	Profitability, operating efficiency, real sales, dividend payments, and leverage significantly increase during the post-privatisation period. Moreover, capital investments significantly increase in absolute values, but not relative to sales and assets. Finally, employment declines following privatisation, but insignificantly

Table 2.1: Continued

La Porta and López-de-Silanes (1999)	Using data of 218 state-owned companies in 26 different sectors privatised between 1983 and 1991 in Mexico	Comparing post-privatisation financial and operating performance ratios to pre-privatisation ones	Operating income to sales and net income to sales increase by 24.1 and 40.0 percent, respectively, and output (sales) increases by 54.3 percent in comparison with pre-privatisation. In addition, employment significantly declines (by 53.4 percent for blue-collar workers and 53.3 percent for white-collar workers), and operating efficiency, as measured by the average cost per unit, drops by 21.49 percent following privatisation. However, capital investment in fixed assets is mostly unchanged. Further, the improvement in profitability is decomposed into three components: (1) 5 percent is due to higher product prices, (2) 31 percent comes from lay-offs of workers, and 64 percent is induced by productivity gains
D'Souza *et al*. (2001)	Collecting data of 118 firms (from 29 countries and 28 industries), privatised through public share offering for the period between 1961 and 1995	Using the same measures and methodology as Megginson, Nash, and Randenborgh (1994)	Profitability, real sales, operating efficiency and capital expenditure significantly increase, and leverage significantly decreases following privatisation. Moreover, employment increases during the post-privatisation period, but insignificantly. Further, changes in ownership structure significantly contribute to performance improvements, and the level of capital-market development has a positive impact on performance improvements following privatisation.

Table 2.1: Continued

Dewenter and Malatesta (2001)	Obtaining data of 63 firms privatised during the period from 1981 to 1994	Using the same methodology as Megginson, Nash, and Randenborgh (1994) – comparing pre to post-privatisation performance measures	Return on sales and return on assets significantly increase, but return on equity and EBIT-based profitability measures insignificantly decrease after privatisation. Additionally, the study finds that all the measures of leverage significantly decline following privatisation. Finally, the study reports that labour intensity significantly decreases after privatisation
Boubakri and Cosset (2002)	Employing data of 16 newly privatised firms headquartered in Africa during the period from 1989 to 1996	Using the same methodology and performance measures as Megginson, Nash, and Randenborgh (1994) with some exceptions due to unavailable data	Profitability, sales efficiency and real sales increase while the leverage ratios decrease after privatisation, but all changes are statistically insignificant. Moreover, capital investments, measured by capital expenditure on sales and capital expenditure on total assets, significantly increase following privatisation
Harper (2002)	Using data of 453 privatised firms in the first and second waves of Czech privatisation	Using the same methodology as Megginson, Nash, and Randenborgh (1994) Employing a cross–sectional regression to identify the sources of performance changes following privatisation with industry, size, timing, debt, ownership, percent privatised, foreign influence as explanatory variables	Return on sales, net income and sales efficiency significantly increase, but return on assets insignificantly decreases following privatisation. Additionally, real sales and employment significantly decline during the post-privatisation period. Moreover, firms privatised in the second wave perform better that firm privatised in the first wave. Furthermore, small firms show greater improvements than large ones following privatisation. Finally, ownership structure has a small effect on performance improvements of the firms following privatisation

Table 2.1: Continued

Boubakri, Cosset and Guedhami (2004)	Using data of 50 firms from 10 countries in Asia, privatised during the period from 1980 to 1997	Using the same methodology as Megginson, Nash, and Randenborgh (1994)	Privatisation leads to statistically significant improvements in profitability, efficiency and output. Employment also increases, but insignificantly. Further, corporate governance and the economic environment have an effect on the extent of performance improvements. For instance, more developed stock markets and involvement of foreign investors are important determinants of performance changes following privatisation

Table 2.2: Summary of results from five empirical studies into the financial and operating performance of newly privatised firms (compared to their performance as state-owned enterprises)

Measures and studies cited	N	Mean value before privatisation (median)	Mean value after privatisation (median)	Mean change due to privatisation (median)	Z-statistic for difference in medians (after-before)	Percentage of firms with improved performance	Z-statistic for significance of proportion change
1. Profitability (net income ÷ sales)							
Megginson, Nash, and Randenborgh (1994)	55	0.0551 (0.0442)	0.0799 (0.0611)	0.0249 (0.0140)	3.146[a]	69.10	23.064[a]
Boubakri and Cosset (1998)	78	0.0493 (0.0460)	0.1098 (0.0799)	0.0605 (0.0181)	3.155[a]	62.82	2.289[b]
D'Souza and Megginson (1999)	85	0.1400 (0.0500)	0.1700 (0.0800)	0.0300 (0.0300)	3.920[a]	71.00	4.170[a]
D'Souza *et al.* (2001)	119	0.0610 (0.0520)	0.0930 (0.0700)	0.0320 (0.0165)	4.877[a]	70.60	4.440[a]
Boubakri and Cosset (2002)	15	0.1090 (0.0860)	0.1345 (0.0838)	0.0255 (0.0050)	1.022	53.00	0.584
2. Efficiency (real sales per employee)							
Megginson *et al.* (1994)	35	0.9560 (0.9420)	1.0620 (1.0550)	0.1064 (0.1157)	3.66[a]	85.70	6.03[a]
Boubakri and Cosset (1998)	56	0.9224 (0.9056)	1.1703 (1.1265)	0.2479 (0.2414)	4.788[a]	80.35	4.598[a]
D'Souza and Megginson (1999)	63	1.0200 (0.8700)	1.2300 (1.1600)	0.2100 (0.2900)	4.870[a]	79.00	5.760[a]
D'Souza *et al.* (2001)	83	0.9770 (0.9660)	1.0530 (1.0530)	0.0760 (0.0672)	3.398[a]	70.00	3.620[a]
Boubakri and Cosset (2002)	15	0.6613 (0.4118)	0.6422 (0.3665)	-0.0191 (-0.0123)	0.454	47.00	0.670

Table 2.2: Continued

3. Investment

Megginson *et al.* (1994)	43	0.1169	0.1689	0.0521	2.349[b]	67.40	2.441[b]
		(0.0668)	(0.1221)	(0.0159)			
Boubakri and Cosset (1998)	48	0.1052	0.2375	0.1322	2.277[b]	62.50	1.736[b]
		(0.0649)	(0.1043)	(0.0137)			
D'Souza and Megginson (1999)	69	0.1800	0.1700	-0.0100	- 0.800	55.00	0.850
		(0.1100)	(0.1000)	(-0.0100)			
D'Souza *et al.* (2001)	85	0.9340	1.2920	0.3580	3.361[a]	65.90	3.090[a]
		(0.8260)	(1.0560)	(0.2300)			
Boubakri and Cosset (2002)	12	0.0352	0.2054	0.1702	1.804[c]	67.00	0.795
		(0.0353)	(0.0628)	(0.0390)			
4. Output (real sales)							
Megginson *et al.* (1994)	57	0.899	1.140	0.241	4.767[a]	75.40	4.462[a]
		(0.890)	(1.105)	(0.190)			
Boubakri and Cosset (1998)	78	0.9691	1.2220	0.2530	5.192[a]	75.64	4.578[a]
		(0.9165)	(1.1225)	(0.1892)			
D'Souza and Megginson (1999)	85	0.9300	2.7000	1.7600	7.300[a]	88.00	10.94[a]
		(0.7600)	(1.8600)	(1.1100)			
D'Souza *et al.* (2001)	113	0.9380	1.0940	0.1560	5.286[a]	70.80	4.420[a]
		(0.9240)	(1.0690)	(0.1440)			
Boubakri and Cosset (2002)	15	0.9562	0.9048	-0.0514	0.314	40.00	1.014
		(0.9900)	(0.9853)	(0.0000)			
5. Employment (total employees)							
Megginson *et al.* (1994)	39	40,850	43,200	2,346	0.956	64.10	1.836[c]
		(19,360)	(23,720)	(276)			
Boubakri and Cosset (1998)	57	10,672	10,811	139	1.481[c]	57.89	1.195
		(3,388)	(3,745)	(104)			
D'Souza and Megginson (1999)	66	22,941	22,136	-805	-1.620	64.00	2.310[b]
		(9,876)	(9,106)	(-770)			

Table 2.2: Continued

	N						
D'Souza *et al.* (2001)	87	32,570 (12,000	34,160 (11,440)	1,590 (560)	0.751	54.0	0.750
Boubakri and Cosset (2002)		- -	- -	- -	-	-	-
6. Leverage (total debt ÷ total assets)							
Megginson *et al.* (1994)	53	0.6622 (0.7039)	0.6379 (0.6618)	-0.0243 (-0.0234)	-2.408[b]	71.70	3.507[a]
Boubakri and Cosset (1998)	65	0.5495 (0.5575)	0.4986 (0.4789)	-0.0508 (-0.0162)	-2.483[b]	63.07	2.108[b]
D'Souza and Megginson (1999)	72	0.2900 (0.2600)	0.2300 (0.1800)	-0.0600 (-0.0800)	-3.080[a]	67.00	3.000[a]
D'Souza *et al.* (2001)	104	0.4890 (0.4670)	0.4250 (0.3820)	-0.0650 (-0.0293)	4.391[a]	72.10	4.510[a]
Boubakri and Cosset (2002)	15	0.6811 (0.7430)	0.6626 (0.7441)	-0.0185 (-0.0029)	-0.738	40.00	1.015
7. Dividends (cash dividends ÷ sales)							
Megginson *et al.* (1994)	39	0.0128 (0.00544)	0.0300 (0.0223)	0.0172 (0.01213)	4.626[a]	89.70	8.179[a]
Boubakri and Cosset (1998)	67	0.0284 (0.0089)	0.0528 (0.0305)	0.0244 (0.0130)	4.366[a]	76.11	4.280[a]
D'Souza and Megginson (1999)	51	0.0150 (0.0000)	0.0400 (0.0200)	0.0250 (0.0200)	4.975[a]	79.00	5.24[a]
D'Souza *et al.* (2001)	-	- -	- -	- -	-	-	-
Boubakri and Cosset (2001)	-	- -	- -	-	-	-	-

[a], [b], [c]: *Significant at the 1%, 5% and 10% levels, respectively.*

Table 2.3: Summary of empirical studies comparing performance of privatised firms to state-owned enterprises

Study	Sample description	Methodology	Main findings
Pohl, Anderson, Claessens and Djankov (1997)	Using data of over 6,300 privatised and state-owned firms in seven Eastern European countries (Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovak Republic, and Slovenia) during the period 1992-1995	Comparing the extent of restructuring across firms	Privatisation has a positive impact on firm restructuring. Firms that have been private for four years have an increase in productivity 3-5 times more than similar state-owned firms
Frydman, Gray, Hessel and Rapaczynski (1999)	Using a sample of 90 state-owned and 128 privatised enterprises in the transition economies of Central Europe (Czech Republic, Hungary, and Poland)	Comparing the performance of privatised firms to state-owned firms, and examining the impact of ownership structure on firm performance. Using sales revenues, employment, labour productivity (revenue per employee) and labour and material cost (per unit of revenue) as performance measures of firms	Privatised firms generally outperform state-owned firms, particularly in terms of sales revenue growth. Especially, privatisation has a significantly positive impact on the performance of firms that are controlled by outsiders. However, privatisation has no significant effect on any performance measure of firms that are controlled by inside owners
Claessens and Djankov (2002)	Using data of 3,181 newly privatised and 3,173 state-owned enterprises in seven Eastern European countries (Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovak Republic and Slovenia) during the initial transition period from 1992 to 1995	Studying the benefits of privatisation by comparing changes in performance of newly privatised to state-owned enterprises. Using sale revenues, labour productivity and employment as the company's performance measures	Privatisation is associated with statistically significant performance improvements of the whole sample, in sales revenues and labour productivity and the rate of labour shedding. Especially, firms that have been private for three years or more significantly outperform state-owned firms, but firms that have been private for less than two years do not significantly differ in performance with state-owned firms

Table 2.4: Summary of empirical studies examining the effect of ownership structure and corporate governance on privatised firms' performance

Study	Sample description	Methodology	Main findings
Smith, Cin, and Vodopivec (1997)	Using a sample of 22,735 Slovene privatised firms during the period from 1989 to 1992	Using the production function to measure effects of foreign and employee ownership on firm performance	Firms with higher revenues, profits and exports are more likely to exhibit foreign ownership and employee ownership. Moreover, an elasticity analysis shows that one percentage point increase in foreign ownership is associated with an increase of about 3.9. percent in value-added, and for employee ownership with an increase of about 1.4%
Weiss and Nikitin (1998)	Using data of 755 Czech firms over the period 1993-1995	Employing both robust and OLS regression techniques	Ownership concentrated by large individual shareholders other than investment funds and companies is associated with positive improvements in all performance measures. However, concentrated ownership by funds does not improve firm performance
Claessens and Djankov (1999a)	Using a sample of 706 Czech privatised firms over the period from 1992 to 1997	Using OLS regression analysis to determine the relationship between ownership structure and firm performance Employing profitability and labour productivity as measures of firm performance	Concentrated ownership is associated with positive changes in both profitability and labour productivity. Specifically, a 10 percent increase in concentration leads to a 2 percent increase in labour productivity and a 3 percent increase in profitability. Moreover, foreign strategic investors and non-bank-sponsored investment funds outperform bank-sponsored funds and local strategic investors

Table 2.4: Continued

Claessens and Djankov (1999b)	Using a sample of 706 Czech privatised firms over the period from 1993 to 1997	Using OLS regression analysis	The appointment of new managers induces improvements in profit margins and labour productivity, especially if the managers are selected by private owners
Estrin and Rosevear (1999)	Using data of 150 enterprises in Ukraine by conducting a survey	Using OLS regression analysis to examine the relationship between firm performance and ownership structure	Private ownership is not associated with performance improvements of firms. Moreover, outsider-owned firms do not perform better than insider- or even state-owned companies
Walsh and Whelan (2001)	Using survey data for 220 privatised manufacturing firms in Bulgaria, Hungary, Slovakia and Slovenia for the period from 1990 to 1996	Employing OLS regression analysis	Firms with majority outsider ownership outperform firms with majority insider ownership or state-owned ones in case the firms inherited CMEA (Council for Mutual Economic Assistance) trade- oriented production from the central planning era. However, for firms inheriting EU trade-oriented production ownership has no impact on firm performance
Dean and Andreyeva (2001)	Using a sample of 190 Ukrainian privatised companies	Using OLS regression analysis	Concentrated ownership has a significantly positive effect on firm performance. Specifically, concentrated insider-owned firms exhibit the best performance
Pivovarsky (2001)	Using data of 376 Ukrainian firms for the year of 1998	Using OLS regression analysis to measure the relationship between ownership concentration and firm performance	Ownership concentration has the positive effect on firm performance. Specifically, ownership concentrated by foreign companies and banks is associated with better performance than domestic owners' ownership concentration.

First, privatisation could improve the financial health of the public sector and reduce the budgetary burden of government subsidies for SOEs. Indeed, it should be expected that more extensive privatisation programmes would lead to lower budget deficits, *ceteris paribus*, because privatisation can raise funds (proceeds from the sales of SOEs) for the government in the short term and eliminate the need for permanent subsidies to state-owned enterprises. Moreover, if firms perform better, the government will not only eliminate subsidies, but also actually start collecting taxes from them. Of course, the impact of privatisation on the public sector will also be determined by the use of the proceeds from privatisation. If the proceeds are used to reduce public debt, which has been the case in the most countries, it would lead to lower interest payments and thus a stronger cash-flow position of the public sector. Consequently, the effect of privatisation on the public sector should be exhibited in lower interest rates, which would foster investment and growth.

Furthermore, privatisation has a significant impact on the development of stock markets. Indeed, privatisation induces an increase in stock-market capitalisation by bringing more commodities to the market. In addition, according to Perotti and Van Oijen (2001), the reduction of political risk through sustained privatisation has a strong effect on stock-market development. Specifically, privatisation has gradually strengthened the institutional framework by forcing a resolution of political and legal uncertainties, which deter stock-market development. The strength of the legal system would increase investor confidence and enhance the development of the stock market.

Finally, although privatisation could have a negative effect on employment in the short-run, it can have a positive effect in the medium and long run. From a theoretical perspective privatisation could reduce the aggregate level of employment in the short-run through the elimination of redundant labour. However, unemployment level could decrease in the medium to long run when the rate of growth of the economy increases as a result of efficiency gains at the micro level and increasing stability at the macro level.

2.7. Conclusion

This chapter provides an overview of the theoretical and empirical literature on privatisation. Privatisation is a broad concept and has been defined in different ways. In general, privatisation is the process of converting ownership of an enterprise from the state to other agents which results in their effective control of the business. In order to transfer ownership of SOEs in such a way, some alternative methods have been used in both developed and developing countries,

including restitution, sales to outsiders, management-employee buyouts, leasing and management contracts, and voucher privatisation.

The theoretical literature reviewed in this chapter helps to shed light on the impact of privatisation, both in terms of its microeconomic and macroeconomic effect. In the microeconomic perspective, on which we concentrate in this chapter, agency theory points out that agency conflicts are the source of the inefficiency of SOEs. Privatisation helps to solve this problem and therefore improves the performance of firms. In a macroeconomic perspective, privatisation has positive effects on the financial health of public sector, the development of the stock market, and employment, especially in the medium and long run. However, some studies still question the benefits of privatisation.

Although theory is not unambiguous, the majority of empirical studies provide evidence that privatisation improves the financial and operating performance of divested firms. Specifically, profitability, output (sales), operating efficiency, and capital expenditure significantly increase, and leverage significantly decreases following privatisation. However, the evidence on the effect on employment is still ambiguous. Indeed, some studies document significant increases in employment and some find insignificant changes while the remaining report significant declines in employment. Furthermore, the evidence derived from empirical studies indicates that ownership structure plays an important role in performance improvements of firms. Specifically, concentration of ownership is associated with better performance than diffuse ownership. Additionally, outside ownership is likely to be superior to inside ownership in term of performance improvements, and foreign ownership outperforms domestic ownership.

Chapter 3

Reform of State-Owned Enterprises and the Equitisation Process in Vietnam

3.1. Introduction

Chapter 2 has reviewed the theoretical and empirical literature on privatisation. Before closely examining the impact of equitisation on firm performance, this chapter provide an overview of the reform of state-owned enterprises (SOEs) in the context of the overall programme of economic reform in Vienam. The policy of economic reform in Vietnam officially started in 1986 and is named *doi moi* in Vietnamese. As a main component of the economic reforms, some comprehensive measures to restructure the SOEs have been launched. These measures have focused on enhancing the performance, competitive capability and reducing the number of SOEs. Among other measures, equitisation has been seen as a main instrument to reform the SOEs effectively and quickly.

The rest of this chapter is structured as follows. Section 3.2 describes the economic reforms in general, with an emphasis on SOE reforms. Section 3.3 more specifically focuses on the process of equitisation. Finally, Section 3.4 concludes the chapter.

3.2. Reform of state-owned enterprises in the context of the overall programme of economic reform

After the defeat of the French in 1954, Vietnam was temporarily divided into two parts, the North and the South. In the North the government immediately adopted a Soviet-style central-planning model to take care of the tasks of economic

reconstruction and social development. The main elements of the model are quick industrialisation, collectivisation of agriculture and strong central control of the economy. In order to achieve these objectives the Vietnamese leaders at that time claimed that state-owned enterprises (SOEs) should play a leading role in the economy. Consequently, the SOE sector was rapidly established through both a comprehensive nationalisation programme of existing privately-owned enterprises and creating new ones. Indeed, by the end of 1960, 100 percent of the industrial enterprises, 99.4 percent of the commercial enterprises, and 99 percent of the transportation enterprises, which used to belong to foreign and domestic capitalist owners, were nationalised and transformed into SOEs. Additionally, in the first five-year plan for the years 1961-1965, the government invested, on average, 61.2 percent of total budget expenditures in establishing new SOEs (Vu, 2002).

Under the central planning the SOEs were directly controlled and managed by corresponding ministries of the central government or departments of the local government. They were seen as pure production units and had no freedom to decide either what they produced or whom they produced for. Indeed, their tasks are simply to receive inputs and implement production plans formulated by the various ministries and departments in question. Regardless of their quality finished products are directly transferred to the ministries and departments. Importantly, operating profits, which were also pre-determined in the plan, were transferred to the government budget, and losses were compensated from the government's budget.

After the unification of the country in 1975, the Vietnamese government started imposing central planning on the South within the five-year plan for the years 1976-1980. Following a similar procedure as was conducted in the North after 1954, many private and public enterprises under the former government in the South were quickly and forcefully transformed into northern-style SOEs through a nationalisation programme. In the beginning of 1978, 1,500 private enterprises, which employed 130,000 workers or 70 percent of the workforce in this sector, were nationalised and converted into 650 SOEs (Nguyen, 1980). In addition, substantial investments were done on new industrial SOEs. Specifically, according to Vu (2002), the state's investment in heavy and light industry accounted for 21.4 and 10.5 percent of the total state's investment in 1976 respectively. In spite of a large amount of investment in the industrial sector and the rapid expansion of the SOEs, the 1976-1980 five-year plan was a complete failure. None of the targets established in the plan were met. Specifically, the average growth rate of GDP was only 1.7 percent instead of between 13.0 and 14.0 percent per year as targeted.

Furthermore, the Vietnamese economy came under serious strain during the late 1970s due to the political and economic isolation of Vietnam from most of the world, combined with a bad agricultural harvest. Consequently, the state was not

able to supply inputs to the production units (SOEs) and food to the people. Facing the threat of economic crisis, the government started to reconsider the merits of the model that it was pursuing. At the Fifth Plenum of the Fourth National Party Congress in July 1979, initial changes to the model were made. The issuance of Decree 25/CP, on January 21 1981, is seen as the most important decision that marked the change in economic strategy. Specifically, the so-called Three-Plan System, under which a state-owned factory must have a single plan with three elements, is the main element of the Decree. The most important element is called Plan A, which is mandatory. Under this Plan the factory has to produce and supply output at low prices to the state, using inputs provided by the state. Moreover, profits obtained from this Plan have to be transferred to the state budget. When the factory has surplus capacity, they could use a second plan, Plan B. In this case the factory freely acquires inputs by itself, but it could only produce the products specified in Plan A. Output of Plan B is regularly sold to trading SOEs, and the factory could also dispose of its products in the free market. A third plan, Plan C, is non-compulsory and to be established by the factory (Fforde and De Vylder, 1996). Under this Plan output usually concerned minor products that are made through the factory's own attempts at diversification. This production is absolutely free in both acquiring inputs and disposing of outputs in the free market. It is important to note here that profits under the second and third plan could be retained by the factory with a predetermined proportion.

Despite having some considerable achievements with respect to industrial production, reform measures in the 1980-1985 were not able to save the system of central planning. Specifically, the economy was still stagnating with a high state budget deficit and inflation. In an attempt to revive the economy and control inflation, a policy package (price, wage and monetary reform) was launched in September 1985. This policy package was a failure, because it did not fully solve the roots of the problem. Consequently, prices were still centrally determined and SOEs were given more subsidies. Soft budget constraints resulted in a substantial state budget deficit. The deficit could only be financed by printing money, which strongly contributed to the pre-existing inflationary tendency. In fact, in 1986 alone the consumer price index increased by 487 percent (see Table 3.1). The unexpected macroeconomic impact of the policy package urged the State to take more drastic economic-reform measures in the second half of the 1980s.

The Sixth National Party Congress of December 1986 marked an important shift in the economic reforms. Specifically, the central planning mechanism was officially abandoned and replaced by a market economy. This policy is often referred to as economic reform (*doi moi*). The first and most important measure in the framework of *doi moi* was included in Decision 217/HDBT, issued in November 1987. Under this Decision the elements of the old planning mechanism on the SOEs are

removed. Specifically, the SOEs were granted autonomy to establish and implement their own production plans based on socio-economic development guidelines issued by the state. In addition, the mechanism in which inputs are supplied by the state and outputs have to be transferred to the state was abolished. Instead, the SOEs could directly sell their products to other trading companies or even to final consumers. Moreover, profits computed on the basis of real costs were retained by the SOE and used at their own discretion, except for compulsory transfers to the state budget. Furthermore, prices of products were determined on the basis of supply and demand conditions in the market in the case of non-price-controlled products. For the case of price-controlled products, the SOEs had to refer to price tables (floor and ceiling prices) before setting prices for their products. However, the number of price-controlled products was rapidly reduced.

The change in management mechanism of the SOEs under Decision 217/HDBT, combined with other policies, for instance the issuance of the Law on Foreign Direct Investment in 1987, resulted in a large number of SOEs facing difficulties and incurring losses. To deal with this problem, the state issued Decree 388/HDBT on 20 November 1991, which provides a legal framework for restructuring the SOEs. Under this Decree conditions for establishing new SOEs and closing existing SOEs are clearly defined. Specifically, an SOE could be forced to be dissolved or to merge with another if they are in one of the following categories: (1) poor performance (continuous loss-making), (2) lack of capital or technology, (3) insufficient market demand for its products. Moreover, based on a resolution of the tenth session of the Eighth National Assembly, the Prime Minister issued Decision 202-CT to launch an equitisation (privatisation) programme in mid-1992. These efforts in restructuring the SOEs achieved an impressive result in reducing the number of SOEs. In fact, the number of SOEs decreased from 12,297 in 1991 to 6,264 by April 1994 (Vu, 2002).

The SOEs were further restructured following the issuance of Decision 90 and 91 in 1994 on the establishment of General Corporations, namely General Corporation 90 and 91. Specifically, Decision 90 called for the establishment of state corporations with at least five voluntary SOE members and minimum legal capital of VND 100 billion while Decision 91 called for formation of much larger corporations with at least seven SOE members appointed by the state and minimum legal capital of VND 1,000 billion. With respect to management, the General Corporation 90 belongs to corresponding ministries or provincial governments while the General Corporation 91 is directly under the control of the Prime Minister. The reason behind the establishment of state corporations is to enhance the competitive capacity of the Vietnamese SOEs in the context of globalisation of the economy.

The SOEs have been significantly reorganised after the enactment of the Law on SOEs in 1995. According to the Law, SOEs are classified into two groups. The first group refers to profit-seeking SOEs, the primary objective of which is making profit while the second group is defined as non-profit SOEs, which produce and distribute public services or take responsibilities on national defence or security activities. Moreover, the roles of ministries and provincial governments in controlling the SOEs (controlling agencies) are clearly defined in the Law. Specifically, the controlling agencies have the authority to restructure or dissolve SOEs as well as appoint senior positions in the SOEs (the Chairman and other members of the board of directors, the manager and chief accountant). Furthermore, the responsibilities of the Ministry of Finance (MOF) in managing the state's capital in the SOEs, the relationship between MOF and other controlling agencies of the SOEs are determined in the Law. Importantly, the SOEs are allowed to decide what, how and for whom to produce. Additionally, they are free to do business with each other and with non-SOEs, including foreign companies in the form of joint ventures or business contracts. Also, the SOEs are almost independent in using their capital and assets received from the government, borrowing and investing, except for big projects or important equipment that requires the approval of the finance authority. Finally, net income fully belongs to the SOEs and is distributed into three funds, namely a welfare, reward, and business development fund.

The SOE reform measures in this period, combined with the success of macroeconomic reform, led Vietnam to achieve a high rate of economic growth, especially between 1992 and 1997. In addition, inflation was controlled (see Table 3.1). However, the SOEs entered a difficult phase since the end of 1997 due to the financial crisis in Asia. Indeed, they faced serious problems in selling their products in both the domestic market and the international market because of the currency devaluations of neighbour countries. Consequently, the SOEs' performance generally deteriorated, and many of them incurred losses. In fact, according to Vu (2002), loss-making SOEs accounted for 60 percent of the total SOEs at the end of 1997. Poor performance of the SOEs partly resulted in a decrease in economic growth for the period of 1998-1999.

To overcome the poor performance of the SOEs and avoid the burden for the state budget, some impressive measures on SOEs reform have been continuously conducted since 1998. These measures have focused on improving performance and concurrently reducing the number of SOEs. The most important policy regarding SOE reform in this period is the issuance of Decree 44 on June 27 1998 to end the pilot stage and launch the expansion stage of the equitisation programme. This Decree has a strong effect on the progress of the equitisation process. In addition, the state issued Decree 103/ND-CP in September 1999 on

"transfer, sale, management contract and lease of SOEs" applying for small and loss-making SOEs that do not satisfy conditions for equitisation[1].

Table 3.1: Some economic performance indicators of Vietnam, 1985-2003

Year	Annual GDP growth rate (%)	Annual inflation rate (%)
1985	3.8	Na
1986	2.8	487.0
1987	3.6	317.0
1988	5.1	311.0
1989	8.0	35.0
1990	4.5	67.0
1991	6.1	68.0
1992	8.6	18.0
1993	8.1	5.0
1994	8.8	14.4
1995	9.5	12.7
1996	9.3	4.5
1997	8.2	3.6
1998	5.8	9.2
1999	4.8	0.1
2000	6.8	-0.6
2001	6.9	0.8
2002	7.1	4.0
2003	7.3	3.0

Source: Fforde and De Vylder (1996) and the General Statistics Office's website (www.gso.gov.vn)
Note: na: not available

In short, this section provides an overview of the main elements of economic policies, in general, and SOE policies, in particular, in Vietnam for the period from 1976 onwards. It is important to stress here that economic reform in Vietnam officially only started in 1986. The Vietnamese economy has since entered a new development phase with many impressive achievements. As the main component of the economic reform, the state has launched some measures to reform the SOEs

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[1] More details about the equitisation process and the "transfer, sale, management contract and lease of SOEs" are presented in the next sections.

with the aims of improving the performance and reducing the number of SOEs. Among other measures, equitisation has been seen as a main one to reach these objectives. As a result of these measures, the number of SOEs has significantly decreased, from 12,297 in 1991 to 5,364 by the end of 2002 (GSO, 2004). However, SOEs still play an important role in the Vietnamese economy. In fact, they have held an essential position in many key economic sectors and contribute for a considerable portion to Vietnam's GDP (see Table 3.2).

Table 3.2: Shares of the state-owned and non-state sectors in GDP, 1989-2003

Year	SOE sector (%)	Non-SOE sector (%)
1989	33.2	66.8
1990	32.3	67.7
1991	33.2	66.8
1992	34.3	65.7
1993	35.4	64.6
1994	36.7	63.3
1995	40.2	59.8
1996	39.9	60.1
1997	40.5	59.5
1998	40.0	60.0
1999	38.7	63.1
2000	38.5	61.5
2001	38.4	61.6
2002	38.4	61.6
2003	39.1	60.9

Source: Computed from Dodsworth et al. (1996) for the period of 1989-1994 by Le (2003) and the General Statistics Office for the period of 1995-2003

3.3. Overview of the equitisation process in Vietnam

The privatisation programme in Vietnam, officially called "Equitisation Programme" (*co phan hoa*) started in 1992 as part of the State-Owned Enterprise Reform Programme, in the context of overall economic reforms. Equitisation is defined as the transformation of SOEs into joint-stock companies and selling part of the shares in the company to private investors in order to improve the performance of the firms in question. Equitisation differs from privatisation in the

usual western sense in that it does not necessarily mean that the government looses its ultimate control over the firm. To the contrary, in the case of Vietnam the government still holds decisive voting rights in many cases. Another remarkable difference with usual Western privatisation practices is that employees and managers of the firms acquire a substantial portion of the shares in the equitised firms. Details of the equitisation process are discussed in the following sub-sections.

3.3.1. Stages of equitisation

The equitisation process in Vietnam can be divided into two stages. The first one is called the pilot stage, ranging from 1992 to 1996, and the second is the expansion stage, from 1996 onwards.

The pilot stage of the equitisation programme (1992 -1996)

Based on a resolution of the tenth session of the Eighth National Assembly, the Prime Minister issued Decision 202-CT to launch the equitisation programme on June 8, 1992. According to this Decision, SOEs involved in the pilot equitisation programme should be small or medium-sized and profitable or at least potentially profitable enterprises, but should not be "strategic enterprises". Moreover, the Decision stipulates that employees of equitised enterprises have a first right to buy the shares at preferential terms. Being afraid of a social collapse such as in Eastern and Central European countries, the Vietnamese government launches the equitisation process very carefully. In the pilot period from 1992 to 1996, only five SOEs were equitised. It involves small SOEs from the transportation, shoes, machine and food-processing industries. In most of those enterprises, the employees hold the dominant portion of shares, and the state still owns nearly 30 percent of the shares. The capital and ownership structure of the first five firms in the pilot stage is summarised in Table 3.3.

The expansion stage of the equitisation programme (1996 – present)

Recognising the need for a more aggressive approach, the Government issued Decree 28-CP in May 1996 to end the pilot stage and to start a new stage of the equitisation process. This decree maintains the general principles of the pilot equitisation programme, extends the scope of equitisation to all non-strategic small and medium-sized SOEs, and requires SOEs' controlling agencies (ministries, People's Committees of provinces and state corporations) to select enterprises for equitisation. However, since this Decree went into force the pace of the equitisation

process did not quickly improve compared to the previous period. In fact, only six SOEs were completely equitised in the second half of 1996, and additional four SOEs were equitised in 1997.

Table 3.3: Capital and ownership structure of the first five equitised firms in the pilot period

Firm name	Capital (Billion VND*)	Ownership structure (%)		
		State	Employees	Outsiders
Transportation Service Co.	6,200	18.0	77.0	5.0
Refrigeration & Electrical Engineering Co.	16,000	30.0	50.0	20.0
Hiep An Shoes Co.	4,793	30.0	35.2	34.8
Animal Food Processing Co.	7,912	30.0	50.0	20.0
Long An Export Product Processing Co.	3,540	30.2	48.6	21.2

Source: Chu (2002).
* The USD/VND exchange rate on Dec. 31st, 2004 is 15,745 VND per USD.

The equitisation process has accelerated since the promulgation of Government Decree No. 44/1998/ND-CP in mid-1998. The Decree provides a fairly clear and comprehensive framework for transforming SOEs into equitised firms. Consequently, annually hundreds of SOEs have been equitised following the issue of this Decree. Although Decree 44 has played an important role in stimulating the equitisation process, it still has some shortcomings, *e.g.*, concerning the firm-valuation method. As a result, the government issued Decree 64 in mid-2002 to replace Decree 44. The new decree, that has about 10 major changes compared with the former Decree 44, such as firm-valuation methods, initial public-offering requirements, founders' obligation, has a strong effect on cranking-up the pace of the equitisation process. Indeed, the number of SOEs, which were successfully transformed into equitised firms in the period 2003-2004, reaches 1,292, accounting for about 57.6 percent of the current total number of equitised firms.

Over 12 years of implementation, the equitisation process in Vietnam has led to some important results. Up to the end of 2004, a total of 2,242 SOEs, with a total capital of about VND 17,700 billion, have completed the equitisation process. However, the process has progressed slowly, and it is hard to achieve the Government's goal of equitising about 3,000 SOEs by 2005. In addition, most of the SOEs that have been selected for equitisation are small and medium-sized. Indeed, according to a report of the National SOE Reform Board, firms that have less than VND 10 billion in capital account for 81.5 percent of the total number of

equitised firms. It is important to note here that "strategic" SOEs are not included in the equitisation programme. Regarding the ownership structure of equitised firms the report reveals that insiders (employees and management board) hold dominant shares in the firms, and the state still owns over one-third of the total shares of the firms. Specifically, in 2,242 firms equitised by the end of the year 2004, insiders, on average, control 46.5 percent, and the state still holds 38.1 percent, on average, of the total shares of the firms. The rest, only 15.4 percent on average, belongs to outside investors. Furthermore, firms in which the state owns more than 50 percent of the shares account for 29.5 percent of the total number of equitised firms[2]. Table 3.4 provides a comparison of the ownership structure of equitised firms in Vietnam with privatised firms in other transition countries, showing that, with the exception of Georgia, the share of outsiders in Vietnamese equitised firms is low even compared with other transition economies. Table 3.5 presents the number of equitised firms in Vietnam for the period from 1993 to 2004.

Table 3.4: Ownership structure of privatised firms in Vietnam (2004) and other transition countries (%)

Country	The state	Insiders	Outsiders
Vietnam (2004)	38.1	46.5	15.4
Georgia (1997)	23.3	64.4	12.4
Kazakstan (1997)	16.1	37.6	46.3
Kyrgyz Republic (1997)	5.6	70.8	23.6
Moldova (1997)	23.8	38.0	38.2
Russia (1997)	14.7	59.6	25.7
Ukraine (1997)	15.4	61.5	23.1

Source: Nguyen (2005) for Vietnam and computed from Djankov (1999) for the other transition countries

3.3.2. Role of the National Steering Committee for Enterprise Reform and Development (NSCERD) in implementing the equitisation process

In order to efficiently implement the reform of SOEs, in general, and the equitisation process, in particular, the Vietnamese government decided to establish

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[2] These figures are drawn from the report of the National SOE Reform Board, according to Nguyen (2005).

a National Enterprise Reform Committee in June 1998. The committee has the responsibility to assist the government in planning, coordinating and guiding the implementation of SOE reform consistently. The committee was replaced by the National Steering Committee for Enterprise Reform and Development (NSCERD) in 2000, but basically kept the same responsibilities. The organisation of the NSCERD is illustrated with Figure 3.1.

Table 3.5: Number of SOEs to be annually equitised for the 1993-2004 period

Year	Number of equitised firms	Total capital (mil. VND)	Mean of capital per firm (mil. VND)
1993	2	22,200	11,100
1994	1	4,793	4,793
1995	2	11,452	5,726
1996	6	19,032	3,172
1997	4	55,800	13,950
1998	101	480,223	5,163
1999	254	1,311,636	12,171
2000	212	n.a.	n.a.
2001	206	n.a.	n.a.
2002	164	n.a.	n.a.
2003	537	n.a.	n.a.
2004	753	n.a.	n.a.
Total	**2,242**	n.a.	n.a.

Source: Dang (2000), Nguyen (2004b) and Nguyen (2005)

By regulation, the Director of NSCERD should be a Deputy Prime Minister. Additionally, vice-directors, specialized members, who work full-time for the NSCERD, and concurrent members, who just work part-time for the NSCERD, are senior officers to represent the Economic Department of the Central Communist Party, related Ministries and governmental agencies. Moreover, the Department for Enterprise Reform and Development, a unit of the Central Government Office, serves concurrently as an assistant agency of the NSCERD. Besides, the Committee for Enterprise Reform and Development in ministerial and provincial level authorities and general state corporations is also established in order to help these agencies manage all activities regarding SOE reform within their scopes.

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┌─────────────────────────────────┐
│    Director of the Committee    │
└─────────────────────────────────┘
                 │
                 ▼
┌─────────────────────────────────┐
│      Vice-Directors of the      │
│           Committee             │
└─────────────────────────────────┘
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Specialized members of the committee		Concurrent members of the committee

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┌─────────────────────────────────┐
│   Department for SOE Reform and │
│   Development (Under the Central │
│        Government Office)        │
└─────────────────────────────────┘
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Committee for SOE Reform and Development (Under Ministries and General Corporation)		Committee for SOE Reform and Development (Under Provincial Governments)

Figure 3.1: Organisation of the NSCERD

With the given authorities, the NSCERD has played a central role in implementing the SOE reform and equitisation process in Vietnam. Specifically, the roles of the NSCERD can be briefly summarised as follows:

-   to prepare general plans and strategies related to SOEs reform, including equitisation plans, for each given period and submit them to the government for approval;

-   to direct and supervise the implementation of the programme and plans regarding to SOE reform that are approved;

-   to assess achievements and shortcomings in implementing these programme, and, based on observed results, to give recommendations in order to overcome these problems;

- to cooperate with authorised agencies to prepare the legal framework for SOE reform and equitisation;
- to verify plans on SOE reform of Ministries, provinces and state general corporations before submission to the government for approval.

3.3.3. The equitisation procedure of SOEs in Vietnam

By regulation, the implementation procedure for equitisation of a given SOE must consist of several steps. First, the government agency that controls the SOE (ministers, provincial people's committees and state corporations) forms the steering committee for equitisation. Then, the committee is responsible for selecting a list of SOEs that fulfil the requirements for equitisation and submit it to the NSCERD and the Prime Minister for approval. Subsequently the agency in question will inform each candidate company about the decision on equitisation. Also the agency issues the decision to establish the company's equitisation board and offer training for the equitisation-board members and concerned company officials.

The second step is that the company's equitisation board will have to explain the government's equitisation policies and regulations to employees. The board also is responsible for preparing the company's financial statements over the last three years, a report on the company's personnel, an inventory of assets comprising assets in use, assets unneeded, assets to be liquidated, and social assets (housing for employees and schools for employees' children invested by the company's fund, etc.) to be transferred to the company trade union, and an estimate of expenditures for equitisation up to the moment that the first general meeting of shareholders is closed.

In the next step the general manager of the selected SOE has to settle debts, clarify the status of unsold materials, and liquidate assets identified for liquidation, open an account at the State Treasury for depositing proceeds from sales of the equitised enterprise's shares, and establish a register for listing prospective shareholders.

In the fourth step the company equitisation board must prepare a three-year business plan for the post-equitisation period and establish a council to re-evaluate company valuation based on regulations and guidance of the Ministry of Finance. Practically this work is the most complex and time-consuming in the process[3]. In addition, the board also prepares a detailed equitisation plan to be presented in an extraordinary congress of employees for reviews and comments. Then, the results

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[3] A detailed description of the company evaluation for equitisation is presented in the following section.

of the company re-evaluation and the final equitisation plan are submitted to the controlling agency for approval. Before finishing this step, the board has to draft the equitised company's statutes and send it to the controlling agency for comments.

In the following step, the controlling agency takes measures for approval of the final equitisation plan and proposes nominees to represent the state on the board of directors and supervisors of the company. In this step the controlling agency also directs the company equitisation board to organise the first meeting of shareholders and issues the decision to transform the SOE into an equitised company.

After receiving the decision to transform the ownership structure, the company's equitisation board must publicly announce its pre-equitisation financial status and plan to sell its shares. Based on the equitisation plan, the board organises the sales, transfers proceeds to the account at the State Treasury, and then reports the outcome to the controlling agency. Furthermore, the board proposes a list of candidates for the board of directors and supervisors and seeks for the agreement from the controlling agency. Then the company equitisation board convenes the first meeting of shareholders in order to elect the board of directors, the board of supervisors and adopt the statutes of the equitised company.

Following the first shareholders meeting, the company director and chief accountant of the former SOE, in the presence of the company equitisation board and the controlling agency, transfer the management responsibilities of the company to the newly elected board of directors.

Finally, the Board of directors applies for the new seal of the equitised company, complete the procedure for transferring ownership from the SOE to the equitised company, and organises the inauguration of the equitised company.

To sum up, the equitisation process in Vietnam can be divided into eight steps. Practically, the evaluation of the company is the most difficult step and takes much time to implement. In addition, the company equitisation board plays an important role in the process. Indeed, they are involved in almost all steps and have to prepare all required documents. However, the local government agency (provincial Committee for Enterprise Reform and Development) has full power to pass the entire equitisation process.

3.3.4. *Main features of the equitisation programme*

As briefly mentioned at the beginning of this section, the equitisation programme in Vietnam has its own characteristics that differ from the privatisation process in other countries. The main features of the programme can be summarised as follows.

Objectives of the equitisation

The following issues are defined in the government's policy on the SOE reform as objectives of the equitisation programme:
–   improving the performance and competitiveness of enterprises by ownership diversification;
–   mobilising capital from employees and outside investors, including domestic and foreign investors, for renewing technologies and developing enterprises' business;
–   balancing interests of the state, employees and shareholders in the equitised enterprise.

Forms of equitisation

In order to convert the SOEs into equitised enterprises, the enterprises can choose one of the following forms of equitisation depending on their characteristics:
–   maintaining the existing capital of the SOE and issuing additional shares to mobilise more capital for developing their business;
–   selling a part of the existing state capital of the SOE;
–   selling the entire existing state capital of the SOE;
–   partially or entirely selling the existing state capital of the SOE and concurrently issuing additional shares to mobilise more capital.

Valuation of the SOEs to be equitised

The valuation of the SOEs is the most important and difficult work in the equitisation implementation process. Since the interest of the government and investors (many of them are employees of the enterprise to be equitised) regarding the valuation of the enterprises usually conflict, it is hard and usually time-consuming to achieve the agreed value. According to Decree 187/2004/ND-CP issued by the Prime Minister on November 16 2004, the valuation of the SOEs can be determined by the following methods:
–   the asset method;
–   the discounted cash-flow (DCF) method.

The asset method

According to the asset method, the value of the SOE at the time of equitisation is determined by the following formula:

Enterprise value = Total assets value – Total liabilities + Commercial advantages

where: Total assets value = Total fixed assets value + Total current assets value

For tangible fixed assets and physical current assets the values are computed on the basis of quantity, market price of new and comparable assets at the time of equitisation and remained quality based on the following formula:

Assets value = Actual quantity x Market price x Remained quality (%)

The value of other assets is based on the accounting book value. Similarly, liabilities are based on the accounting value at the time the SOE is to be equitised, including debt payable, reward and welfare funds for employees.
Furthermore, the commercial advantages (geographical location, brand names, etc.) are calculated on the basis of an excess rate of return for the last three year before equitisation by the following formula:

Commercial advantages = Total state capital x Excess rate of return

where:

$$\text{Excess rate of return} = \text{3-year average rate of return on equity of the SOE} - \text{10-year state bond rate}$$

The discounted cash flow (DCF) method

With this method, the value of the SOE is determined on the basis of projections of net income for dividend and the discount rate, regardless of the SOE's current asset values. By regulation, the method is applicable to SOEs operating in financial and consulting services, construction designing, informatics and technology transfer, and having an average return on equity in five consecutive years before equitisation higher than the return on 10-year government bonds.

Organisation of the valuation of the SOEs

According to Decree 187, if the SOEs under equitisation have total asset values of VND 30 billion or more, their valuation must be conducted by a professional organisation such as an auditing company, a securities company, a price evaluation organisation or an investment bank, either domestic or foreign. However, if the SOEs have total asset values less than VND 30 billion, it is not absolutely

necessary to hire any valuation organisation to determine their valuation. In this case, the SOEs are permitted to evaluate themselves, but the valuation results have to be submitted to the authorised agency for approval.

First shares offering

The structure of first shares issue (the percentage of share held by the state, employees, outside investors) is included in the equitisation plan and approved by the authorised agency. First of all, in principle, the state holds a portion of shares depending on the kind of SOE. The remaining shares, then, are sold to employees and strategic investors of the enterprise with a special discount. It is important to clarify here that strategic investors should be domestic investors who play an important role in the enterprises' business such as regular suppliers of raw materials, customers who undertake to buy the products of the enterprises on a long-term basis. According to Decree 187 the strategic investors are allowed to purchase a maximum of 20 percent of the total shares for sale at a discount of 20 percent compared to the average auction price. However, they are obligated to hold these shares for a period of three years after the date when business registration certificates are issued to the equitised enterprises. In special cases the strategic investors can transfer their shares to other investors, but the deal must be approved by the board of directors. Finally, the remaining shares are offered to other outside investors, including foreign investors through a public auction. However, foreign investors are not allowed to hold more than 30 percent of the total shares in an equitised company.

The form of the public auction is dependent on the value of shares that is allocated to the outside investors. Specifically, the auction must be conducted through an intermediary financial organisation if the value is greater than VND one billion. Especially, the auction should be held at the Securities Trading Centre in the case that the value exceeds VND 10 billion. However, the auction can be implemented at the enterprise if the value of shares offered to the public is equal to or less than VND 1 billion.

Preferences for equitised companies

According to Decree 187 equitised companies will receive preferential treatment from the government. The main preferences as follows:
– preferences with respect to the enterprise income tax in line with any newly-established enterprises (in the normal case, the enterprise is exempted from income tax for the first two years and a 50 percent reduction of income tax for the third and fourth year after equitisation);

– exemption from the registration fee for registered assets of the new companies;
– entitlement to borrow from state commercial banks and other state financial organisations using the same mechanisms and interest rates that are applied to SOEs;
– entitlement to continue using social assets, such as nursery schools, clubs, these assets are not included in the enterprise value);
– compensation for equitisation expenses from the proceeds.

Preferences for employees in equitised enterprises

Employees of SOEs that are selected for equitisation receive some special treatment from the government following equitisation. Specifically, they will be entitled to buy a maximum of 100 shares (VND 10,000 for each) for each year they have worked for the SOEs at a 40 percent discount on the basis of an average auction price. Especially, since 2005 these shares are freely transferred regardless of how long they are kept. Moreover, the employees will be retrained if their skills are not suitable to work for the newly-equitised enterprises. Finally, employees who are laid-off as a result of the equitisation process will receive a lump-sum compensation from the government.

3.4. Conclusions

This chapter reviews SOE policies along with the general economic policies in Vietnam since 1976. Initially adopted in 1954, the central-planning model caused many problems for the Vietnamese economy. Specifically, the economy came under serious strain during the period from 1979 to 1985. In an attempt to revive the economy, the government initiated remarkable economic reforms *(doi moi)* in 1986, which ended the central-planning era and adopted the market economy. Subsequently, the country's economy showed impressive results in terms of economic growth and inflation, especially since 1989. Along with the economic reforms some comprehensive measures to restructure SOEs have been launched since 1986. Among other measures, equitisation has been seen as the best way to restructure the SOEs effectively and quickly. Specifically, the equitisation process in Vietnam started in 1992 with two stages, a pilot stage from 1992 to 1996 and an expansion stage from 1996 onwards. As an achievement of over 12 years of implementation, by the end of 2004 a total of 2,242 SOEs with a total capital of about VND 17,700 billion have been equitised.

Chapter 4

The Impact of Equitisation and Stock-Market Listing on Firm Performance in Vietnam: Case Studies

4.1. Introduction

Chapter 3 has described the equitisation process in Vietnam. Before quantitatively examining the impact of equitisation on firm performance in Vietnam, this chapter tries to explore some primary evidence on effects of equitisation and stock market listing (SML) on firm performance through closely determining two equitised companies, namely Cantho Foodstuff, Fruit & Vegetable Company (CFFVC) and Refrigeration Electrical Engineering Corporation (REE Corp.). These companies are selected for the following reasons. Firstly, to be able to measure the impact of equitisation on firm performance, a selected company has to be equitised at least three years ago. Both of these companies satisfy this requirement. Secondly, these firms were equitised in different time periods. Specifically, REE Corp. was equitised in 1993, during the pilot phase of equitisation (1992-1996) while Cantho Foodstuff, Fruit & Vegetable Company was equitised in 1999, during the expansion phase of the equitisation programme. Moreover, REE Corp. has been listed on the stock exchange since 2000. Finally, these companies are chosen because they are different in size, sector and ownership structure[4]. Data and information for the two case studies were mainly obtained from direct interviews which were conducted by the author in 2004. Moreover, financial data and other information on REE Corp. were obtained from its prospectus and website.

The case studies will provide evidence on the effect of equitisation on firm performance that can be employed as the foundation for building hypotheses to test

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[4] For detailed information on the differences between the two case studies, see Section 4.2 of this chapter.

in Chapter 6. In addition, the chapter will give useful and detailed information on the ownership structure, corporate governance and possible explanations for performance changes of the selected firms following equitisation that cannot be found in Chapter 6. Moreover, by dealing with the impact of stock- market listing on firm performance, the chapter will provide preliminary results that serve as background information for the quantitative analysis in Chapter 6.

The rest of this chapter is structured as follows. Section 4.2 reports preliminary evidence of the impact of equitisation on firm performance by investigating two cases. The effect of stock-market listing on REE Corp.'s performance is briefly presented in Section 4.3. Section 4.4 concludes the chapter.

4.2. Effect of equitisation on firm performance

As presented in both the theoretical and empirical literature, privatisation is likely to have positive effects on firm performance. Is that also true in the case of Vietnam? This section aims to find preliminary evidence on the impact of equitisation on firm performance in the Vietnamese context by closely examining two cases, namely Cantho Foodstuff, Fruit & Vegetable Company and REE Corp.

It is important to note here that a new Vietnamese accounting system, which is in line with international accounting standards and has been applied to all types of firms, was introduced in 1995. Next, Vietnamese Accounting Standards have been developed, and the first Accounting Standards were officially issued at the end of 2001. However, it is to be observed that these developments have not created any significant effects on measuring sales revenue, income before tax, total assets and equity of firms, the variables that play a central role in the analysis of this chapter and of Chapter 6. It can be concluded that these data are comparable over the observed time period.

4.2.1. Cantho Foodstuff, Fruit & Vegetable Company (CFFVC)

Overview of Cantho Foodstuff, Fruit & Vegetable Company

Cantho Foodstuff, Fruit & Vegetable Company, which belongs to the category of small and medium-sized enterprises according to Vietnamese standards, was founded in November 1992. It is a locally-controlled state-owned enterprise functioning in trading. Specifically, its main activities are retail and wholesale trade in vegetables, fruits, foodstuff, consumer goods and processing food. The company has been a major distributor for products of Vinamilk Company, Thien Huong Foodstuff Company, Net Company, P&G, Vedan.

At the time the company had to be equitised (September 30, 1999), the value of the company's total assets was 12,211 VND million, in which fixed assets account for VND 1,342 million (11.0 percent) and current assets for 10,869 VND million (89.0 percent). Because of being a trade company, the company's current assets account for a large share of total assets. Regarding the sources of capital, liabilities account for 10,354 VND million (84.8 percent) while government capital (equity) is 1,857 VND million (15.2 percent). Moreover, before equitisation, due to being given preferential treatment in borrowing from the government and the specific characteristics of trading firms, short-term liabilities are quite high relative to total assets. Indeed, this ratio is 86 percent in 1997, 87 percent in 1998 and 85 percent in 1999. Performance of Cantho Foodstuff, Fruit & Vegetable Company for the period from 1996 to 2003 is presented in Table 4.1.

Table 4.1: Performance of CFFVC (in VND million)

	1996	1997	1998	1999[*]	2000	2001	2002	2003
Sales revenues	138,583	134,419	163,561	100,546	171,985	169,524	229,567	255,433
Total costs	138,275	134,108	163,217	100,282	170,966	165,959	224,266	254,909
Income before tax	308	311	344	264	1,019	981	958	524
Net income	169	171	189	133	693	667	651	440
Total current assets	11,757	10,331	11,104	10,869	18,268	21,529	25,055	28,861
Total fixed assets	1,029	835	2,241	1,342	3,303	4,681	7,703	7,554
Total assets	12,786	11,166	13,345	12,211	21,571	26,210	32,758	36,145
Short term debts	11,296	9,610	11,614	10,328	9,429	13,386	18,582	26,051
Long term debts	0	0	0	0	0	0	0	0
Other liabilities	29	56	3	26	5,138	5,451	6,773	2,842
Total liabilities	11,325	9,666	11,617	10,354	14,567	18,837	25,355	28,893
Equity	1,461	1,500	1,728	1,857	7,004	7,373	7,403	7,522
Total liabilities and equity	12,786	11,166	13,345	12,211	21,571	26,210	32,758	36,145

Source: Financial statements of Cantho Foodstuff, Fruit & Vegetable Company
*: Data refer to the period from January 1, 1999 to September 30, 1999

The company was selected for equitisation in September 1998. Following the needed steps, the company was officially transformed into an equitised company on September 30, 1999 with total equity of 6,534 VND million.

Ownership structure and corporate governance of the company

Shareholders of Cantho Foodstuff, Fruit & Vegetable Company can be classified into four groups: the state (provincial government), insiders (employees and management), domestic institutions and domestic individuals. The ownership structure of the company is shown in Table 4.2.

Table 4.2: Ownership structure of Cantho Foodstuff, Fruit & Vegetable Company

Shareholder	1999 (%)	2002 (%)
State	20.0	20.0
Employees and management	20.7	8.7
Domestic institutions	43.0	42.2
Domestic individuals	16.3	29.1
Total	**100.0**	**100.0**

Source: Reports of Cantho Foodstuff, Fruit & Vegetable Company

As can be readily seen in Table 4.2, the state owns 20.0 percent of the company's total shares, and this portion is unchanged for the period between 1999 and 2002. It is important to note here that the former manager of the company is appointed as representative for the state as shareholder in the company following equitisation. In addition, the insiders hold 20.7 percent of the total shares at the first issue in 1999. However, the insiders' share significantly decreases in the following years after equitisation, dropping from 20.7 percent in 1999 to 8.7 percent in 2002. The main reason explaining this result is that many of employees in the company have low incomes, so they desire to transfer their shares to outsiders in exchange for cash. Especially, domestic institutions are the biggest group of shareholders in the company, holding 42.2 percent of the total issued shares in 2002. Among domestic institutions, Thien Huong Company, an instant noodle processing company, controls 30.6 percent, and Net Company, a detergent producing company, possesses 10.1 percent of the company's total shares. Finally, domestic individuals, consisting of the insiders' relatives, friends, officers of public departments, the company's suppliers and others, own 29.1 percent of the company.

In the case of Cantho Foodstuff, Fruit & Vegetable Company, it can be concluded that ownership is highly concentrated. In fact, the three biggest shareholders (the State, Thien Huong Company and Net Company) hold about 60.7 percent of the total shares. Therefore, these groups of shareholders have a representative in the

company's board of directors and have a strong influence on the company's decisions.

Like other equitised companies in Vietnam, the organisation structure of Cantho Foodstuff, Fruit & Vegetable Company also includes a board of directors, a board of supervisors and a management team[5].

Currently, the board of directors has seven members who represent for the government (one person), insiders (two persons) and outside investors (four persons). The chairman of the board (Mr. Tri), who was the former general manager of this company before equitisation, is the representative for the government. Moreover, he also holds the position of general manager of the company.

In this company, the board of supervisors have three members who are elected by the shareholders. Surprisingly, all of them are currently employees of the company. Indeed, their supervision role is only a part-time job, and most of their income comes from their job as employee of the company.

Effect of equitisation on the company's performance

Profitability

Generally, it is expected that as firms move from public to private ownership, their profitability should increase. This is also true for the case of Cantho Foodstuff, Fruit & Vegetable Company. Specifically, mean income before tax on assets (IBTA) and income before tax on sales (IBTS) increase from 2.6 percent and 0.2 percent in the pre-equitisation period to 3.2 percent and 0.4 percent respectively during the post-equitisation period. Contrary to IBTA and IBTS, income before tax on equity (IBTE) has experienced a significant decline after equitisation. In fact, the average IBTE decreases from 20.6 percent in the pre-equitisation stage to 11.9 percent over the post-equitisation one. The decline in IBTE following equitisation can be explained by the fact that the company's post-equitisation equity significantly increases due to issuing new shares for mobilising capital. Income before tax also increases, but its growth rate is lower.

Efficiency

Indicators that measure the company's operating efficiency are sales efficiency and income efficiency. It is to be noted here that these indicators are adjusted for

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[5] For more information about corporate governance in the Vietnamese equitised companies, see Appendix 4.1 at the end of this chapter.

inflation. The effect of equitisation on the company's operating efficiency is mixed. Indeed, equitisation has a positive impact on income efficiency while it has a negative effect on sales efficiency. Specifically, mean income efficiency, measured by income before tax per employee, shows an increase of VND 1.2 million between the pre- and post-equitisation period. However, the mean change of sale efficiency between the pre and post-equitisation period is negative with an absolute value of VND 528.9 million.

Real sales

Real sales are defined as sale revenues obtained from the company's income statement corrected for inflation. Following equitisation, the company has continuously expanded its business by establishing some new branches in other regions. In addition, the company has applied a new policy to motivate its sales force. As a result, real sales significantly improve following equitisation. In fact, mean real sales increase by VND 30,838 million in the post-equitisation period compared to the pre-equitisation one.

Leverage

The debt ratio, measured by the ratio of total debt to total assets, is used to represent the company's leverage. In Vietnam most SOEs have a large share of debt in their capital structure because they are given preferential treatment and guarantees from the government in borrowing from the state commercial banks. Cantho Foodstuff, Fruit & Vegetable Company is not an exception. Indeed, when the company operated as a SOE, its debt ratio was fairly stable at a high level. For instance, the mean debt ratio is 87.4 percent over the pre-equitisation period. After being equitised, since the government's debt guarantees and preferential treatment have been removed, the company has to reduce its debts and use other sources, e.g. new shares issues, to finance its businesses. Consequently, ownership transformation leads to a decrease of 13.4 percent in the company's debt ratio during the post-equitisation period.

Employment and employee income

In the literature, the effect of privatisation on employment has been ambiguous. Indeed, some studies report an increase in employment following privatisation while other studies document a decline in employment level during the post-privatisation period. In the case of Cantho Foodstuff, Fruit & Vegetable Company, the number of employees has significantly increased after equitisation. For

instance, the mean employment level rose from 119 employees in the pre-equitisation period to 271 employees in the post-equitisation one. No lay-offs of employees have been reported concerning the company after equitisation. Similarly, average income of employees has considerably increased during the post-equitisation period. In fact, the mean annual employee income rose from VND 7.1 million in pre-equitisation period to VND 9.1 million for the years after equitisation.

In short, the company's performance has improved since equitisation. Specifically, IBTA, IBTS, income efficiency, real sales, employment level and employee income have increased during the post-equitisation period. Moreover, the company's debt ratio has been reduced after equitisation. However, it is found that equitisation has a negative effect on the company's IBTE and sale efficiency. The company's pre and post-equitisation performance is summarised in Table 4.3.

Possible explanations for the performance improvements

In an effort to discover sources of the aforementioned performance improvements of the company after equitisation, the author had an in-depth interview on this issue with the Deputy General Director of the company. According to her, incentives and corporate governance are the main reasons to explain the performance improvements.

Income incentives

Income incentives have played an important role in improving performance of the company following equitisation. Indeed, by holding a given number of the company shares, employees have a strong motivation to work hard for the company's success because their benefits are dependent on company performance. In addition, changes in salary and reward policies had a significant impact on company performance. Specifically, before equitisation, the company had to follow salary and reward rules of the government that did not stimulate employees to work efficiently. According to these rules, the salary to be paid to the company's employees was not higher than a certain level (ceiling), even if they had special skills and knowledge or greatly contributed to the company. After being equitised, the company is free from these constraints. Instead, the company has applied performance-based salary and reward scales to stimulate greater efforts by its employees. It is observed that this policy had a strongly positive impact on the company's performance.

Table 4.3: The pre and post equitisation performance of Cantho Foodstuff, Fruit & Vegetable Company

Measures	Pre-equitisation				Post-equitisation					Mean change
	1996	1997	1998	Mean	2000	2001	2002	2003	Mean	
1. Profitability										
Income before tax on assets (IBTA)	0.024	0.028	0.026	0.026	0.047	0.037	0.029	0.014	0.032	**0.006**
Income before tax on sales (IBTS)	0.002	0.002	0.002	0.002	0.006	0.006	0.004	0.002	0.004	**0.002**
Income before tax on equity (IBTE)	0.211	0.207	0.199	0.206	0.145	0.133	0.129	0.070	0.119	**-0.086**
2. Operating efficiency										
Salesefficiency (mil. VND) (Real sales/employees)	1,154.9	1,085.4	1,251.8	1,164.0	712.2	629.2	596.8	602.4	635.1	**-528.9**
Income efficiency (mil. VND) (Net income/employees)	2.6	2.6	2.9	2.7	4.9	4.8	4.2	1.7	3.9	**1.2**
3. Real sales (mil. VND)	138,583	130,251	147,707	138,847	146,703	143,456	186,795	201,788	169,685	**30,838**
4. Leverage										
Total debts/total assets	0.886	0.866	0.871	0.874	0.675	0.719	0.774	0.793	0.74	**-0.134**
5. Number of employees	120	120	118	119	206	228	313	335	271	**152**
6. Annual income per employee (mil. VND)	6.3	7.8	7.3	7.1	7.9	8.9	8.7	10,8	9,1	**2.0**

Note:
- *The figures in this table were calculated from financial statements of the company.*
- *Sales efficiency, net income efficiency, real sales and annual income per employee are adjusted for inflation.*

Corporate governance

The second area, which has been significantly changed and has positively affected the company's performance following equitisation, is corporate governance. Before equitisation the company was controlled by bureaucrats. Specifically, all business plans and important decisions regarding the company's business, *e.g.*, cooperation agreements with other partners, new investments, had to be approved by the controlling agency. The approval procedure normally was time-consuming and/or costly due to corruption. As a result, the company would miss good opportunities to make a profit if these opportunities are only short-lived, or the company has to incur some "unnamed expenses" that reduce its profits. After equitisation, these constraints have been unlashed. Specifically, the board of directors and general manager have full authorities to make all decisions regarding the company' business.

Furthermore, with a share in the company's profits (all members of the board of directors and senior management have owned a significant amount of shares) and the pressure of shareholders, the board of directors and senior management are inclined to pursue profit maximisation. Additionally, the company has benefited from involvement of outside institutional investors. Indeed, Thien Huong Company, the biggest shareholder of the company, provides exclusive preferential treatment of the company. For instance, normally customers of Thien Huong Company have to pay for products purchased in 10 days from the delivery date while Cantho Foodstuff, Fruit & Vegetable Company is allowed to make payments in 20, even 30 days without any fines. Moreover, the company usually receives special promotion from Thien Huong Company which is not applied to all its customers.

4.2.2. *Refrigeration Electrical Engineering Corporation (REE Corp.)*

Corporation profile

REE Corp. originally was the Mechanical and Electrical state-owned enterprise, established in 1977. Being part of the pilot equitisation programme launched in 1992 by the government, the company was equitised on November 13, 1993 as the first in the country. At that time, the company's total re-evaluated capital was VND 16,000 million and the number of employees was 334. Moreover, when the Stock Trading Centre was opened on July 20, 2000, REE Corp. was one of the first two companies volunteering to be listed at the Centre.

The company primarily started with mechanical and electrical (M&E) business. Over time, its business has expanded. Indeed, the company's current business

consists of M&E contracting, manufacturing, trading and financial investments. REE Corp. is currently the first M&E contracting corporation in Vietnam that has received the ISO 9002 certificate.

The development of REE shows consecutive increases in both capital and employment. Specifically, the company's registered capital is raised from VND 16,000 million in 1993 to VND 150,000 million in 1998 and VND 225,000 million in 2001. Similarly, the number of employees increased from 334 in 1993 to 798 in 1998 and 851 in 2001. Revenues and net profits have significantly increased since 1993. The company performance during the period from 1991 to 2003 is exhibited in Table 4.4.

Ownership structure and corporate governance

Shareholders of REE Corp. can be grouped into the state, the insiders (employees and management), domestic investors and foreign investors. At the first shares were issued, in 1993, the ownership structure of REE Corp. is as follows: 30 percent of the shares are owned by the state, 50 percent by insiders and the rest (20 percent) by outside investors. However, this structure has significantly changed in the direction of reducing the share of the state and insiders and increasing the share of outsiders. Specifically, the state accounted for 25.1 percent in 1999 and for only 10.0 percent in 2002. In addition, the insiders' share decreased from 50.0 percent in 1993 to 23.9 percent in 1999, but then increased to 39.0 percent in 2002. Conversely, the outsiders' share has considerably increased following equitisation, from 20.0 percent in 1993 to 51.0 percent in 2002. Within that group foreign investors are increasingly involved in the company. They held 16.3 percent of the total REE's shares in 1999 and 25 percent in 2002. The ownership structure of REE is presented in Table 4.5 and shown graphically Figures 4.1, 4.2 and 4.3.

Furthermore, in 2002 only four shareholders who held more than 5 percent of total shares were reported. Specifically, they are the State (10%), Veil Holding Ltd. (10%), Mr. Nguyen Ngoc Hai (7.76%) and Vener Group Ltd. (7.56%). In addition, the Board of directors (five members) own 6.08 percent of the total shares.

Corporate governance of REE Corp., like other joint-stock companies in Vietnam, also includes a board of directors, a board of supervisors and management team.

In the case of REE Corp. the board of directors has five members who are directly elected by shareholders. Specifically, two of them represent the state, two represent the insiders, and one outside investors (foreign investors). The names of the members of the board of directors and other information are presented in Table 4.6

Table 4.4: REE performance for the period of 1991-2003 (in VND million)

Indicators	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Sales revenues	24,698	42,252	46,597	78,441	213,990	307,095	426,042	366,983	171,465	225,182	311,848	411,808	372,227
Total costs	23,596	39,362	39,205	67,055	192,611	249,606	334,700	327,491	152,709	187,944	261,433	375,586	323,837
Income before tax	1,102	2,890	7,392	11,386	21,379	57,489	91,342	39,492	18,756	37,238	50,415	36,222	48,390
Net income	771	2,023	5,434	8,838	14,470	47,405	75,869	21.659	7,961	30,802	44,934	34,302	39,021
Total current assets	11,088	18,384	29,850	41,645	92,709	174,350	188,816	190,705	150,869	173,982	206,228	198,307	126,676
Total fixed assets	1,738	1,467	7,856	8,727	10,994	18,767	26,316	49,161	68,802	76,243	136,949	265,615	336,262
Total assets	12,826	19,851	37,706	50,372	103,703	193,117	215,132	239,866	219,671	250,225	343,177	463,922	462,938
Liabilities	10,462	17,184	21,411	30,405	74,926	139,115	114,032	51,935	41,778	87,829	86,539	192,174	180,825
Equity	2,364	2,667	16,295	19,967	28,777	54,002	101,100	187,931	177,893	162,396	256,638	271,748	282,113
Total liabilities and equity	12,826	19,851	37,706	50,372	103,703	193,117	215,132	239,866	219,671	250,225	343,177	463,922	462,938

Source: Financial statements of REE Corp. and Dang (2000)

Table 4.5: Ownership structure of REE

Shareholder	1993 (%)	1999 (%)	2002 (%)
State	30.0	25,1	10,0
Employees and management	50.0	23,9	39.0
Domestic investors	20.0	44.7	26.0
Foreign investors	0.0	16.3	25.0
Total	**100.0**	**100.0**	**100.0**

Source: REE's prospectuses and Dang (2000)
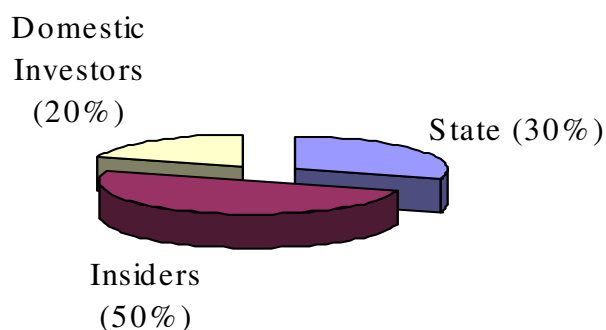
Figure 4.1: REE's ownership structure in 1993
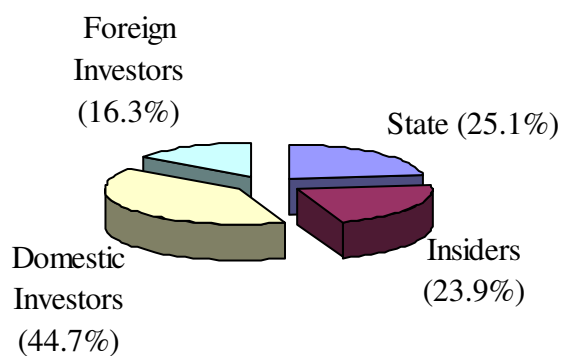
Figure 4.2: REE's ownership structure in 1999

Foreign
investors
(25%)

State (10%)

Insiders (39%)

Domestic
Investors
(26%)
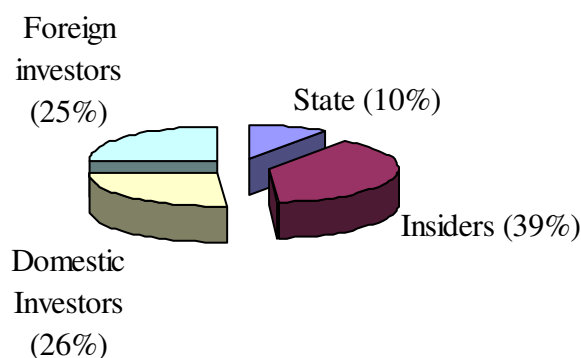
Figure 4.3: REE's ownership structure in 2002

Table 4.6: List of members of the board of directors

Name	Education	Position
Mrs. Nguyen T. Mai Thanh	Technical Engineer	- Chairperson of the Board - General Director of REE
Mr. Luu Minh Luan	Bachelor	- Member of the Board - Deputy General Director of REE
Mrs. Do Thi Trang	BA. in Economics	- Member of the Board - Financial Manager of REE
Mr. Tran Van Thanh	BA. in Law	- Member - Head of Investment Dept. of REE
Mr. Dominic T. C. Scriven	BA. in Law	- Member of the Board - Director of Dragon Capital Ltd. Co.

Source: Prospectus of REE

The chairwoman of the board of directors, Mrs. Thanh, was the former general director of REE, and she is a representative of the state. Moreover, all members of the board, except Mr. Dominic T. C. Scriven, were employees of REE for a long time.

The board of supervisors have three members who are all outsiders. They have ample expertise in finance, accounting and experiences that are required in accordance with the Enterprise Law. The members list of the board of supervisors and their qualifications and positions are presented in Table 4.7.

Table 4.7: Members of the board of supervisors

Name	Qualification	Position
Mr. Chau Ngoc Duc	BA. in Economics	- Chairman of the Board - Chief Accountant of Vinh Thinh Ltd. Co.
Mr. Hoang Kien	MBA	- Member of the Board - Financial analyzing expert of Dragon Capital Ltd. Co.
Mr. Cao Si Thang	BA. in Finance	- Member of the Board - Head of Industrial Department, Financial Service of Ho Chi Minh City (HCMC)

Source: REE's prospectus

The first two supervisors in the list are representatives of outside investors, especially the second, Mr. Kien, the representative for foreign investors. The last member, who is the Head of the Industrial Department of Ho Chi Minh City, is the representative of the state.

As mentioned in Table 4.6, the chairwoman of the board of directors is also the general irector of REE. According to the Company's regulations, the general director is appointed by the board of directors and is responsible for the management of the company. The organisational structure of REE is shown in Figure 4.4.

Effect of equitisation on REE performance

As mentioned above, REE has been listed on the stock exchange since 2000. Therefore, in order to measure the impact of equitisation on the company's performance while isolating the effect of initial public offering (IPO) on firm performance, the three-year averages (1991-1993) of pre-equitisation performance measures are compared with the six-year averages (1994-1999) of post-equitisation performance measures. The pre and post-equitisation performance of REE Corp. are shown in Table 4.8.

Profitability

Like Cantho Foodstuff, Fruit & Vegetable Company, profitability ratios of REE measured by IBTS and IBTA have considerably improved following equitisation. Indeed, the mean IBTA and IBTS increase from 14.3 percent and 9.1 percent in the

pre-equitisation period to 23.4 percent and 14.4 percent in the post-equitisation period, respectively. However, profitability measured by IBTE has remarkably decreased since equitisation. Specifically, the mean IBTE has a decrease of 6.8 percentage-points between the pre- and post-equitisation periods, although it still is at a high level.

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                    ┌─────────────────────────┐
                    │  Shareholders Meeting   │
                    └─────────────────────────┘
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│ Board of Supervisors │─────────┤
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                    ┌─────────────────────────┐
                    │   Board of Directors    │
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                    │    General Director     │
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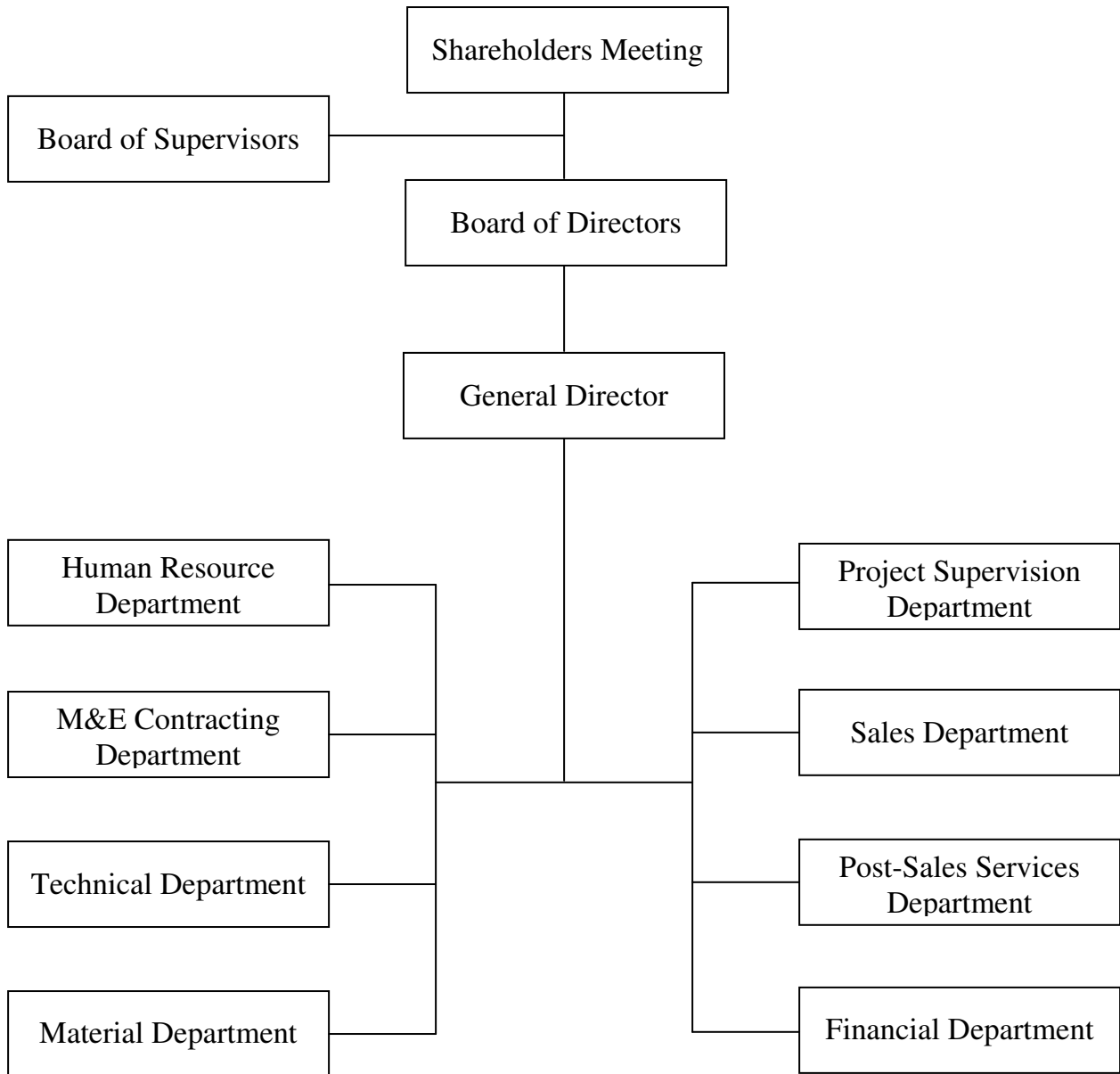
Figure 4.4: Organisational structure of REE

Human Resource Department — Project Supervision Department — M&E Contracting Department — Sales Department — Technical Department — Post-Sales Services Department — Material Department — Financial Department

Efficiency

Unlike in the case of the Cantho Foodstuff, Fruit & Vegetable Company, both sales and net income efficiency have considerably increased after equitisation, indicating that the company has allocated its human capital and current technological resources to be more efficient. Specifically, the mean sale efficiency, measured by real sales on the number of employees, increase from VND 146.8 million in the pre-equitisation to VND 296.4 during the post-equitisation period. Similarly, the average income efficiency shows an increase of VND 35.8 million.

Real sales

After equitisation, the company has invested a large amount of capital to expand its business and implemented some measures to accelerate its sales, such as applying incentive policies to motivate employees, developing new products that meet current market demands and improving product quality. Consequently, REE Corp.'s real sales show a significant increase following equitisation. Specifically, the mean real sale for the post-equitisation period increases over four times in comparison with the pre-equitisation period.

Leverage

As expected, REE's debt ratio, measured by total debts on total assets, significantly reduces in the context that its business has been continuously expanded since equitisation. This situation can be explained by the fact that after equitisation the company has used retained income and new share issues as the main sources of finance. As a result, the mean debt ratio decreases from 75.0 percent during the pre-equitisation period to 49.7 percent in the years following equitisation.

Employment and employee income

In line with the government's expectations concerning results of the equitisation programme, REE's employment remarkably increases since equitisation. In fact, mean employment increases from 278 employees over the post-equitisation to 591 employees after equitisation. The increase in employment could be due to the expansion of the company's business. In addition to the increase of employment the average annual income of the employees rose after equitisation. Indeed, this indicator increases from VND 14.9 million to VND 17.6 million between the pre and post-equitisation periods.

Table 4.8: Pre and post-equitisation performance of REE

Indicators	Pre-equitisation				Post-equitisation							Mean change
	1991	1992	1993	Mean	1994	1995	1996	1997	1998	1999	Mean	
1. Profitability												
Income before tax on assets (IBTA)	0.086	0.146	0.196	0.143	0.226	0.206	0.298	0.425	0.165	0.085	0.234	**0.092**
Income before tax on sales (IBTS)	0.045	0.068	0.159	0.091	0.145	0.100	0.187	0.214	0.108	0.109	0.144	**0.053**
Income before tax on equity (IBTE)	0.466	1.084	0.454	0.668	0.570	0.743	1.065	0.903	0.210	0.105	0.599	**-0.068**
2. Operating efficiency												
Sales efficiency (mil. VND) (Real sales/employees)	119.1	181.8	139.5	146.8	165.2	323.4	335.2	361.7	-	-	296.4	**149.6**
Income efficiency (mil. VND) (Net income/employees)	5.3	12.4	22.1	13.3	24.0	32.3	62.8	77.6	-	-	49.1	**35.8**
3. Real sales (mil. VND)	30,601	44,365	46,597	40,521	68,567	159,739	216,878	291,551	234,050	105,048	179,305	**138,784**
4. Leverage												
Total debts/total assets	0.816	0.866	0.568	0.750	0.604	0.723	0.720	0.530	0.217	0.190	0.497	**-0.253**
5. Number of employees	257	244	334	278	415	494	647	806	-	-	591	**313**
6. Annual income per employee (mil. VND)	19.6	14.6	10.5	14.9	15.1	17.6	16.5	18.4	20.2	-	17.6	**2.7**

Note:
– *The figures in this table are calculated from financial statements of REE CORP. and Dang (2000).*
– *Sales efficiency, net income efficiency, real sales, annual income per employee is adjusted for inflation.*

In summary, on the basis of results presented above, it can be concluded that equitisation has a positive impact on virtually all of the company's performance measures. Specifically, IBTS, IBTA, sale efficiency, income efficiency, employment and employees' average income have significantly increased following equitisation. However, it is found that IBTE considerably decreased after equitisation.

Possible explanations for the performance improvements

As reported in Table 4.8, almost all performance measures of REE Corp. (except IBTE) significantly improved after equitisation. Similar to the first case study, the performance improvements of REE Corp. can be explained by the following reasons.

Income incentives

To be aware of the important role of employees in the company's success, after equitisation REE Corp. has launched several policies to encourage its employees to work more efficiently. Specifically, like Cantho Foodstuff, Fruit & Vegetable Company, REE Corp. started to apply performance-based salary and reward policies for its employees. Moreover, the company has applied the so-called "Employee Stock Ownership Plan (ESOP)". ESOP can be defined as a plan that allows employees, who made a special contribution to the company, to own some preferred stocks that will be convertible into common stock after a given period. Consequently, these policies have created great efforts from the company's current employees and attracted excellent- quality employees to work for the company.

Entrepreneurship

After being equitised, the company has applied quality management systems in order to ensure quality of its products and improve its production efficiency. Indeed, the company received the ISO certificate in 2000. In addition, REE Corp. has introduced new electrical refrigeration products with the brand name "Reetech". Importantly, these products can compete against other well-known brands in the market. Besides new product offerings, the company's market has expanded from the domestic to international market. Indeed, the company has exported its products to Cambodia, Laos and African countries. Finally, with a new capital source by issuing new shares following equitisation, the company has heavily invested in new businesses, such as real estate and infrastructure for

information technology (Saigon E-town). The investments have contributed to the growth rate of sales revenue and income of the company.

Corporate governance

Similar to other equitised firms in Vietnam, corporate governance of REE Corp. has significantly changed since equitisation. Specifically, the board of directors and general manager of the company have been independent from bureaucrats and now focus on the objective of profit maximisation. Moreover, involvement of foreign investors in the board of directors can be a reason to explain improvements in the company's performance. Indeed, the foreign investors have great management skills and experiences that can help the company to perform better.

4.2.3. A comparison of performance changes following equitisation between the two cases

A comparison of performance changes following equitisation between Cantho Foodstuff, Fruit & Vegetable Company and REE Corp. is summarised in Table 4.9. Generally, it is observed that the performance of these companies has improved following equitisation. However, the improvement differs between the two cases. Regarding the profitability indicators, Table 4.9 shows considerable improvements in IBTA and IBTS for both companies following equitisation. However, the growth rate of the improvements is different between two companies. Specifically, Cantho Foodstuff, Fruit & Vegetable Company achieves a higher growth rate of improvement in IBTS compared to what REE Corp. gains, but its growth rate of improvement in IBTA is lower than REE Corp.'s. Contrary to IBTA and IBTS, equitisation has a negative effect on IBTE of the two companies. Specifically, the mean IBTE in the first and second case decrease by 42.2 percent and 10.2 percent respectively during the post-equitisation period.
The impact of equitisation on sales efficiency of the studied companies is mixed. Indeed, sale efficiency has significantly increased in the second case following equitisation while it has considerably decreased in the first case. However, income efficiency remarkably improved in both of the two cases, especially for the second case, after equitisation. Specifically, the growth rate of mean income efficiency is reported to be 44.4 percent and 269.2 for the first and second case, respectively.
Furthermore, it is observed that real sale of both cases significantly improved after equitisation. In fact, mean real sales increase by 22.2 percent and 342.58 percent for Cantho Foodstuff, Fruit & Vegetable Company and REE Corp., respectively. In addition, the debt ratio, measured by the ratio of total debts to total assets, fell for both companies since equitisation. The declines in mean debt ratios during the post-

equitisation period in the first and second case are 15.3 percent and 33.7 percent respectively. The difference in the decline in the debt ratios of the two cases can be explained by the fact that REE Corp. has been listed on the stock market, so the company can easily issue new shares for increasing its equity.

Finally, the effect of equitisation on employment and annual income of employees is almost the same for both of the two cases. Indeed, the significant increases in employment level are reported for both companies. For instance, the growth rate of employment is observed to be 127.7 percent and 112.6 percent for the first and second case, respectively. Likewise, an improvement in employees' annual income following equitisation is found for both Cantho Foodstuff, Fruit & Vegetable Company and REE Corp., with growth rates of 28.2 percent and 18.1 percent, respectively.

4.3. The effect of stock-maket listing on firm performance: the case of REE Corp.

This section investigates the impact of stock-maket listing (SML) on firm performance in Vietnam by comparing pre to post-SML performance of REE Corp. It is to be noted that this section focuses on the impact of SML on profitability, leverage and real sales due to lack of some data for the post-SML period (2001-2003). The pre and post-SML performance of REE Corp. are summarised in Table 4.10.

Profitability

It is surprising to find that SML has a negative effect on REE Corp.'s profitability. Indeed, the results presented in Table 4.10 indicate that all profitability indicators have significantly decreased since the company's shares are listed on the stock market. For instance, mean IBTE and IBTA decline from 59.9 percent and 23.4 percent in the pre-SML period to only 16.7 percent and 12.7 percent respectively during the post-SML stage. A possible explanation for the considerable decreases in IBTE and IBTA is that after listing on the stock market, the company has heavily invested (see Table 4.4), financed by issuing new shares, so that its IBTE and IBTA are negatively affected in the short run.

Real sales

Contrary to profitability, it is observed that the company's real sales have significantly increased after SML. In fact, mean real sales increase from VND

179,305 million over the pre-SML period to VND 210,226 million in the post-SML period. As mentioned above, the company has invested heavily in expanding its business. Moreover, SML is likely to be the best way to advertise the company's products. A combination of these reasons could be the explanation for the increase in real sale of REE Corp. after SML.

Leverage

As can be readily seen in Table 4.10, the company's leverage, measured by the ratio of total debt to total assets, has continued to decrease since SML. Specifically, REE Corp.'s debt ratio declines from 49.7 percent in the pre-SML period to 35.2 percent in the years after SML. The reduction in debt ratio could be caused by substituting share issues for bank borrowing as source of finance. In fact, the company issued 7.5 million new shares (VND 75 billion) in 2002.

4.4. Conclusion

This chapter examines the impact of equitisation and stock-market listing on firm performance by investigating two cases, namely Cantho Foodstuff, Fruit & Vegetable Company and REE Corp. From the two cases it can be observed that equitisation had a positive effect on the selected companies' performance. Specifically, equitisation has led to significant improvements in IBTS, IBTA, sales efficiency, income efficiency, leverage and employees' average income for both of the cases. Similarly, the employment level of the two cases has considerably increased during the post-equitisation period. Contrary to equitisation, stock market listing negatively affects REE Corp.'s performance. Indeed, profitability and operating efficiency of the company have significantly declined since the company' shares are listed on the stock market. However, real sales, leverage, employment and employees' average income of REE Corp. have been improved after SML.
It should be noted here that this chapter only provides preliminary evidence of the effect of equitisation on firm performance by examining two case studies. More insight can only be obtained by considering a larger sample of firms, which will be done in the coming chapters.

Table 4.9: Comparison of performance changes following equitisation between two cases

Indicators	Cantho Foodstuff, Fruit & Vegetable Company				REE Corp.			
	Mean before (1996-1998)	Mean after (2000-2002)	Mean change	Percentage* change (%)	Mean before (1991-1993)	Mean after (1994-1999)	Mean change	Percentage* change (%)
1. Profitability								
Income before tax on assets (IBTA)	0.026	0.032	0.006	23.1	0.143	0.234	0.092	64.3
Income before tax on sales (IBTS)	0.002	0.004	0.002	100.0	0.091	0.144	0.053	58.2
Income before tax on equity (IBTE)	0.206	0.119	-0.087	-42.2	0.668	0.599	-0.068	-10.2
2. Operating efficiency								
Sales efficiency (mil VND) (Real sales/employees)	1,164.0	635.1	-528.9	-45.4	146.8	296.4	149.6	101.9
Income efficiency (mil VND) (Net income/employees)	2.7	3.9	1.2	44.4	13.3	49.1	35.8	269.2
3. Real sales (mil. VND)	138,847	169,685	30,838	22.2	40,521	179,305	138,784	342.5
4. Leverage								
Total debts/total assets	0.874	0.740	-0.134	-15.3	0.750	0.497	-0.253	-33.7
5. Number of employees	119	271	152	127.7	278	591	313	112.6
6. Annual income per employee (mil. VND)	7.1	9,1	2.0	28.2	14.9	17.6	2.7	18.1

Percentage change (%) = [(mean after – mean before)/mean before] x 100

Table 4.10: The pre and post-IPO performance of REE

Indicators	Pre- IPO							Post-IPO				Mean change
	1994	1995	1996	1997	1998	1999	Mean	2001	2002	2003	Mean	
1. Profitability												
Income before tax on assets (IBTA)	0.226	0.206	0.298	0.425	0.165	0.085	0.234	0.162	0.088	0.130	0.127	-0.107
Income before tax on sales (IBTS)	0.145	0.100	0.187	0.214	0.108	0.109	0.144	0.147	0.078	0.105	0.110	-0.034
Income before tax on equity (IBTE)	0.570	0.743	1.065	0.903	0.210	0.105	0.599	0.196	0.133	0.172	0.167	-0.432
2. Operating efficiency												
Sales efficiency (mil VND) (Real sales/employees)	165.2	323.4	335.2	361.7	-	-	296.4	219.0	-	-	219.0	-77.4
Income efficiency (mil VND) (Net income/employees)	24.0	32.3	62.8	77.6	-	-	49.1	35.4	-	-	35.4	-13.7
3. Real sales (mil. VND)	68,567	159,739	216,878	291,551	234,050	105,048	179,305	186,369	236,642	207,667	210,226	30,921
4. Leverage												
Total debts/total assets	0.604	0.723	0.720	0.530	0.217	0.190	0.497	0.252	0.414	0.391	0.352	-0.145
5. Number of employees	415	494	647	806	-	-	591	851	-	-	851	260
6. Annual income per employee (mil. VND)	15.1	17.6	16.5	18.4	20.2	-	17.6	19.3	-	-	19.3	1.7

Note: The figures in this table are calculated from financial statements of REE Corp. and Dang (2000).
Sales efficiency, net income efficiency, real sales and annual income per employee are adjusted for inflation.

Appendix 4.1: Corporate governance in the Vietnamese equitised companies

In accordance with the Law on Enterprises issued on June 12, 1999 by the National Assembly, the corporate governance of joint-stock companies, in general, and of equitised firms in particular, includes the board of directors, the board of supervisors and the director (general director).

The board of directors

The board of directors is the body managing the company that has full authorities to make decisions on all issues related to objectives and benefits of the company. The board of directors are composed of a maximum of 11 members who are directly elected by shareholders at the first meeting of each term. Specifically, the term, qualifications and specific number of member of the board are stipulated in the company's Charter. By regulation, the board has the following rights and duties:
- to decide on the development strategies of the company;
- to recommend the types of shares and total number of shares to be offered for sale;
- to make decisions on investment plans;
- to decide on solutions regarding market expansion, marketing and technology; to approve contracts for purchases, sales, borrowing, lending and other contracts which have the value equal to or larger than 50 percent of the company's total asset value;
- to appoint and dismiss the director (general director) and other senior managers of the company, to decide the salaries and other benefits of such managers;
- to decide on the organisational structure as well as internal management rules of the company, the establishment of subsidiary companies, branches and representative offices, and the capital contribution to or purchase of shares of other companies;
- to submit annual financial reports to the general shareholders assembly;
- to recommend the dividend rates to be paid, to decide the period of time and procedures for payment of dividend or dealing with losses incurred in the business operation;
- to decide on the price at which the company's shares are offered for sale, to evaluate assets that are contributed to other companies to form a joint-venture company;
- to approve the agenda and documents for the shareholders meeting, convene the meeting;

- to decide on the redemption of not more than 10 percent of the total shares of each type which have been sold;
- To recommend restructuring or dissolution of the company.

After being formed, the board of directors will elect a chairperson from its members. It is important to note here that by regulation the chairperson of the board of directors can concurrently act as the director (general director) of the company. Specifically, the chairperson of the board of directors has the following rights and duties:

- to prepare working plans and programmes of the board;
- to prepare documents for the board's meeting, convene and preside over meetings of the board;
- to supervise the implementation of the board's decisions;
- to preside over meetings of the general assembly of shareholders.

The board of supervisors

According to Law on Enterprises, a joint-stock company having more than 11 shareholders must have a board of supervisors which is composed of three to five members, of whom at least one member has to be specialised in accountancy. All supervisors are elected by shareholders at the first meeting of each term. Then, the board of supervisors elect one of its members, who has to be a shareholder, to serve as the chairperson of the board. The board of supervisors has the following rights and duties:

- to inspect the reasonability and legality in the management and administration of business activities, and financial reports;
- to inform the board of directors regularly results of the company's operations, consult the board prior to submitting reports, conclusions and recommendations to the shareholders meeting;
- to report to the general assembly of shareholders on the accuracy, truthfulness and legality of books of account, financial reports, and other reports of the company;
- To recommend changes and/or improvements in the organisational structure, management, and administration of the company.

According to Law on enterprises, the following people are not allowed to be a member of the board of supervisors:

- members of the board of directors, the director (general director) and their marital or relative relationship;
- people who are being examined for penal liability, or serving imprisonment sentences.

Furthermore, the term, working regulations and salary of members of the board of supervisors are stipulated in the company's Charter or decided by the general assembly of shareholders.

Director (general director)

The manager, who is appointed by the board of directors, can be a member of the board of directors or whoever (shareholder or non-shareholder). The director (general director) has the following power and duties:
- to decide on all issues regarding the company's daily businesses;
- to implement decisions of the board of directors;
- to organise the implementation of business plans and investment plans of the company;
- to propose plans on the organisational structure and internal management rules of the company;
- to appoint and dismiss senior management personnel in the company, except those who are appointed by the board of directors;
- to establish the salary and allowance policy for employees of the company.

Chapter 5

An Overall Description of the Sample

5.1. Introduction

As mentioned in Chapter 1, one of the main aims of this thesis is to measure the impact of equitisation on firm performance in Vietnam. In order to achieve this objective, both qualitative and quantitative methods are used. The qualitative method, in the form of two case studies presented in Chapter 4, provides some details regarding the process of equitisation and the impact of equitisation on firm performance. However, the results obtained from these case studies cannot be used to generalise on the impact of equitisation in Vietnam. In order to quantitatively assess the impact of equitisation in Vietnam, statistical information on a broader group of firms is needed. Therefore, firm-level data are required. Since this information is not readily available, a survey has been conducted.

In the first quarter of 2004, 88 equitised firms mostly in the southern region of Vietnam have been interviewed. The survey focused on the equitisation process, corporate governance, employment, and performance of the equitised firms. Another survey of 84 SOEs was organised in June 2005. Moreover, data of some 33 equitised firms were obtained in other ways (detailed description presented in the next section). The aim of this chapter is to describe the surveys and to give some details about the sample as well as some information on the equitisation process in Vietnam.

The remainder of this chapter proceeds as follows. Section 5.2 explains the data collection. In Section 5.3, a statistical description of the sample is presented. Preliminary results regarding some aspects of the equitisation process derived from the survey are summarised in Section 5.4. Section 5.5 covers the ownership structure and corporate governance of the equitised firms. Finally, Section 5.6 concludes the chapter.

5.2. Description of data collection

To collect data and information for the empirical study on the impact of equitisation on firm performance, interviews among both equitised firms and SOEs were held. In order to develop questionnaires, a pilot survey of 15 equitised companies and 15 SOEs was conducted during the first quarter of 2003 in the Mekong River Delta (MRD) region by interviewing the chairperson of the board of directors or the manager of these firms. The pilot survey helped to uncover the real situation of equitised firms and to identify possible irrelevant questions. Based on the pilot survey, the irrelevant questions were eliminated or modified and some new questions were added. The questionnaires had to be revised several times before reaching the final version that served to obtain the data set used in Chapter 6[6].

The first survey, which took place from March 15 to April 30 2004, focused on equitised firms. To measure the impact of equitisation on firm performance, this study first compares post-equitisation performance indicators of equitised firms to pre-equitisation ones. Therefore, the firms that were chosen for being included in the first survey had to satisfy two conditions. First, they have to be former SOEs and, second, their financial information should be available and sufficient (at least one year before and after equitisation). Additionally, to serve as the basis for the collection of data for the so-called "difference in differences" (DID) method a second survey on SOEs was conducted, from March 20 to May 20 2005. Both of the surveys took place in the southern region of Vietnam [Ho Chi Minh City (HCMC) and the Mekong River Delta (MRD)] because of budget limitations.

In the surveys, three public officers who have worked for Local SOEs Reform Boards[7] and four researchers of Ho Chi Minh City (HCMC) Institute for Economic Research were asked to do the surveys. In addition, I also participated in the surveys as an interviewer and interviewed about 25 equitised firms. It is important to note here that the selection of the public officers as interviewers may have influenced the results because interviewees may provide distorted data in order to receive some benefits from the government through the public officers. However, it is impossible to acquire the information of many equitised firms in the context of Vietnam if interviewers would not already have a good relationship with respondents (managers of firms). Consequently, the study had to rely on the access of the interviewers to the firms concerned.

Since the number of equitised firms in the region that satisfy the conditions mentioned above was limited, we decided to try to interview all of them.

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[6] The entire questionnaires are presented at the end of the thesis.
[7] Each province has its own SOEs Reform Board.

Unfortunately, some of them absolutely refused when interviewers tried to contact them. Consequently, only 88 equitised firms were interviewed. A similar approach in the second survey among SOEs resulted in financial information of 84 SOEs.

Beside the direct interviews, mail interviews among equitised firms from other parts of Vietnam were also used to obtain data and information for the study. For this purpose, about one hundred equitised firms were selected for the survey from the list of equitised firms. However, this survey was not successful in that only four questionnaires with complete information were sent back.

Furthermore, data and information on equitised companies were obtained in other ways. First, financial data of and other information on listed companies were collected by downloading information from their websites. By regulation these companies have to all their financial information to investors. Second, we contacted some organisations that have stored the information and data of equitised companies, for providing these data. As a result, a data set of 21 equitised firms from Northern provinces was acquired. These data contain some useful information, but not as much as expected. Specifically, they include several pre- and post-equitisation performance measures, such as sales, income, number of employees, average salary of employees, and return on equity. However, information regarding the equitisation process, ownership structure and corporate governance of these firms is not available.

Finally, by combining the data from different sources a data set of 121 equitised firms and 84 SOEs is available for the empirical study. Some descriptive statistics of the sample are presented in the following section.

5.3. Descriptive statistcs of the samples

5.3.1. Structure of the samples

The sample of equitised firms

According to Decree 44/1998/ND-CP, issued in June 1998 and Decree 64/2002/ND-CP, issued in June 2002, SOEs to be selected for equitisation can be central state enterprises, local state enterprises or a unit of large SOEs. The central state enterprises have been controlled by the ministries or Prime minister and usually are large ones in terms of sales and employees. A survey conducted by the General Statistical Office in 2003 shows that a central state enterprise, on average, has VND 231 billion in sales and 704 employees. Contrary to the central state enterprises, most local state enterprises are of a small or medium size. Indeed, average sale of the local state enterprise is only VND 44 billion, and the average

number of employees is 246. In the sample, local state enterprises and central state enterprises account for 57.9 and 24.8 percent respectively while the third category, unit of a large SOE, makes up 17.3 percent. Categories of the surveyed firms are presented in the first part of Table 5.1.

Table 5.1: Equitised firms classified by categories, sectors, and locations

	Number of firms	Percentage (%)
Categories of the surveyed firms		
– Central State Enterprises	30	24.8
– Local State Enterprises	70	57.9
– Unit of a large SOE	21	17.3
Total	121	100.0
Main business of the firms		
– Manufacturing	69	57.0
– Trade and services	52	43.0
Total	121	100.0
Location		
– MRD region	38	31.4
– HCMC	58	47.9
– Northern part of Vietnam	21	17.4
– Central part of Vietnam	4	3.3
Total	121	100.0

Source: Own survey in 2004

To serve as the basis for the empirical study in the following chapter, the sample firms are also classified into two groups depending on their main business: manufacturing, and trade and services. Manufacturing firms account for 57 percent of the sample while trade and service firms contribute 43 percent to the sample. Regarding the location of the firms, Table 5.1 shows that firms located in HCMC and the MRD account for 47.9 and 31.4 percent of the sample, respectively. In total, 79.3 percent of the entire sample comes from the MRD and HCMC. In addition, firms situated in the North make up 17.4 percent of the sample. Finally, the rest of the sample firms (3.3 percent) consist of equitised firms from the central part of Vietnam.

The sample of SOEs

The structure of the sample of SOEs by sectors and locations is presented in Table 5.2. It can be seen from the table that the sectoral distribution of the surveyed SOEs is similar to that of the sample of equitised firms. Specifically, 51.2 percent of SOEs are in manufacturing, while trade and service SOEs account for 48.8 percent of the sample. Unlike the sample of equitised firms, the survey of SOEs focuses only on SOEs in the MRD and HCMC. Indeed, Table 5.1 shows that SOEs located in the MRD dominate the sample, accounting for 83.3 percent of the sample while SOEs situated in HCMC contribute to the sample by only 16.7 percent.

Table 5.2: Sample structure of the surveyed SOEs by sectors and locations

	Number of firms	Percentage
By sectors		
Manufacturing	43	51.2
Trade and services	41	48.8
Total	84	100.0
By location		
MRD region	70	83.3
HCMC	14	16.7
Total	84	100.0

Source: Own survey in 2005

5.3.2. Size of the samples

In this sub-section, the size of both equitised firms and SOEs is measured by the firm's chartered capital. Chartered capital is defined as the capital to be contributed by shareholders, as recorded in the firms' charter. The chartered capital to be included in this survey is the capital at the end of 2003. The charter capital of the surveyed firms is presented in Table 5.3.

The sample of equitised firms

Table 5.3 shows that the chartered capital of equitised firms varies enormously. It ranges from VND 590 million to VND 150,000 million, with a standard deviation

of 121,233. Additionally, the mean of the chartered capital of the equitised firms is VND 14,546 million. Furthermore, firms with capital above VND 10 billion represent 47 percent of the sample while firms having capital less than VND 10 billion account for 53 percent of the sample (see Table 5.4).

Table 5.3: Chartered capital of the surveyed firms (million VND)

	Obs.	Min.	Mean	Median	Max.	St. dev.
Equitised firms	100	590	14,546	8,902	150,000	121,233
SOEs	84	981	19,175	10,863	99,974	22,168

Source: Own surveys in 2004 and 2005

Table 5.4: Distribution of the sample of the surveyed firms by chartered capital

Chartered capital of the firms	Number of firms	Percentage (%)
Equitised firm		
Less than 5 billion VND	31	31,0
From 5 to 10 billion VND	22	22,0
More than 10 billion VND	47	47,0
Total	100	100,0
SOEs		
Less than 5 billion VND	19	22.6
From 5 to 10 billion VND	22	26.2
More than 10 billion VND	43	51.2
Total	84	100.0

Source: Own surveys in 2004 and 2005

The sample of SOEs

Table 5.3 shows that charter capital of the SOEs ranges from VND 981 million to VND 99,974 million, with an average of VND 19,175 million. Regarding the structure of the SOEs by chartered capital, Table 5.4 reveals that firms having capital more than VND 10 billion account for 51.2 percent while firms having capital less than VND 10 billion make up 48.8 percent of the sample.

5.4. Some aspects of the equitisation process: results from the survey

5.4.1. Duration of the equitisation process

As mentioned in Chapter 4, the process of equitisation is complicated, with many steps to be taken. Therefore, the firm has to spend much time on completing the process. Indeed, the survey indicates that the duration of the process ranges from 1 to 44 months, with an average of 13.2 months. Moreover, firms that have more than VND 10 billion take more time to complete the equitisation process than firms having less than VND 10 billion in terms of charter capital. Specifically, the mean equitisation period is 15.9 months for the former, and 11.6 months for the latter group.

Table 5.5: Duration of the equitisation process of the sample (number of months)

	Obs.	Min.	Mean	Median	Max.	St. dev.
Equitised firms having chartered capital to 10 billion VND	53	1.0	11.6	12.0	42.0	8.0
Equitised firms having chartered capital more than 10 billion VND	33	5.0	15.9	14.0	44.0	9.1
Total sample	86	1.0	13.2	12.0	44.0	8.6

Source: Own survey in 2004

The duration of the equitisation process have been significantly reduced since the promulgation of Decree 44-CP/TTg on "Transforming SOEs into joint stock companies" (1998). In fact, according to the findings derived from a survey of 14 equitised firms that were equitised from 1992 to the end of 1997, conducted by Mekong Project Development Facility (MPDF), the duration of the equisation process ranged from 9 to 79 months, with an average of 27 months. Since the selected firms in our survey were mostly equitised after the year of 1998, these results imply that Decree 44 has been instrumental in shortening the equitisation period.

5.4.2. Reasons for equitisation

In order to determine the main reasons that encourage the SOEs to equitise, the question "what are the main reasons that you decided to equitise your firm?" is

added in the questionnaire. Interviewees were asked to grade four possible reasons. The respondents are asked to grade each reason as follows: (1) = Very unimportant, (2) unimportant, (3) neutral, (4) important, and (5) very important. The ranking is presented in Table 5.6.

Table 5.6: Ranking of the reasons for equitisation

Reasons	Obs.	Min.	Mean	Median	Max.	St. dev.
Tax advantages	88	1.0	2.7	2.0	5.0	1.1
Improving firm performance	88	2.0	4.5	5.0	5.0	0.7
Mobilising more capital at low cost	88	1.0	2.9	3.0	5.0	1.2
Obligated by the government	88	1.0	3.6	4.0	5.0	1.4

Source: Own survey in 2004

According to Table 5.6, "improving firm performance" is the most important reason (4.5 points) to stimulate SOEs to equitise. Many respondents say that equitisation is the best way to restructure the firm and encourages employees to work efficiently because their benefits are derived from the firm's performance. Thus, firm performance would improve following equitisation. The second reason that led to equitisation of the firms is being "obligated by the government" (local or central government). Surprisingly, tax exemption (income tax) and mobilising more capital, according to the respondents, are not the main reasons to encourage them to equitise their firms. They assert that tax advantages do not significantly contribute to the performance of their firms. Similarly, some of the respondents think that mobilising more capital by issuing new shares is not the most efficient way to achieve good performance because the issue could reduce shareholders' dividend. Therefore, instead of issuing new shares, the firms should ask for loans from commercial banks. Practically, it is not difficult for these firms to borrow capital from the banks.

5.4.3. *Main problems and constraints in the implementation of equitisation*

As mentioned in Chapter 2, the equitisation programme has progressed slowly. In order to discover the causes of this slow progress, the following question has been added: "*Please indicate the importance of the following constraints and problems that may be the causes of the slowness of the equitisation process*". The question helps to grasp the perception of the key persons in the equitised firms about this

issue. This question provides a list of constraints that are derived from the pilot surveys and articles. In addition, the respondents could add some more constraints that they think are of importance, but were not included in the question. Each constraint is assigned ranking points formulated as follows: (1) = Very unimportant, (2) unimportant, (3) neutral, (4) important, and (5) very important. The importance of these constraints is summarised in Table 5.7.

Table 5.7: The main constraints and problems in the equitisation process

Reasons	Obs.	Min.	Mean	Median	Max.	St. dev.
Firm evaluation	86	1,0	4,0	4.0	5,0	0,9
Legal constraints	86	1,0	3,4	4.0	5,0	1,0
Administrative constraints	86	1,0	3,4	4.0	5,0	1,0
Unwillingness of the SOEs' managers	86	1,0	3,1	3.0	5,0	1,2
Debt settlement	86	1,0	3,7	4.0	5,0	1,1

Source: Own survey in 2004

According to Table 5.7, firm evaluation is the biggest constraint in the process of equitisation. As described in Chapter 2, the firm evaluation procedure is complicated since the state wants the firm value to be accurately assessed with this procedure. Consequently, it needs ample time to follow the procedure carefully. Moreover, debt settlement is known as one of the constraints causing slowness in the equitisation process. As a result of soft budget constraints, most SOEs in Vietnam have had a high debt ratio[8], and part of the debt has become bad debt. Since the bad debt has existed in most SOEs for a long period, the documents underlying the debts might not be found. Therefore, it is difficult to identify who was associated with the bad debt. As a result, it is time-consuming to deal with the issue of debt settlement before the equitisation is approved. Furthermore, legal and administrative constraints are seen as determinants that have slowed down the pace of the equitisation process. However, these constraints are unlikely to significantly affect the process. Additionally, many people believe that unwillingness of SOE managers can harm the implementation of equitisation. However, according to the results of the survey this is not true in practice since the average ranking is only 3.1.

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[8] The next chapter will discuss this issue in more detail.

5.4.4. *Labour issues of the equitised firms following equitisation*

This sub-section describes changes in employment during the pre and post-equitisation periods. The changes in employment of the surveyed firms are shown in Table 5.8.

Table 5.8: Pre and post-equitisation numbers of employees

	Obs.	Min.	Mean	Median	Max.	St. dev.
Pre-equitisation number of employees	119	11	352	159	3,681	575
Post-equitisation number of employees	119	12	382	155	3,695	615
No. of fired employees	35	2	24	12	149	31
No. of hired employees	72	1	42	14	629	82

Source: Own survey in 2004

Table 5.8 shows an increase in employment of the surveyed firms following equitisation. Specifically, mean employment increases from 352 employees in the pre-equitisation period to 382 employees in the post-equitisation period. Furthermore, the inflow and outflow of employees are examined by asking the respondents to provide information regarding the number of fired and hired employees, and the kinds of these employees (trained or untrained). Firms that have fired employees since equitisation account for 40.2 percent of the sample. In these firms, the number of fired employees range from 2 to 149, with an average of 24 employees. 65.7 percent of firms have fired both trained and untrained employees while 22.9 percent of firms laid-off only untrained employee, and the rest (11.4 percent) has fired trained employees.

Many equitised firms have hired new employees following equitisation. Following equitisation, 83.9 percent of the sample has hired new employees. In these firms, 42 employees, on average, are hired. The equitised firms have paid special attention to the quality of employees in recruiting new employees in that 61.6 percent of the firms have hired only trained employees while only 4.1 percent of firms hired untrained employees, and the rest (34.2 percent) hired both trained and untrained employees.

5.5. Ownership structure and corporate governance of the equitised firms

5.5.1. Ownership structure

A firm's ownership structure usually has a strong effect on corporate governance and the performance of equitised firms. Shareholders of surveyed firms are classified into three groups, namely the state, insiders (employees) and outsiders (including domestic and foreign investors). The ownership structure of the surveyed firms is summarised in Table 5.9.

Table 5.9: Ownership structure of equitised firms at the time of the first shares issue (percentage)

Ownership	Obs.	Min.	Mean	Median	Max.	St. dev.
State	100	0.0	29.8	30.0	77.6	16.5
Insiders	100	5.3	36.1	33.5	100.0	20.8
Outsiders	100	0.0	34.1	32.0	78.1	19.1
Total			100.0			

Source: Own survey in 2004

It is noteworthy that the ownership structure presented in Table 5.9 is based on the ownership situation at the time of the first shares issue. According to Table 5.9, state ownership ranges from zero to 76.6 percent, accounting for, on average, 29.8 percent of the total shares of the surveyed firms. In addition, the state does not hold any shares in only seven firms of the sample, but these firms are small, their capital being less than 5 billion VND. Moreover, equitised firms in which the state holds at least 30 percent of total issued shares account for 50 percent of the total surveyed firms. Firms where the state owns more than 50 percent of total shares made up 14 percent of the sample.

The second group of shareholders consists of insiders who are employed by the firm. Employees' shares range from 5.3 to 100 percent, with an average share of 36.1 percent. Finally, shares owned by outside investors account for 34.1 percent of the total shares of the surveyed firms. Especially, foreign investors have been shareholders of seven firms and their shares, on average, in these firms account for about 13.7 percent of the total issued shares.

Based on the ownership structure presented in Table 5.9, it can be concluded that the state still holds a remarkable share in the equitised firms, especially in large and

profitable firms. The high share is not surprising because, according to Decision 58/2002/QD-TTg issued by Prime minister on April 26 2002, the state must hold more than 50 percent of the total shares in firms that have more than VND 10 billion in capital and are profitable in three consecutive years. In these firms, it is difficult for outside investors to purchase shares, even any share because the number of shares sold to outsiders is very limited. Instead, employees of these firms, public officers related to the firms and their relatives and friends are the main non-state shareholders of these firms.

Table 5.10: The sample structure by the state's share

State ownership	Frequency	Percentage (%)
Less than 30%	50	50.0
From 30% to 50%	36	36.0
More than 50%	14	14.0
Total	100	100.0

Source: Own survey in 2004

To measure the changes in ownership structure of the firms after equitisation, the question "*Has the ownership structure changed since equitisation*?" is included in the questionnaire. As a result, 45 percent of surveyed firms answer "yes", 33 percent answer "no" and the rest of the sample did not answer. The new ownership structure of the firms at the time the survey conducted is presented in Table 5.11.

Table 5.11: New ownership structure of the firms (percentage)

Ownership	Obs.	Min.	Mean	Median	Max.	St. dev.
State	78	0.0	27.5	29.0	77.6	17.9
Insiders	78	4.1	36.5	33.1	100,0	21.7
Outsiders	78	0.0	36.0	34.0	82.3	21.4
Total			100.0			

Source: Own survey in 2004

According to Tables 5.9 and 5.11, it can be seen that no significant change in the ownership structure is observed following equitisation. Specifically, the state's share shows a small decrease, from 29.8 percent to 27.5 percent, while the employee ownership is almost stable. The ownership of outside investors lightly increases after equitisation, from 34.1 percent to 36.0 percent.

In general, ownership structure has a considerable effect on corporate governance of the firms. As mentioned above, the state holds significant shares in the equitised firms, so it could still play an important role in governing the firms after equitisation. The next section will reveal more details about this issue.

5.5.2. *Corporate governance*

Corporate governance can be defined as the system of mechanisms by which a company is directed and controlled. General issues regarding corporate governance in Vietnam are stipulated in the Enterprise Law. As presented in the Appendix 4.1 (Chapter 4), the governance structure for Vietnamese equitised firms is a two-tier board system with a separate supervisory board which is similar to what has been employed in Germany, The Netherlands and some other European countries. However, the power of the supervisory board in Vietnamese equitised firms is rather limited compared to that of the supervisory board in German or Dutch companies. For instance, in Vietnam the supervisory board does not have any rights to appoint and remove members of the board of directors, but in Germany and the Netherlands the supervisory board has full authority to take these actions.

The board of directors

By regulation, the board of directors is elected by shareholders and does not have more than eleven members. Results of the survey report that the board of directors is made up of three to eleven members drawn from the three main groups of shareholders. On average, the board of directors has six members, in which one represents the state, three represent insiders, and two represent outside investors.

Although there is only one member representing the state in the board of directors, the position of chairperson of the board is essentially assigned to the state's representative. In fact, among 98 equitised firms that gave full information regarding the board of directors, 72 firms (accounting for 73.5 percent of the total firms) have a chairperson of the board representing the state. As mentioned above, the state controls a large number of shares, so it is not so difficult for the state to take this position. Furthermore, 18 firms have a chairperson of the board who represents insiders (18.4 percent); the rest (only 8.2 percent of the sample) have a chairperson of the board who represents outside investors. The distribution of

chairpersons of the board of directors in the sample over different backgrounds is presented in Table 5.13.

Table: 5.12: The composition of the board of directors

	Obs.	Min.	Mean	Median	Max.	St. dev.
Number of directors representing the state	98	0	1	1	6	1
Number of directors representing insiders	98	0	3	3	9	2
Number of directors representing outsiders	98	0	2	1	6	1
Total number of directors	98	3	6	5	11	1

Source: Own survey in 2004

Table: 5.13: Distribution of chairperson of the board of different backgrounds

	Frequency	Percentage (%)
Chairperson of the board representing the state	72	73,5
Chairperson of the board representing insiders	18	18,4
Chairperson of the board representing outsiders	8	8,2
Total	98	100,0

Source: Own survey in 2004
The board of supervisors

Similar to the board of directors, the board of supervisors is also elected and removed by shareholders. The board of supervisors of the surveyed firms has two to five members, with an average of three members. Among three members of the board one represents outside investors, and the rest represent insiders and the state. The composition of the board of supervisors is shown in Table 5.14.

Surprisingly, the findings of the survey reveal that insiders serve as the chairperson of the supervising board in over half of the surveyed firms (54.1 percent). In addition, the state's representative is appointed as the chairperson of the board in 23 equitised firms, accounting for 23.5 percent of the sample. Finally, the remaining firms (22.4 percent of the sample) have a chairperson representing outside investors. The distribution of chairpersons of the boards of supervisors over different backgrounds is shown in Table 5.15.

Table 5.14: **C**omposition of the board of supervisors

	Obs.	Min.	Mean	Median	Max.	St. dev.
Number of supervisors representing the state	98	0	0	0	1	0
Number of supervisors representing insiders	98	0	2	2	4	1
Number of supervisors representing outsiders	98	0	1	1	3	1
Total number of supervisors	98	2	3	3	5	0

Source: Own survey in 2004

Table 5.15: Chairpersons of the board of supervisors by different backgrounds

	Frequency	Percentage (%)
Chairperson of the board representing the state	23	23.5
Chairperson of the board representing insiders	53	54.1
Chairperson of the board representing outsiders	22	22.4
Total	98	100.0

Source: Own survey in 2004

Manager/General manager (CEO)

According to the Enterprise Law, the board of directors appoints the manager of equitised firms who, on behalf of the board of directors, is responsible for the management of the firm. Therefore, the ownership structure has a strong effect on this appointment. As mentioned above, the state still is a dominant shareholder in equitised firms. Thus, very often the representative of the state takes the position of manager in equitised firms. In fact, according to the results of the survey, firms that have a manager representing the state account for 69.4 percent of the sample. In addition, firms which have a manager who represents outside investors make up only 4.1 percent of the sample. Finally, the rest (26.5 percent of the sample) have a manager who represents insiders.

Table 5.16: Distribution of manager of surveyed firms by different backgrounds

	Frequency	Percentage (%)
Manager representing the state	68	69.4
Manager representing insiders	26	26.5
Manager representing outsiders	4	4.1
Total	98	100,0

Source: Own survey in 2004

5.6. Conclusion

This chapter describes the sample and briefly summarizes some findings of the survey on the equitisation process, the ownership structure and corporate governance of the equitised firms. The entire sample includes 121 equitised firms and 84 SOEs. Most firms in the sample are located in the southern part of Vietnam. The survey reveals that in general firms need much time to complete the process of equitisation due to problems and constraints. Among these problems and constraints, firm evaluation and debt settlement are the most predominant. Regarding ownership structure and corporate governance of the equitised firms, it is found that the state still holds a large number of shares in the equitised firms, so it continues to play a decisive role in the firms after equitisation. This chapter has given an overall picture of the process of equitisation in Vietnam, but does not make any analysis about the impact of equitisation on firm performance. The next chapter will deal with this issue.

Chapter 6

The Impact of Equitisation on Firm Performance in Vietnam: An Empirical Study

6.1. Introduction

During the last decades, privatisation has become an important part of the economic reforms in transition economies. Most governments expect that through launching privatisation programmes firm performance will improve. Like in other transitional countries, the Vietnamese government launched a privatisation process (named "Equitisation Programme") in 1992 as part of the State-Owned Enterprise Reform Programme. This chapter aims to examine the impact of this programme on firm performance by using data of 121 equitised firms and 84 SOEs. Following the methodology of Megginson, Nash and Randenborgh (1994), the chapter first compares the pre to post-equitisation financial and operating performance of the full sample of firms. Then, the sample is partitioned into several sub-groups based on factors that the literature has documented as being potentially important in determining firm performance following privatisation, and statistical tests are conducted for detecting significant changes in performance between sub-samples. In addition, to measure the sources of performance changes, a cross-sectional regression analysis is applied. Finally, to overcome the shortcoming of the pre-post comparison method that it is unable to isolate the impact of privatisation on firm performance from that of other determinants such as macroeconomic factors, the so-called difference-in-differences (DID) method is employed.

The rest of this chapter proceeds as follows. Section 6.2 presents the testable predictions and methodology that are used to test for the impact of equitisation on firm performance. The empirical results from the pre-post comparison method are summarised and discussed in Section 6.3 while Section 6.4 reports the outcomes of

the regression analyses. The DID method and empirical results from this method are given in Section 6.5. Finally, Section 6.6 concludes the Chapter.

6.2. Hypotheses and methodology

Privatisation is usually seen as a means to improve the performance of the firms in question. To examine the impact of privatisation on financial and operating performance of firms, many studies compare pre- and post-privatisation performance measures (Megginson *et al.*, 1994, Boubakri and Cosset, 1998, D'Souza and Megginson, 2001, Harper, 2002). Because the first study published using this methodology was Megginson, Nash and Randenborgh (1994), the methodology is usually referred to as the MNR methodology (Megginson and Netter, 2001). In this chapter, the methodology is applied to measure the effects of equitisation on firm performance in Vietnam. Some of the measures used in the MNR methodology, such as capital investment and dividends, cannot be employed in the study due to a lack of the necessary data. Moreover, some of the measures have to be adjusted to the Vietnamese situation. Specifically, income before tax is used to calculate profitability of firms instead of net income as in the MNR methodology. Similarly, net income efficiency is replaced by income-before-tax efficiency. An explanation for this adjustment is that in Vietnam the equitised firms have some income-tax advantages for the first years after equitisation, so to avoid a bias in measuring the impact of equitisation *per se* on profitability, income before tax has to be used instead of net income.

To measure the effects of equitisation on firm performance, performance measures are calculated for every firm for the years before and after equitisation. Then, the mean of each measure is computed for each firm over the pre-equitisation (years –3 to –1) and post-equitisation (years +1 to +3) period. However, it is important to note here that firms that have data for only one year before and after equitisation are also included in the sample. The aim of the inclusion is to enlarge the sample[9]. Because the year of equitisation includes both public and private ownership phases for many firms, it is eliminated from our analyses.

It is expected that if firms move from public to private ownership, their profitability increases. First, privatisation leads managers to focus on profit goals because under private ownership, management is directly responsible to shareholders (Yarrow, 1986). Second, to the extent that privatisation transfers both control rights and cash flow rights from politicians to managers, profitability increases through efficiency

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[9] We also conducted some analyses with a two-year and one-year data screen to find out the possible impact of the number of years included in the calculations. However, the results were very similar to those presented in this chapter.

gains in the form of redress of the excess labour spending that politicians needed for electoral reasons (Boycko *et al.*, 1996). Similarly, after privatisation firms should employ their human, financial and technological resources more efficiently because of a greater stress on profit goals and a reduction of government subsidies (Kikeri *et al.*, 1992 and Boycko *et al.*, 1996). Moreover, it is also expected that output (sales revenues) will increase following privatisation, because of better incentives, more flexible financing opportunities and greater scope for entrepreneurial initiative (Megginson *et al.*, 1994). Regarding leverage, the shift from public to private ownership can be expected to lead to a decrease in the share of debt in the capital structure since with the end of government debt guarantees the firm's cost of borrowing will increase and the firm has new access to public equity markets (Megginson *et al.* 1994). In addition, if bankruptcy costs are significant, once government guarantees are removed the newly privatised firm should reduce its debt (Boubakri and Cosset, 2002). Furthermore, we expect that the level of employment would decline once the SOE, which is usually overstaffed, turns private and no longer receives government subsidies. Finally, once the productivity of newly-privatised firms increase as a result of privatisation, employee income should improve. Table 6.1 presents definitions and expected changes of the performance measures investigated in this chapter.

Given a general improvement in performance as a result of privatisation, the literature documents that differences would arise due to differences in size, sector, ownership structure, corporate governance and capital market discipline (Comstock *et al.*, 2003; Harper, 2002; D'Souza *et al.*, 2001; Pistor and Turkewitz, 1996). Therefore, in the next step the data are divided into five sub-samples.

First, the firms are partitioned into two groups, larger firms and smaller firms, based on their pre-equitisation real sales average. Firms with a pre-equitisation real sales average above the median of the sample are referred to as larger firms; otherwise they belong to the second group of smaller firms. The literature is not unambiguous about the role of firm size in performance improvement after privatisation. On the one hand, Comstock *et al.* (2003) suppose that larger firms will enjoy greater improvements in their performance due to being better prepared for the post-privatisation environment, especially in terms of facing competition[10]. On the other hand, Harper (2002) argues that smaller firms will show greater improvement in performance after equitisation than larger firms because it would be easier for them to restructure and adjust their business. In addition, it could be relevant in the case of Vietnam that the residual state share in small equitised firms is usually lower than for large firms. As will be discussed later in this section, the

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[10] The study, however, assumes that privatisation is equivalent to the introduction of competition, which conceptually is incorrect. See, *e.g.,* Shirley and Walsh (2000) for a discussion in which competition and firm ownership are clearly distinguished conceptually.

literature suggests that the percentage of state ownership in newly-privatised firms has a negative effect on firm performance after privatisation.

Table 6.1: Performance measures: definitions and expected changes

Performance measures	Definition	Expected change
1. Profitability		
Income before tax on assets (IBTA)	Income before tax/total assets	Increase
Income before tax on sales (IBTS)	Income before tax/sales	Increase
Income before tax on equity (IBTE)	Income before tax/equity	Increase
2. Operating Efficiency		
Sales efficiency	Real sales/number of employees	Increase
Income efficiency	Income before tax/number of employees	Increase
3. Output (real sales)	Nominal sales/price index	Increase
4. Leverage	Total debt/total assets	Decrease
5. Employment	Number of employees	Decrease
6. Employee income	Annual income per employee	Increase

Next, a split is made on the basis of the sectors in which the firms operate: either trade and services or manufacturing. The underlying idea is that firms in the trade and services sector have an easier job in improving their performance since in this sector there is less need for investment in fixed assets that may be a necessary component of the adjustment process (Harper, 2002).

The literature further documents that ownership structure plays an important role in improving firm performance following privatisation. To measure such effects, the sample firms are divided into two subgroups on the basis of the median of the full sample (30 percent residual state-ownership). The reason to split the sample in this way is to generate subgroups with the same number of observations. It is expected that the former subgroup will show greater performance improvements than the latter one. The reason underlying this expectation is that the state as a shareholder has multiple interests - economic, social and political - that can be antagonistic to the interests of private shareholders in the direction of performance improvement (see, *e.g.*, Pistor and Turkewitz, 1996).

Additionally, to examine the impact of corporate governance on firm performance our sample is classified into firms that have a chairperson of the board of directors representing the state (FCBDRS), and firms that have a chairperson of the board of directors representing private investors (FCBDRP). In Vietnam, the board of directors has the highest authority to make decisions relevant to the company, except some issues that have to be approved by shareholders at the shareholders meeting. For instance, the board of directors exerts full power in the appointment or dismissal of the general manager and senior managers. It is expected that the improvements in performance measures are greater for firms in the latter group in that board chairpersons representing the private sector will give priority to improving firm performance and do not have to compromise with the other interests that state representatives have to take into account.

Moreover, the data are split into listed and non-listed firms. Listed firms are the equitised firms that have shares that are traded in the Ho Chi Minh City Stock Exchange. The corporate-governance literature suggests that stock-market listing provides important possibilities to monitor the management of firms. The fear of replacement and the linkage of compensation to performance stimulate a firm's management to maximise the firm's profit. Moreover, the listed firms could get other benefits from the listing of its shares on the stock market. First, through the stock market the firm can mobilize more capital at low cost. Second, since the firm's share price is publicly announced in many media, there are free channels for advertising the firm's image. Taking into account these factors, it is expected that listed firms have greater performance improvements than non-listed ones following equitisation.

Furthermore, the sample is divided into firms located in HCMC and other firms. HCMC is Vietnam's biggest city, and it is also the country's main economic centre. With the advantages of location, it is expected that firms in HCMC have larger gains in performance than firms in other regions.

As mentioned in Chapter 2, the equitisation programme in Vietnam consists of two stages, namely the pilot and expansion stages. Although the expansion stage officially started in 1996, the equitisation process only accelerated since the issuance of Decree No. 44 in mid-1998. Therefore, the sample is also partitioned into firms equitised before 1999 (January 1st, 1999) and other firms. Firms in the first group had to face some disadvantages such as lack of experience, the state's imperfect regulations and the short time for preparing equitisation compared to firms in the second group. Thus, the first group is expected to have lower performance gains than the second one.

6.3. Effect of equitisation on firm performance: Results from the pre-post comparison method

6.3.1. *Results for the full sample*

This section presents the empirical results for the full sample. The results are summarised in Table 6.2. It is important to note that before testing for significant changes in performance, the Jarque-Bera test was employed to examine whether the performance measures of the surveyed firms are normally distributed. The results (not reported in this paper, but to be obtained on request) are that the null hypothesis that the main variables in the sample are normally distributed is rejected for most measures. Consequently, the nonparametric two-tailed Wilcoxon signed-rank test is used to test for significant changes in the median of performance measures following equitisation[11]. The Wilcoxon signed-rank method tests the null hypothesis that the median difference in measure values between the pre and post-equitisation periods is zero. This test takes into account information about the magnitude of differences within pairs and gives more weight to pairs that show large differences than to pairs that show small differences. The test statistic is based on the ranks of the absolute values of the differences between the two measures[12]. Moreover, this study employs a proportion (binominal) test to determine whether the proportion (P) of firms with the anticipated changes is greater than what would be expected by chance, typically testing whether $P = 0.5$.

Profitability

Profitability is the most important indicator to measure the performance of firms. As expected, the results of the study show that all profitability ratios, to wit income before tax on assets (IBTA), income before tax on sales (IBTS), and income before tax on equity (IBTE), increase significantly after equitisation. Specifically, the mean (median) IBTA significantly increases (at the one percent level), from 9.35 (7.59) percent in the pre-equitisation period to 12.43 (10.82) percent in the post-equitisation period. Furthermore, Table 6.2 shows that a statistically significant 69.0 percent of the full sample has positive changes in IBTA. Similarly, the mean (median) of IBTS and IBTE increases from 6.10 (3.84) percent to 8.43 (6.04) percent, and from 22.92 (17.37) to 27.51 (22.94) percent respectively. These increases are significant at the one percent level. The results strongly confirm that

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[11] Statistically, the nonparametric Wilcoxon test is more powerful in detecting the existence of significant differences than the parametric t-test when the sample is not normally distributed.
[12] For a detailed description of the Wilcoxon signed-rank test, see Berenson *et al.* (1988).

equitisation in Vietnam has a positive effect on the profitability of the firms in question.

Efficiency

To measure efficiency this study uses the inflation-adjusted sales per employee and income before tax per employee. In addition, they are normalised to equal 1.00 in year 0 (the year of equitisation), so the figures for other years are expressed as a fraction of values of the efficiency measures in the year of equitisation. The results of the study reveal that both efficiency measures show a significant increase (at the one percent level) after equitisation. For instance, sales efficiency rises from an average (median) 1.02 (1.00) in the pre-equitisation period to 1.26 (1.14) in the post-equitisation period. Similarly, income efficiency increases from on average (median) 1.10 (1.00) during the pre-equitisation period to 3.21 (1.70) after equitisation. Furthermore, the proportion tests show that sales efficiency and income efficiency increase in 74.0 and 91.5 percent of the number of firms respectively, both significant at the one percent level. These results suggest that the equitised firms use their resources with much greater efficiency after equitisation.

Output

Output is measured by inflation-adjusted sales (real sales). Similar to the efficiency measures, real sales are also normalised to 1.00 in year 0. Using the Wilcoxon test it is found that real sales increase significantly (at the one percent level) following equitisation. Specifically, the mean (median) real sale increases from 1.00 (1.00) during the pre-equitisation period to 1.41 (1.19) after equitisation. The proportion test also shows a significant increase (at the one percent level) in real sales level after equitisation. In fact, 81.0 percent of the firms in the sample improve their real sales level in the years following equitisation. This result confirms that equitisation in Vietnam has a positive effect on the output of firms.

Leverage

To measure the effect of equitisation on the leverage of firms, this study compares the pre-equitisation ratio of total debt to total assets to the post-equitisation ratio. Many scholars believe that leverage is reduced following privatisation due to a combination of greater retained earnings and new share offerings. In the case of Vietnam, a decline in leverage is also found, but it is insignificant. In fact, the mean (median) leverage decreases from 52.99 percent (56.22 percent) over the pre-equitisation period to 50.06 percent (54.43 percent) in the years following

equitisation. The results further show that 52 percent of the sample firms reduce their debt ratio after equitisation. However, the proportion test indicates that the decline in leverage following equitisation is insignificant. Clearly, the effect of equitisation on leverage of firms in Vietnam is not significant. The debt ratio of equitised firms is still high following equitisation, 50 percent on average.

Employment

The literature documents that the effect of privatisation on employment is ambiguous. Some researchers (Megginson *et al.*, 1994 and Boubakri and Cosset, 1998) report an increase in employment after privatisation while other authors (La Porta and López-De-Silanes, 1999, and Harper, 2002) found a significant decline in the number of employees after privatisation, which is in line with the theoretical model of Boycko *et al.* (1996) referred to earlier in this thesis. The results obtained from this study are consistent with the findings of Megginson *et al.* (1994) and Boubakri and Cosset (1998) in that employment does not decrease significantly over the post-privatisation period. Specifically, mean employment increases by 30 employees after equitisation, from 352 to 382 employees, although the Wilcoxon test shows that this increase is insignificant. Contrary to this test, the proportion test reveals that the increase in employment is significant at the one percent level, with 63.9 percent of the sample firms having an increased employment level following equitisation.

Employee income

This study measures the change in employee income by calculating the change in inflation-adjusted annual income per employee. The results of the study reveal that the mean (median) inflation-adjusted annual income per employee rises from 12.2 million VND (11.3 million) in the pre-equitisation period to 17.3 million VND (14.9 million) in the post-equitisation period, and 88.4 percent of the sample firms report to pay higher salaries to their employees. Both the Wilcoxon and proportion tests show that the increase in inflation-adjusted annual income per employee is significant at the one percent level.

In short, the results suggest that equitisation has positive effects on firm performance in Vietnam. It is found that profitability, efficiency, and output of equitised firms increase significantly after equitisation. In addition, the study documents a decline in leverage (measured by total debt to total assets) of firms in the post-equitisation period, although it is statistically insignificant. Remarkably, the results show no evidence of a significant decline in employment in the years following equitisation. Finally, the findings confirm that equitisation results in

Table 6.2: Summary of results from tests of expected results for the full sample of all equitised firms

Measures	N	Mean (median) before	Mean (median) after	Mean (median) change	Z-Statistic for difference in medians (after – before)	Proportion of firms that performed as expected	Z-Statistic for significant of proportion change
Profitability							
IBTA	100	0.0935 (0.0759)	0.1243 (0.1082)	0.0308 (0.0323)	2.69[a]	0.690	3.80[a]
IBTS	121	0.0610 (0.0384)	0.0843 (0.0604)	0.0233 (0.0220)	3.21[a]	0.793	6.44[a]
IBTE	121	0.2292 (0.1737)	0.2751 (0.2294)	0.0459 (0.0557)	3.36[a]	0.678	3.91[a]
Operating efficiency							
Sales efficiency (million VND)	119	1.0204 (1.0000)	1.2631 (1.1410)	0.2427 (0.1410)	4.82[a]	0.740	5.23[a]
Income efficiency (million VND)	118	1.1011 (1.0000)	3.2056 (1.6993)	2.1045 (0.6993)	9.23[a]	0.915	9.03[a]
Real sales (million VND)	121	1.0048 (0.9996)	1.4102 (1.1907)	0.4054 (0.1911)	7.67[a]	0.810	6.81[a]
Leverage							
Total debts/total assets	100	0.5299 (0.5622)	0.5006 (0.5443)	-0.0293 (-0.0179)	0.90	0.520	0.40
Employment (Number of employees)	119	352 (159)	382 (155)	30 (-4)	0.52	0.336	-3.58[a]
Annual income per employee (million VND)	95	12.2 (11.3)	17.3 (14.9)	5.1 (3.6)	3.41[a]	0.884	7.02[a]

[a] Significant at the 1% level

significant increase in employee income after equitisation. Especially, the results go against the hypothesis that performance improvements of privatised firms are derived from the excess labour spending that is characteristic of SOEs according to the model of Boycko *et al.* (1996). A possible explanation for this result may be that employees, holding substantial portions of shares of equitised firms in the case of Vietnam, are able to prevent reductions in employment of the firms in question and even are able to achieve rises in their income. The remarkable improvements in profitability and efficiency may be explained by the incentive effect of the income rises that stimulates the employees to work more efficiently.

6.3.2. Sub-sample results

To determine significant changes in performance measures between sub-samples, the Mann-Whitney U test is employed. The Mann-Whitney U test is used to examine whether or not two independently drawn samples came from the same population. This test is designed to test the null hypothesis that two populations are identical against the alternative hypothesis that they differ[13].

Larger firms versus smaller firms

Table 6.3 compares the performance changes of larger firms with the performance changes of smaller firms. As discussed above, the literature comes up with conflicting hypotheses regarding the role of firm size in post-privatisation performance improvement. The outcome of our comparison is that for most criteria smaller firms show greater performance improvements after equitisation than larger ones. Specifically, smaller firms report greater rises in IBTA, IBTS, IBTE, income efficiency, and employee income. For instance, the mean (median) increase in IBTS for the smaller firms is 2.30 percentage points (3.14 percentage points) higher than the larger firms, 3.47 percent (4.11 percent) compared to 1.17 percent (0.97 percent). Similarly, the mean (median) change in IBTE for smaller firms is 10.46 percent (6.86 percent) as compared to -1.37 percent (2.34 percent) for the larger firms. The Mann-Whitney test shows that the difference in performance changes between the two sub-samples is significant at the one percent level for IBTS, IBTE, and at the five percent level for income efficiency. No significant difference is found for IBTA and employee income. On the other hand, improvements in real sales and sales efficiency of the larger firms are greater than for the smaller firms. The mean (median) increase in real sales for the larger firms is 43.45 percent (21.37 percent) compared to 37.68 percent (16.78 percent) for the smaller firms, and the mean (median) improvement in sales efficiency for the larger firms is 6.82

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[13] For a detailed description of the Mann-Whitney test, see Zuwaylif (1984).

percentage points (0.37 percentage points) higher than for the smaller firms. The differences in improvements between the two sub-groups are significant at the five percent level for sales efficiency, but insignificant for real sales. Finally, the results show a significant difference (at the one percent level) in the employment change between the two sub-groups. Specifically, the mean (median) increase for the larger firms is 58 (48) employees while this increase is only 3 (8) employees for the smaller firms.

To sum up, for almost all criteria smaller firms show a greater performance improvement following equitisation than larger ones, thereby supporting the Harper (2002) hypothesis that smaller firms are more flexible in adjusting to the new environment.

Trade and services firms versus manufacturing firms

Performance comparisons of trade and services firms to manufacturing firms are presented in Table 6.4. The empirical findings show that after equitisation both sub-groups report significant changes in the predicted direction for all measures, except for leverage and employment. However, for different measures the pattern is different between the two subgroups. Indeed, greater changes in IBTA, IBTE, real sales, income efficiency, and employee income are found for the first sub-group. On the other hand, somewhat higher improvements in IBTS, sales efficiency, leverage, and employment are reported for the manufacturing firms. However, the Mann-Whitney test shows that the differences between the two subgroups are not statistically significant for all performance measures.

Firms with residual state ownership less than 30 percent versus firms with the residual state ownership greater than or equal to 30 percent

The results presented in Table 6.5 show that firms with residual state ownership of less than 30 percent have greater performance improvements in profitability, income efficiency, employment, and employee income than firms where residual state ownership is greater than or equal to 30 percent. For instance, the mean (median) gain in IBTS for the former sub-group is 4.02 percent (3.78 percent), while this increase for the latter is only 1.72 percent (1.92 percent). Moreover, it is found that the average employment increase for the firms with residual state ownership lower than 30 percent is 52 employees compared to 14 employees for the other group. However, the latter sub-group has greater improvements in real sales, sales efficiency and leverage. The differences found are, however, not statistically significant for any of the variables.

Table 6.3: Comparison of post-equitisation performance changes for larger and smaller firms

Measures	N	Mean (median) before	Mean (median) after	Mean (median) change	Z-Statistic for difference in medians (after – before)	Z-Statistic for difference in medians between sub-samples
IBTA						
Larger firms	55	0.0982	0.1237	0.0255		
		(0.0726)	(0.1013)	(0.0287)	1.73[c]	1.33
Smaller firms	45	0.0879	0.1251	0.0372		
		(0.0767)	(0.1159)	(0.0392)	2.16[b.]	
IBTS						
Larger firms	60	0.0490	0.0607	0.0117		
		(0.0379)	(0.0476)	(0.0097)	1.79[c]	3.42[a]
Smaller firms	61	0.0728	0.1075	0.0347		
		(0.0432)	(0.0843)	(0.0411)	2.97[a]	
IBTE						
Larger firms	60	0.2818	0.2681	-0.0137		
		(0.2091)	(0.2326)	(0.0234)	0.92	2.86[a]
Smaller firms	61	0.1774	0.2820	0.1046		
		(0.1528)	(0.2214)	(0.0686)	3.56[a]	
Sales efficiency						
Larger firms	58	1.0341	1.4523	0.4182		
		(1.0000)	(1.1584)	(0.1584)	3.12[a]	2.04[b]
Smaller firms	61	1.0074	1.3628	0.3554		
		(1.0000)	(1.1547)	(0.1547)	3.71[a]	
Income efficiency						
Larger firms	58	1.0330	2.7360	1.7030		
		(0.9909)	(1.3415)	(0.3506)	6.15[a]	2.24[b]
Smaller firms	61	1.1479	3.5995	2.4516		
		(1.0000)	(1.1911)	(0.1911)	6.83[a]	
Real sales						
Larger firms	60	1.0178	1.4523	0.4345		
		(0.9924)	(1.2061)	(0.2137)	6.22[a]	0.16
Smaller firms	61	0.9920	1.3688	0.3768		
		(1.0000)	(1.1678)	(0.1678)	4.59[a]	
Total debts/total assets						
Larger firms	55	0.5858	0.5353	-0.0505		
		(0.6154)	(0.5916)	(-0.0238)	1.20	1.70[c]
Smaller firms	45	0.4616	0.4583	-0.0033		
		(0.4487)	(0.4742)	(0.0255)	0.05	
Number of employees						
Larger firms	58	596	654	58		
		(307)	(355)	(48)	0.79	3.92[a]
Smaller firms	61	120	123	3		
		(93)	(101)	(8)	0.18	
Annual income per employee (million VND)						
Larger firms	40	14.2	17.8	3.6		
		(13.0)	(15.7)	(2.7)	2.25[b]	0.28
Smaller firms	55	10.8	16.9	6.1		
		(9.6)	(12.7)	(3.1)	2.63[a]	

[a], [b], [c] *Significant at the 1%, 5%, and 10% levels, respectively.*

Table 6.4: Comparison of performance changes following equitisation for trade and services firms and manufacturing firms

Measures	N	Mean (median) before	Mean (median) after	Mean (median) change	Z-Statistic for difference in medians (after – before)	Z-Statistic for difference in medians between sub-samples
IBTA						
Trade and services firms	47	0.0764	0.1102	0.0338		
		(0.0673)	(0.0807)	(0.0134)	1.64[c]	
Manufacturing firms	53	0.1087	0.1368	0.0281		0.46
		(0.0764)	(0.1241)	(0.0477)	2.13[b]	
IBTS						
Trade and services firms	52	0.0681	0.0894	0.0213		
		(0.0365)	(0.0607)	(0.0242)	1.73[c]	
Manufacturing firms	69	0.0557	0.0804	0.0247		0.75
		(0.0384)	(0.0604)	(0.0220)	2.97[a]	
IBTE						
Trade and services firms	52	0.1875	0.2456	0.0581		
		(0.1757)	(0.2237)	(0.0480)	2.17[b]	
Manufacturing firms	69	0.2606	0.2974	0.0368		0.27
		(0.1632)	(0.2498)	(0.0866)	2.59[a]	
Sales efficiency						
Trade and services firms	51	1.0005	1.2200	0.2195		
		(0.9952)	(1.1410)	(0.1458)	2.80[a]	
Manufacturing firms	68	1.0353	1.2955	0.2602		0.64
		(1.0000)	(1.1599)	(0.1599)	3.93[a]	
Income efficiency						
Trade and services firms	50	1.1695	3.5137	2.3442		
		(0.9643)	(1.5016)	(0.5373)	5.59[a]	
Manufacturing firms	68	1.0509	2.9790	1.9281		0.78
		(1.0000)	(1.7970)	(0.7970)	7.28[a]	
Real sales						
Trade and services firms	52	0.9700	1.3837	0.4137		
		(0.9679)	(1.1454)	(0.1775)	5.16[a]	
Manufacturing firms	69	1.0310	1.4303	0.3993		0.32
		(1.0000)	(1.2524)	(0.2524)	5.69[a]	
Total debts/total assets						
Trade and services firms	47	0.5496	0.5240	-0.0256		
		(0.5768)	(0.5666)	(-0.0102)	0.42	
Manufacturing firms	53	0.5125	0.4799	-0.0326		0.93
		(0.5451)	(0.5288)	(-0.0163)	0.87	
Number of employees						
Trade and services firms	51	217	231	14		
		(87)	(103)	(16)	0.41	
Manufacturing firms	68	453	495	42		0.78
		(192)	(217)	(25)	0.50	
Annual income per employee (million VND)						
Trade and services firms	44	13.3	20.0	6.7		
		(11.1)	(15.3)	(4.2)	2.11[b]	0.29
Manufacturing firms	51	11.3	14.9	3.6		
		(11.3)	(14.7)	(3.4)	2.64[a]	

[a], [b], [c] *Significant at the 1%, 5%, and 10% levels, respectively.*

Table 6.5: Comparison of performance changes following equitisation for firms with residual state ownership less than 30 percent and the other firms

Measures	N	Mean (median) before	Mean (median) after	Mean (median) change	Z-Statistic for difference in medians (after – before)	Z-Statistic for difference in medians between sub-samples
IBTA						
State ownership < 30%	59	0.0829	0.1231	0.0402		
		(0.0703)	(0.1081)	(0.0378)	2.55[a]	0.79
State ownership ≥ 30%	41	0.1089	0.1261	0.0172		
		(0.0891)	(0.1083)	(0.0192)	1.06	
IBTS						
State ownership < 30%	59	0.0529	0.0828	0.0299		
		(0.0384)	(0.0531)	(0.0147)	2.71[a]	1.52
State ownership ≥ 30%	41	0.0769	0.0899	0.0130		
		(0.0594)	(0.0715)	(0.0121)	1.02	
IBTE						
State ownership < 30%	59	0.2287	0.2600	0.0313		
		(0.1538)	(0.2282)	(0.0744)	2.54[a]	1.06
State ownership ≥ 30%	41	0.2381	0.2459	0.0078		
		(0.2101)	(0.2070)	(-0.0031)	0.79	
Sales efficiency						
State ownership < 30%	59	1.0484	1.1751	0.1267		
		(1.0000)	(1.1043)	(0.1043)	1.79[c]	1.42
State ownership ≥ 30%	39	0.9890	1.2732	0.2842		
		(1.0000)	(1.1410)	(0.1410)	3.12[a]	
Income efficiency						
State ownership < 30%	59	1.1648	4.2864	3.1216		
		(0.9818)	(1.9111)	(0.9293)	5.96[a]	1.76[c]
State ownership ≥ 30%	38	1.0581	1.7954	0.7373		
		(0.9643)	(1.4722)	(0.5079)	5.47[a]	
Real sales						
State ownership < 30%	59	1.0369	1.3125	0.2756		
		(0.9881)	(1.1420)	(0.1539)	4.34[a]	1.17
State ownership ≥ 30%	41	0.9610	1.4913	0.5303		
		(0.9831)	(1.1835)	(0.2004)	5.17[a]	
Total debts/total assets						
State ownership < 30%	59	0.5488	0.5287	-0.0201		
		(0.5897)	(0.5794)	(-0.0103)	0.43	0.88
State ownership ≥ 30%	41	0.5028	0.4603	-0.0425		
		(0.5450)	(0.5059)	(-0.0391)	0.88	
Number of employees						
State ownership < 30%	59	455	507	52		
		(163)	(173)	(10)	0.52	0.78
State ownership ≥ 30%	39	206	220	14		
		(152)	(134)	(-18)	0.60	
Annual income per employee (million VND)						
State ownership < 30%	44	13.1	20.3	7.2		
		(12.9)	(16.4)	(3.5)	2.32[b]	0.38
State ownership ≥ 30%	30	12.7	16.9	4.2		
		(11.2)	(15.5)	(4.3)	2.68[a]	

[a], [b], [c] *Significant at the 1%, 5%, and 10% levels, respectively.*

Firms that have a chairperson of the board of directors representing the state (FCBDRS) versus firms that have a chairperson of the board of directors representing private investors (FCBDRP)

The empirical results, shown in Table 6.6, indicate that improvements in almost all performance measures are in line with expectations in that they are greater for the FCBDRP as compared to the FCBDRS. First, FCBDRP yield greater changes in profitability and real sales following equitisation. Indeed, the average increase in IBTA for the FCBDRP is 6.58 percent as opposed to 1.91 percent for the FCBDRS. Additionally, the mean (median) real sales increase for the latter subgroup is 44.91 percent (33.77 percent) against 35.56 percent (14.73 percent) for the former one. Secondly, the findings also confirm that FCBDRP trigger higher improvement in efficiency measures. In fact, mean (median) sales efficiency increase for the FCBDRP is 23.62 percent (13.90 percent) while this increase is only 16.94 percent (10.43 percent) for the FCBDRS. Surprisingly, the mean (median) leverage of the FCBDRP increases following equitisation (1.28 percentage points in mean and 2.72 percentage points in median) while the mean (median) leverage of the FCBDRS falls by 4.58 percentage points (4.06 percentage points) percent after equitisation. The Mann-Whitney test, however, reports that, except for the difference in real sales between the two sub-groups (significant at the five percent level), no significant differences are found for any of the other variables.

Listed versus non-listed firms

Table 6.7 presents comparisons of performance changes between listed and non-listed firms. As expected, higher increases in real sales, sales efficiency, and employment are observed for listed firms as compared to non-listed firms. The mean (median) real sales of listed firms increases by 60.73 percentage points (39.77 percentage points) following equitisation compared to an improvement of 37.02 percentage points (15.15 percentage points) for the non-listed firms. Moreover, Table 13 shows an average (median) increase of 58 employees (137 employees) for the listed firms as opposed to 25 employees (3 employees) for the non-listed ones. The differences are significant at the 10 percent level for real sales and at the five percent level for employment. Furthermore, the results show a greater decrease in leverage for the listed firms than for non-listed firms, but the difference is statistically insignificant. Contrary to the predictions, the findings indicate that non-listed firms have higher profitability improvements than listed firms. For instance, the mean (median) improvement in IBTS for non-listed firms is 2.66 percentage points (2.53 percentage points) compared to 0.40 percentage points (0.67 percentage points) for listed firms. In addition, the mean (median) IBTE of the non-listed firms increases by 6.66 percentage points (5.65 percentage points) while the mean (median) IBTE of listed firms decreases

by 7.18 percentage points (4.90 percentage points) following equitisation. Using the Mann-Whitney test it is found that the differences between the two sub-samples are significant at the one percent level for IBTS and IBTE, and at the five percent level for IBTA. The results also show a significant difference (at the five percent level) in income efficiency improvement between these subgroups. Indeed, income efficiency of the non-listed firms increases by a mean (median) of 234.53 percentage points (79.46 percentage points) while this measure also increases in the case of the listed firms, but the gains are less impressive, only 67.35 percentage points (42.26 percentage points).

In general, the results indicate that listed firms show greater improvements in real sales, sales efficiency, leverage, and employment compared to non-listed firms. However, gains in profitability measures are lower for listed firms than for non-listed ones. These findings are consistent with those presented in Chapter 4, except for the IBTA and IBTE measures. A possible explanation for the differences is that by exploiting the benefits from the listing, listed firms substantially expand their business. This results in substantial increases in real sales and employment. The profit margin of listed firms is almost unchanged after equitisation while the total assets of the firms increase considerably due to business expansion. This causes the decrease in IBTA of listed firms following equitisation. The average leverage of listed firms falls in years following equitisation while their total assets increase. This results from increases in the equity of listed firms. Similar to the return on assets, the increase in equity explains the decline in IBTE of listed firms after equitisation.

Firms located in HCMC versus the other firms

Comparisons of performance improvements between firms located in HCMC and the other firms are shown in Table 6.8. As can be seen from the Table, only performance changes in IBTS and leverage show a statistically significant difference between two groups. Specifically, contrary to the prediction a significantly lower improvement in the median IBTS is reported for the group of firms in HCMC. In addition, firms located in HCMC have a significantly lower reduction in the median leverage than the other firms, but an insignificantly higher reduction in the mean leverage.

Firms equitised before 1999 versus the other firms

Performance changes following equitisation for firms equitised before 1999 and other firms are presented in Table 6.9. Statistically, the table shows no significant evidence that supports the expectation that the first group of firms have lower performance improvements than the second one. In other words, performance improvements of firms following equitisation do not depend on the period of equitisation.

Table 6.6: Comparison of performance changes following equitisation for FCBDRS and FCBDRP

Measures	N	Mean (median) before	Mean (median) after	Mean (median) change	Z-Statistic for difference in medians (after – before)	Z-Statistic for difference in medians between sub-samples
IBTA						
FCBDRS	72	0.0958	0.1149	0.0191		
		(0.0724)	(0.1073)	(0.0349)	2.19[b]	
						1.41
FCBDRP	26	0.0895	0.1553	0.0658		
		(0.0762)	(0.1311)	(0.0392)	1.61	
IBTS						
FCBDRS	72	0.0679	0.0878	0.0199		
		(0.0433)	(0.0646)	(0.0213)	2.24[b]	
						0.45
FCBDRP	26	0.0484	0.0816	0.0332		
		(0.0390)	(0.0517)	(0.0127)	1.58	
IBTE						
FCBDRS	72	0.2260	0.2476	0.0216		
		(0.1821)	(0.2136)	(0.0315)	1.76[c]	
						1.46
FCBDRP	26	0.2430	0.2720	0.0290		
		(0.1538)	(0.2409)	(0.0871)	2.17[b]	
Sales efficiency						
FCBDRS	71	1.0334	1.2028	0.1694		
		(1.0000)	(1.1043)	(0.1043)	2.63[a]	
						0.35
FCBDRP	25	0.9963	1.2325	0.2362		
		(1.0000)	(1.1390)	(0.1390)	1.80[c]	
Income efficiency						
FCBDRS	71	1.0494	2.5701	1.5207		
		(0.9543)	(1.4890)	(0.5347)	7.17[a]	
						0.93
FCBDRP	24	1.3507	5.6642	4.3135		
		(0.9897)	(2.2701)	(1.2804)	3.19[a]	
Real sales						
FCBDRS	72	1.0225	1.3781	0.3556		
		(0.9861)	(1.1334)	(0.1473)	4.86[a]	
						2.28[b]
FCBDRP	26	0.9545	1.4036	0.4491		
		(0.9710)	(1.3087)	(0.3377)	4.75[a]	
Total debts/total assets						
FCBDRS	72	0.5469	0.5011	-0.0458		
		(0.5901)	(0.5495)	(-0.0406)	1.30	
						1.49
FCBDRP	26	0.4663	0.4791	0.0128		
		(0.4739)	(0.5011)	(0.0272)	0.19	
Number of employees						
FCBDRS	71	336	367	31		
		(165)	(161)	(-4)	0.34	
						0.81
FCBDRP	25	287	343	56		
		(100)	(115)	(15)	0.60	
Annual income per employee (million VND)						
FCBDRS	55	13.0	16.7	3.6		
		(12.4)	(16.3)	(3.9)	2.96[c]	
						0.17
FCBDRP	19	12.8	25.5	12.7		
		(13.0)	(14.9)	(1.9)	1.61	

[a], [b], [c] *Significant at the 1%, 5%, and 10% levels, respectively.*

Table 6.7: Comparison of performance changes following equitisation for listed firms and non-listed firms

Measures	N	Mean (median) before	Mean (median) after	Mean (median) change	Z-Statistic for difference in medians (after – before)	Z-Statistic for difference in medians between sub-samples
IBTA						
Listed firms	18	0.1380	0.1265	-0.0115		
		(0.1067)	(0.1229)	(0.0162)	0.24	2.46[b]
Non-listed firms	82	0.0838	0.1238	0.0400		
		(0.0707)	(0.1039)	(0.0332)	2.81[a]	
IBTS						
Listed firms	18	0.0963	0.1003	0.0040		
		(0.0659)	(0.0726)	(0.0067)	0.11	2.99[a]
Non-listed firms	103	0.0549	0.0815	0.0266		
		(0.0337)	(0.0590)	(0.0253)	3.40[a]	
IBTE						
Listed firms	18	0.3234	0.2516	-0.0718		
		(0.3033)	(0.2543)	(-0.0490)	0.74	3.14[a]
Non-listed firms	103	0.2127	0.2793	0.0666		
		(0.1666)	(0.2231)	(0.0565)	3.71[a]	
Sales efficiency						
Listed firms	17	1.0587	1.4473	0.3886		
		(1.0000)	(1.3313)	(0.3313)	3.38[a]	0.35
Non-listed firms	102	1.0140	1.2325	0.2185		
		(1.0000)	(1.0933)	(0.0933)	3.83[a]	
Income efficiency						
Listed firms	17	0.9944	1.6679	0.6735		
		(1.0000)	(1.4226)	(0.4226)	2.93[a]	2.06[b]
Non-listed firms	101	1.1191	3.4644	2.3453		
		(1.0000)	(1.7946)	(0.7946)	8.64[a]	
Real sales						
Listed firms	18	1.0521	1.6594	0.6073		
		(1.0000)	(1.3977)	(0.3977)	4.57[a]	1.65[c]
Non-listed firms	103	0.9965	1.3667	0.3702		
		(0.9942)	(1.1457)	(0.1515)	6.51[a]	
Total debts/total assets						
Listed firms	18	0.5156	0.4711	-0.0445		
		(0.5306)	(0.5392)	(0.0086)	0.36	0.31
Non-listed firms	82	0.5331	0.5071	-0.0260		
		(0.5740)	(0.5443)	(-0.0297)	0.75	
Number of employees						
Listed firms	17	850	908	58		
		(518)	(655)	(137)	0.38	2.39[b]
Non-listed firms	102	269	294	25		
		(126)	(129)	(3)	0.44	

[a], [b], [c] *Significant at the 1%, 5%, and 10% levels, respectively.*

Table 6.8: Comparison of performance changes following equitisation for firms located in Ho Chi Minh City (HCMC) and others firms

Measures	N	Mean (median) before	Mean (median) after	Mean (median) change	Z-Statistic for difference in medians (after – before)	Z-Statistic for difference in medians between sub-samples
IBTA						
Firms located in HCMC	58	0.0960 (0.0724)	0.1226 (0.1095)	0.0266 (0.0371)	2.12[b]	0.14
Other firms	42	0.0902 (0.0807)	0.1267 (0.1048)	0.0365 (0.0241)	1.68[c]	
IBTS						
Firms located in HCMC	58	0.0602 (0.0386)	0.0869 (0.0573)	0.0267 (0.0187)	2.54[b]	1.75[c]
Other firms	63	0.0618 (0.0378)	0.0819 (0.0624)	0.0201 (0.0246)	2.03[b]	
IBTE						
Firms located in HCMC	58	0.2300 (0.1657)	0.2579 (0.2223)	0.0279 (0.0566)	1.66[c]	1.13
Other firms	63	0.1993 (0.1872)	0.2910 (0.2500)	0.0917 (0.0628)	3.13[a]	
Sales efficiency						
Firms located in HCMC	57	1.0233 (1.0000)	1.1896 (1.0801)	0.1663 (0.0801)	2.07[b]	1.46
Other firms	62	1.0178 (1.0000)	1.3308 (1.1811)	0.3130 (0.1811)	4.79[a]	
Income efficiency						
Firms located in HCMC	57	1.0187 (0.9272)	3.2802 (1.6373)	2.2615 (0.7101)	6.66[a]	0.59
Other firms	62	1.1592 (1.0000)	3.0323 (1.6367)	1.8731 (0.6367)	6.15[a]	
Real sales						
Firms located in HCMC	58	1.0254 (0.9895)	1.4291 (1.1193)	0.0437 (0.1298)	3.86[a]	1.63
Other firms	63	0.9858 (1.0000)	1.3928 (1.2676)	0.4070 (0.2676)	6.99[a]	
Total debts/total assets						
Firms located in HCMC	58	0.5580 (0.5868)	0.5013 (0.5703)	-0.0567 (-0.0165)	1.31	1.67[c]
Other firms	42	0.4912 (0.5450)	0.4998 (0.5264)	0.0086 (-0.0186)	-0.00	
Number of employees						
Firms located in HCMC	57	450 (196)	495 (181)	45 (-15)	0.43	0.47
Other firms	62	262 (120)	278 (129)	16 (9)	0.41	
Annual income per employee (million VND)						
Firms located in HCMC	45	13.5 (13.0)	17.5 (16.4)	4.0 (3.4)	2.84[a]	1.30
Other firms	50	11.0 (9.6)	17.1 (12.4)	6.1 (2.8)	2.18[b]	

[a], [b], [c] *Significant at the 1%, 5%, and 10% levels, respectively.*

Table 6.9: Comparison of performance changes following equitisation for firms equitised before 1999 and other firms

Measures	N	Mean (median) before	Mean (median) after	Mean (median) change	Z-Statistic for difference in medians (after – before)	Z-Statistic for difference in medians between sub-samples
IBTA						
Firms equitised before 1999	14	0.1342	0.1791	0.0449		
		(0.1002)	(0.1619)	(0.0617)	1.08	0.10
Other firms	86	0.0869	0.1154	0.0285		
		(0.0716)	(0.0965)	(0.0249)	2.45[b]	
IBTS						
Firms equitised before 1999	14	0.0911	0.1448	0.0537		
		(0.0731)	(0.1151)	(0.0420)	1.49	1.58
Other firms	107	0.0571	0.0764	0.0193		
		(0.0375)	(0.0531)	(0.0156)	3.00[a]	
IBTE						
Firms equitised before 1999	14	0.2790	0.2925	0.0135		
		(0.2209)	(0.3019)	(0.0810)	0.90	0.91
Other firms	107	0.2055	0.2729	0.0674		
		(0.1724)	(0.2231)	(0.0507)	3.23[a]	
Sales efficiency						
Firms equitised before 1999	14	0.9802	1.2429	0.2627		
		(1.0000)	(1.0151)	(0.0151)	0.67	0.03
Other firms	106	1.0161	1.2659	0.2498		
		(1.0000)	(1.1428)	(0.1428)	4.90[a]	
Income efficiency						
Firms equitised before 1999	14	0.9135	2.8931	1.9796		
		(1.0000)	(1.4631)	(0.4631)	3.47[a]	0.26
Other firms	106	1.1051	3.1864	2.0813		
		(1.0000)	(1.7493)	(0.7493)	8.30[a]	
Real sales						
Firms equitised before 1999	14	0.9686	1.6161	0.6475		
		(0.9992)	(1.2826)	(0.2834)	2.23[b]	0.77
Other firms	107	1.0095	1.3833	0.3738		
		(0.9996)	(1.1835)	(0.1839)	7.33[a]	
Total debts/total assets						
Firms equitised before 1999	14	0.4659	0.3819	-0.0840		
		(0.3643)	(0.3812)	(0.0169)	0.80	0.91
Other firms	86	0.5404	0.5200	-0.0204		
		(0.5740)	(0.5601)	(-0.0139)	0.60	
Number of employees						
Firms equitised before 1999	14	175	232	57		
		(89)	(121)	(32)	0.48	0.98
Other firms	106	372	402	30		
		(163)	(161)	(-2)	0.50	
Annual income per employee (million VND)						
Firms equitised before 1999	9	14.8	18.6	3.8		
		(15.3)	(16.0)	(0.7)	0.79	0.03
Other firms	86	12.0	17.1	5.1		
		(10.7)	(14.8)	(4.1)	3.25[a]	

[a], [b], [c] *Significant at the 1%, 5%, and 10% levels, respectively.*

6.4. The sources of performance changes: Cross-sectional regression results

To validate the nonparametric tests and to examine what determines differences in effects of equitisation, a cross-sectional regression is used to measure the sources of performance changes after equitisation. In the regression equations the dependent variables represent the percentage changes in income before tax on assets (PIBTA), income before tax on sales (PIBTS), income before tax on equity (PIBTE), real sales (PRS), sales efficiency (PSE), income efficiency (PIE) and employment (PEmp) following equitisation. To explain the changes in performance measures (dependent variables), size (log of pre-equitisation real sales average), residual state ownership, background of the chairperson of the board of directors, background of the chairperson of the board of supervisors, stock-market listing of firms, sectors, equitisation years and location of firms are employed as independent variables. It is important to note here that dummy variables for equitisation years are added to the regressions in order to control for macroeconomic factors that change over time and may affect the equitisation results. Definitions of explanatory variables used in the regression analyses are shown in Table 6.10.

The first equation used for each performance measure is:

$$Y_i = \alpha_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + \varepsilon_i \qquad (1)$$

where Y_i represents the percentage change in a given performance measure. Then, based on the results of the first equation, some independent variables with a low t-value (less than one) are eliminated (hereafter the revised equation is referred to as the second equation). The results of the regression analyses from the first and second equations are shown in Table 6.11.

Profitability

Consistent with the results of Harper (2002) for the Czech Republic, the regression analyses show a significant negative relationship between profitability changes (PIBTA, PIBTS, and PIBTE) and firm size. Moreover, according to Table 6.11, corporate governance appears to be an important determinant to explain profitability changes of firms following equitisation. Specifically, the results indicate that the chairperson of the board of directors representing the state has a significant negative effect on PIBTA and PIBTE, and the chairperson of the board of supervisors representing the state has a significant negative effect on PIBTS. Contrary to expected signs, the regression analyses show a significant negative relationship between listing on the stock exchange and all profitability measures. The possible explanation for the negative impact of listing is presented in the previous section. Similarly,

Table 6.10: Definitions of explanatory variables used and expected sign in regression analyses

Variable	Definition	Expected sign
Size (X_1)	Log of pre-equitisation real sales average	Negative
State ownership (X_2)	Percent of shares owned by the state at the time of the first share issue	Negative
Chairperson of the board of directors (CBD) (X_3)	Dummy variable equal to 1 if the chairperson of the board of directors represents the state, 0 otherwise	Negative
Chairperson of the board of supervisors (CBS) (X_4)	Dummy variable equal to 1 if the chairperson of the board of supervisors represents the state, 0 otherwise	Negative
Listed firms (X_5)	Dummy variable equal to 1 if a firm is listed on the stock exchange, 0 otherwise	Positive
Trade and service (X_6)	Dummy variable equal to 1 if a firm is in the trade or service industries, 0 otherwise	Positive
Equitisation before 1999 (X_7)	Dummy variable equal to 1 if a firm is equitised before 1999, 0 otherwise	Negative
Equitisation in 2000 (X_8)	Dummy variable equal to 1 if a firm is equitised in 2000, 0 otherwise	Positive or negative
Equitisation in 2001 (X_9)	Dummy variable equal to 1 if a firm is equitised in 2001, 0 otherwise	Positive or negative
HCMC (X_{10})	Dummy variable equal to 1 if a firm is located in HCMC, 0 otherwise	Positive
The North (X_{11})	Dummy variable equal to 1 if a firm is located in the North, 0 otherwise	Positive or negative

regression results reveal that being part of the trade and service sector has a significant negative effect on PIBTE. Finally, it is found from Table 6.11 that the dummy variable for equitised firms in HCMC has a positive impact on PIBTS at the one percent significance level.

Overall, in line with the expectations regression results reveal a significant negative effect of corporate governance (X_3 and X_4) and firm size on the profitability improvements of equitised firms. In addition, a significantly greater improvement in PIBTS is reported for equitised firms in HCMC compared to firms in the other regions. Unexpectedly, the regression analyses provide evidence that listing on the

stock exchange and belonging to the trade and services sector have a significant negative impact on profitability improvements of equitised firms following equitisation.

Real sales

As predicted, Table 6.11 shows that firms where the chairperson of the board of directors represents the state have significantly lower improvements in real sales after equitisation than firms where the chairperson of the board of directors represents private owners. Specifically, firms in the former group show a 17.81 percentage points lower improvement, according to the first equation, in real sales than firms in the latter group. Additionally, the results derived from the regression analyses show a significant positive impact of stock-market listing on real sales change. According to the first regression equation, listed firms experience a 21.17 percentage points greater increase in real sales than non-listed firms. These results could mirror the effect hypothesised above that listed firms exploit the benefits from the listing through enlarging their business and market share. These benefits lead to a higher growth rate of sales compared to non-listed firms. Contrary to predictions, the results show a significant positive relationship between real sales and state ownership, and between real sales and the chairperson of the board of directors representing the state. Finally, findings presented in Table 6.11 indicate that equitised firms located in the North have a significantly greater improvement in real sales than the remaining firms.

Efficiency

First, the regression results for sales efficiency are discussed. The regression for this performance measure reveals a significant negative effect of firm size on the improvement in sales efficiency in the post-equitisation period. The employment regression shows a significant positive relationship between the size of firms and employment change. However, in the regression for real sales it is observed that size has a negative effect on real sales, although it is insignificant. Combination of these results may explain the negative relationship between size and sales efficiency. In addition, it is found that listed firms experience a significantly higher increase in sales efficiency than non-listed firms. Similar to the real sales measure, the regression results show that state ownership and the chairperson of the board of directors representing the state also have a significant positive impact on sales efficiency. Finally, results from the second regression equation indicate a significant positive relationship between sales efficiency and firms being located in

the North, but a significant negative relationship between sale efficiency and firms that have chairperson of the board of supervisors representing the state.

Beside the sales efficiency regression, an income efficiency regression is also conducted in this study. It turns out that firm size has a significant negative impact on the change in income efficiency. Moreover, the results obtained from the income efficiency regression confirm the prediction that state ownership has a negative effect on firm performance, including income efficiency. Specifically, according to the first equation, a one percent increase in state ownership causes a 5.40 percentage points decrease in income efficiency. This relationship is statistically significant at the one percent level. Similar to sales efficiency, the regression results show a significantly lower increase in income efficiency for FCBDRS as compared to FCBDRP. In fact, FCBDRS have a 93.01 percentage point lower improvement in income efficiency than FCBDRP. Contrary to what was found for sales efficiency, it is found that listing on the stock exchange has a significant negative impact on income efficiency. However, the significant negative effect is only reported in the second regression equation. In fact, the listed firms' gain in income efficiency is 83.58 percentage points lower than the non-listed firms'.

Generally, the findings indicate that firm size, residual state ownership, corporate governance and listing on the stock exchange are the major determinants of post-equitisation efficiency improvements. Specifically, the results reveal that firm size has significant negative effects on both efficiency measures. Moreover, the regression results show a significant negative relationship between state ownership and both efficiency measures, and between stock-exchange listing and the efficiency measures. Indeed, while state ownership has a positive effect on sales efficiency, the impact on income efficiency is negative. Finally, it turns out that the chairperson of the board of directors representing the state has a significant negative relationship with the efficiency measures, but the chairperson of the board of supervisors representing the state has a significant positive effect on sale efficiency.

Employment

According to the regression results, the size of firms and the background of the chairperson of the board of directors are the major determinants of the changes in employment following equitisation. Specifically, a significant positive relationship between size and employment change after equitisation is found. It suggests that larger size entails a greater increase in employment. A possible explanation for this relationship is that with a new capital source through issuing new shares after equitisation, large firms realise a greater expansion in their production and business

as compared to small firms. Greater expansion of business requires large firms to hire more employees compared to small firms. Further, firms with the chairperson of the board of directors representing the state show a significantly lower increase in employment compared to firms where the chairperson of the board of directors represents private owners.

6.5. Effect of equitisation on firm performance: Results from the difference-in-difference method

The difference-in-difference (DID) method is an approach that is developed to overcome the main shortcoming of the pre-post comparison method, that it ignores the concurrent impact of other determinants when measuring the impact of equitisation on firm performance[14]. The main characteristic of the DID method is that it helps to examine the impact of a policy or policy programme by comparing the difference in given measures of a treatment group over time - from before the policy was implemented until after its implementation - to the difference in the measures of the control group for the same periods.

In this study, the treatment group is formed by the equitised firms while the control group contains SOEs. Since most of the equitised firms in the sample were completely equitised in the year 2000 or 2001, the DID method is only applied to these groups. Moreover, due to insufficient data on the SOEs, only IBTA, IBTS, IBTE, real sales and the ratio of total debts to total assets are used as measures. Because of data limitations the differences in these measures, for both the treatment and the control group, are calculated on the basis of only one year before and after equitisation. Following the DID method, first the difference in the performance measures between before and after equitisation is computed for all individual firms in the treatment and control groups. Second, the mean (median) of the difference is separately calculated for the treatment and control groups. Then, the impact of equitisation on firm performance is examined as the difference between the differences in the performance measures for the two groups. Finally, to test for statistical significance of the difference in the performance measures between the treatment and control group, the non-parametric Mann-Whitney test is applied. Results of the DID method are shown in Tables 6.12 and 6.13.

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[14] For a detailed description of the DID method and a comparison between the DID and the pre-post comparison method, see Wooldridge (2002).

Table 6.11: Cross-sectional regression results

	PIBTA		PIBTS		PIBTE		PRS		PSE		PIE		PEmp.	
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Constant	1.331	12.163	9.360	9.379	4.106	36.669	2.569	9.479	56.135	69.751	824.171	839.457	-20.632	-10.616
	(2.97)^a	(2.68)^a	(5.63)^a	(6.09)^a	(3.65)^a	(3.73)^a	(0.09)	(1.31)	(1.93)^c	(2.43)^b	(4.56)^a	(4.78)^a	(-0.95)	(-0.558)
Size	-0.778	-0.648	-0.804	-0.792	-2.717	-2.359	-0.121	-	-7.529	-7.697	-34.236	-38.988	5.031	3.518
	(-1.96)^c	(-1.57)	(-5.40)^a	(-5.10)^a	(-2.74)^a	(-2.46)^b	(-0.04)	-	(-2.98)^a	(-3.02)^a	(-3.26)^a	(-3.44)^a	(2.33)^b	(1.73)^c
State ownership	0.018	-	-0.004	-	-0.037	-	0.737	0.802	0.770	0.613	-5.403	-5.409	0.082	-
	(0.45)	-	(-0.25)	-	(-0.41)	-	(2.58)^b	(3.80)^a	(2.77)^a	(2.44)^b	(-3.03)^a	(-3.51)^a	(0.37)	-
CBD	-2.235	-1.883	0.203	-	-5.104	-5.914	-17.809	-25.930	-12.611	-13.080	-93.009	-110.516	-17.142	-20.559
	(-1.80)^c	(-1.60)	(0.43)	-	(-1.76)^c	(-2.74)^a	(-2.08)^b	(-3.47)^a	(-1.43)	(-1.67)^c	(-1.97)^c	(-2.21)^b	(-1.89)^c	(-2.51)^b
CBS	-1.130	-1.208	-1.235	-1.132	-3.334	-2.721	21.267	21.293	20.743	22.614	-33.978	-19.084	-3.556	-
	(-1.05)	(-1.08)	(-2.76)^a	(-2.55)^b	(-1.30)	(-1.10)	(2.10)^b	(2.89)^a	(2.93)^a	(3.21)^a	(-1.15)	(-0.71)	(-0.67)	-
Listed firms	-2.168	-3.436	-1.241	-1.254	-6.747	-7.491	21.173	24.155	33.776	33.708	-62.927	-83.582	-7.442	-4.551
	(-1.90)^c	(-2.57)^b	(-1.83)^c	(-1.73)^c	(-1.87)^c	(-2.61)^b	(1.75)^c	(2.13)^b	(3.55)^a	(3.44)^a	(-1.54)	(-2.37)^b	(-1.05)	(-0.74)
Trade and service	-0.205	-	-0.450	-	-4.320	-4.423	1.040	-	1.157	-	5.799	-	-3.170	-
	(-0.21)	-	(-1.08)	-	(-1.84)^c	(-2.12)^b	(0.14)	-	(0.18)	-	(0.22)	-	(-0.57)	-
Equitisation before 1999	-1.527	-	0.312	-	-0.831	-	23.504	17.178	11.048	-	-57.635	-	7.950	-
	(-0.77)	-	(0.36)	-	(-0.21)	-	(1.74)^c	(1.48)	(0.91)	-	(-0.99)	-	(0.74)	-
Equitisation in 2000	-1.626	-0.938	0.133	-	2.166	-	5.254	-	6.100	-	-87.905	-62.098	-8.848	-
	(-1.20)	(-0.82)	(0.24)	-	(0.63)	-	(0.55)	-	(0.63)	-	(-1.69)^c	(-1.67)	(-0.96)	-
Equitisation in 2001	-1.630	-1.378	0.768	0.604	2.207	-	1.854	-	7.636	-	-53.307	-4.006	-4.564	-
	(-1.22)	(-1.22)	(1.17)	(1.31)	(0.57)	-	(0.25)	-	(0.79)	-	(-1.07)	(-0.12)	(-0.47)	-
HCMC	0.942	-	1.521	1.550	-2.211	-	1.502	-	12.324	11.077	-19.454	-	-7.146	-
	(0.87)	-	(2.97)^a	(3.52)^a	(-0.77)	-	(0.19)	-	(1.52)	(1.43)	(-0.43)	-	(-0.89)	-
The North	2.424	2.218	-1.379	-1.338	-0.637	-	46.570	43.229	37.868	61.259	-47.737	-	6.368	-
	(1.32)	(1.63)	(-1.03)	(-1.05)	(-0.10)	-	(2.04)^b	(2.03)^b	(1.37)	(4.82)^a	(-0.73)	-	(0.43)	-
Observations	84	84	84	84	84	84	84	84	84	84	56	56	91	91
Adjusted R^2	0.133	0.162	0.421	0.443	0.207	0.259	0.232	0.353	0.268	0.344	0.372	0.401	0.071	0.108
F-statistic	2.16^b	3.29^a	6.50^a	12.02^a	2.96^a	6.79^a	3.27^a	8.53^a	3.76^a	7.21^a	3.96^a	6.26^a	1.62	4.62^a

$^{a, b, c}$ *Significant at the 1%, 5%, and 10% level, respectively*
t-values in parenthesis (they are based on White Heteroskedasticity-Consistent Standard Errors & Covariances)
(1) results from the first equation, and (2) results from the second equation

Table 6.12 presents results of the DID method for the group of former SOEs equitised in the year 2000. As can be seen from the Table, all profitability measures of the equitised firms increase significantly (after taking into account the difference in differences) following equitisation. Specifically, the mean (median) gains in IBTA and IBTS are 1.72 percentage points (2.36 percentage points) and 1.19 percentage points (1.10 percentage points) respectively. Similarly, the mean (median) increase in IBTE is 3.90 percentage points (10.32 percentage points). Statistically, the performance improvements are significant at the 10 percent level for IBTA and at the five percent level for IBTS and IBTE. Moreover, Table 6.12 reveals that the mean real sales of equitised firms increase by 19.8 percentage points, but the median slightly decreases (2.75 percentage points) after equitisation. The decrease in the median real sales is statistically significant at the five percent level. Finally, results of the DID method show that the leverage of equitised firms is almost unchanged following equitisation.

Similarly, results from the DID approach for the group of SOEs equitised in the year 2001, presented in Table 6.13, indicate that profitability and real sales measures of equitised improve, after adjusting for other effects, following equitisation. However, only the performance improvements in IBTA and IBTS are significant at the five percent level. Contrary to the expectation, the leverage of the equitised firms increases after equitisation, although the increase is statistically insignificant.

To conclude, the results of the DID approach are generally consistent with the results of the pre-post comparison method reported in Section 6.3. Indeed, they provides evidence that equitisation has a significant positive effect on profitability measures of equitised firms after equitisation. In addition, findings from both methods reveal that equitisation has no impact on equitised firms' leverage. However, regarding the real sales measure results from the employed methods are somewhat different. Specifically, the results of the pre-post comparison method show a significant increase in median real sales while those of the DID method show a significant decrease (for the first group of equitised firms) or an insignificant increase (for the second group of equitised firms).

6.6. Summary and conclusions

This chapter examines the effects of equitisation, the Vietnamese version of privatisation, on firm performance in Vietnam by using data of 121 firms that were equitised during the 1993-2002 period and 84 SOEs. Applying the methodology of Megginson, Nash and Randenborgh (1994), the study documents a significant increase in profitability, operating efficiency, real sales, and employee income of

firms following equitisation (all significant at the one percent level). Moreover, we find an increase in employment and a decrease in leverage for the equitised firms following equitisation, although the increases are not statistically significant.

Regarding the sources of the performance improvements of firms after equitisation, the empirical findings derived from cross-sectional regression indicate that the size of firms (measured by log of pre-equitisation real sales average) has significant negative effects on changes in the profitability and efficiency measures, but a significant positive impact on employment change of equitised firms. In addition, the results reveal that ownership and corporate governance are key determinants of the performance improvements of firms after equitisation. Specifically, the findings show a significant negative relationship between state ownership and the change in before-tax income on sales, and between state ownership and the change in income efficiency. Similarly, the regression analyses point out that firms which have a chairperson of the board of directors who represents the state experience a significantly lower increase in real sales, sales efficiency, income efficiency, and employment compared to firms having a chairperson of the board of directors from the private sector. Finally, the results show a significant negative effect of stock-market listing on profitability changes and income efficiency improvement. However, being listed has a significant positive impact on real sales and sales efficiency changes.

Based on the empirical results obtained from the pre-post comparison, it can be concluded that equitisation in Vietnam has positive effects on firm performance. However, this method suffers from the shortcomingthat it ignores the concurrent impact of other determinants when measuring the impact of equitisation on firm performance. To overcome this shortcoming, the DID method is employed in this chapter. The outcomes of the DID analysis confirm that the performance improvements of equitised firms are indeed associated with equitisation.

Table 6.12: Summary of results from the DID test for the group of SOEs equitised in the year of 2000

| Measures | N[*] | Control group (SOEs) | | | N[*] | Treatment group (equitised firms) | | | Mean (median) change between two groups | Z-Statistic for difference in medians between two groups |
		Mean (median) for the year of 1999	Mean (median) for the year of 2001	Mean (median) change		Mean (median) pre-equitisation (1999)	Mean (median) post-equitisation (2001)	Mean (median) change		
Profitability										
IBTA	51	0.1587 (0.1236)	0.1628 (0.1279)	0.0041 (0.0043)	40	0.0940 (0.0723)	0.1153 (0.1002)	0.0213 (0.0279)	0.0172 (0.0236)	1.9071[c]
IBTS	51	0.0962 (0.0791)	0.0976 (0.0860)	0.0014 (0.0069)	56	0.0531 (0.0332)	0.0664 (0.0511)	0.0133 (0.0179)	0.0119 (0.0110)	2.1675[b]
IBTE	51	0.4423 (0.3296)	0.4518 (0.2698)	0.0095 (-0.0598)	56	0.2194 (0.1753)	0.2679 0.2187	0.0485 (0.0434)	0.0390 (0.1032)	2.2299[b]
Real sales	51	0.8968 (0.8649)	1.0042 (1.0491)	0.1074 (0.1842)	56	0.9754 (1.0000)	1.2815 (1.1567)	0.3061 (0.1567)	0.1987 (-0.0275)	2.0053[b]
Leverage (Total debts/total assets)	51	0.5856 (0.6160)	0.5344 (0.5444)	-0.0512 (-0.0716)	40	0.5491 (0.5701)	0.5027 (0.4900)	-0.0464 (-0.0801)	0.0048 (-0.0085)	0.5237

[b], [c]: Significant at the 5% and 10% levels respectively
[*] N: Number of observations

Table 6.13: Summary of results from the DID test for the group of SOEs equitised in the year of 2001

Measures	N*	Control group (SOEs)			N*	Treatment group (equitised firms)			Mean (median) change between two groups	Z-Statistic for difference in medians between two groups
		Mean (median) for the year of 1999	Mean (median) for the year of 2001	Mean (median) change		Mean (median) pre-equitisation (1999)	Mean (median) post-equitisation (2001)	Mean (median) change		
Profitability										
IBTA	48	0.1619 (0.1209)	0.1657 (0.1399)	0.0038 (0.0190)	29	0.0835 (0.0732)	0.1136 (0.1075)	0.0301 (0.0343)	0.0263 (0.0153)	2.0763[b]
IBTS	48	0.0934 (0.0664)	0.0948 (0.0584)	0.0014 (-0.0080)	32	0.0644 (0.0558)	0.0883 (0.0711)	0.0239 (0.0153)	0.0225 (0.0233)	2.3914[b]
IBTE	48	0.5474 (0.3311)	0.5632 (0.3193)	0.0158 (-0.0118)	32	0.1885 (0.1799)	0.2241 (0.2042)	0.0356 (0.0243)	0.0198 (0.0361)	1.4781
Real sales	48	0.9432 (0.8530)	1.1319 (1.1173)	0.1887 (0.2643)	32	1.0104 (1.0000)	1.3156 (1.2898)	0.3052 (0.2898)	0.1165 (0.0255)	0.5647
Leverage (Total debts/total assets)	48	0.5960 (0.6370)	0.5882 (0.6140)	-0.0078 (-0.0230)	29	0.5382 (0.5882)	0.5431 (0.5839)	0.0049 (-0.0043)	0.0127 (0.0187)	0.3417

[b] *Significant at the 5% level*

Part III:

The Vietnamese Stock Market

Chapter 7

Overview of the Vietnamese Stock-Market

7.1. Introduction

The Vietnamese stock market, formally known as the Securities Trading Centre (STC), located in Ho Chi Minh City, was launched on July 28th 2000. At the opening trading session, only two individual stocks with a total market capitalisation of VND 444,000 million (about USD 27.95 million)[15] were traded on the market. Over five years of operation (at the end of 2005), the number of listed companies have increased to 32 with a total market capitalisation of VND 6,337,478 million (USD 398.96 million)[16]. Although the market has significantly grown over the period, it is still rather thin.

The aim of this chapter is to describe the Vietnamese stock market with special emphases on organisation, operation, and performance of the market during the period from its opening date to December 31st, 2005. The remainder of this chapter is organised as follows. Section 7.2 provides an overall description of the organisation and operation of the stock market. Section 7.3 focuses on principles of the VNINDEX (the Vietnamese stock market price index) calculation and maintenance. Section 7.4 summarises performance of the market over the period from July 28th, 2000 to December 31st, 2005. Finally, conclusions of the chapter are given in section 7.5.

7.2. Organisation and operation of the stock market

This section briefly introduces the organisation and operation of the stock market in Vietnam. Specifically, the Section focuses on regulations regarding some organisations involved in the market and how the market works.

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[15] Exchange rate on December 31st 2005: 1 USD = 15,885 VND
[16] Market capitalisation is calculated based on closing price of stocks on December 31st, 2005.

The State Securities Commission (SSC)

The State Securities Commission, officially established in November 1996, is responsible for the organisation, development and supervision of the country's securities market. Before February 2004, the SSC had operated as an organ directly belonging to the Prime Minister. During this period, the SSC could not well regulate the market due to some structural weaknesses. Consequently, the Prime Minister decided, on February 19th 2004, to hand over the task of managing the SSC to the Ministry of Finance. The Government hopes that the transfer would help to improve the performance of the market, which has not been performing well since its establishment in July 2000[17].

Under the new model of operation, the main functions of the SSC are as follows (according to the Decree 90/2003/ND-CP issued by the Government on August 12th 2003):

− issuing, implementing and enforcing regulations and guidelines related to securities and securities markets;
− organising and managing stock trading centres in Vietnam;
− licensing for securities companies, securities advisers, securities investment funds, and securities depositaries & custodians; and
− training specialised personnel for the securities industry.

Regarding the organisational structure, the SSC is divided into eight departments: Securities Market Development, Securities Issuance Management, Securities Business Management, Legal Affairs, supervision and Enforcement, Planning and Finance, International Cooperation, Human Resource, and four centres: Ho Chi Minh City (HCMC) Stock Trading Centre, Hanoi Stock Trading Centre[18], Securities Information Technology Centre, and Centre for Securities Research and Training.

The Securities Trading Centre (STC)

The Securities Trading Centre is an organisation under the control of the SSC. Its operating expenses are partly covered by the government budget. The STC assumes responsibilities of organising, executing and supervising securities trading activities on the Centre. Specifically, according to the Decree

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[17] By setting up a mechanism to ask SOEs, when being equitised, listing on the market, the Ministry of Finance will help bring more commodities (shares) to the market while the SSC, with its former function, could not ask the SOEs to list their stocks on the market. Moreover, it is expected that the Ministry of Finance, as the organ specializing in drawing up macro financial policies, is able to promulgate more suitable legal documents to ensure the substantial development of the market.

[18] Hanoi Securities Trading Centre, which focuses on the listing of small and medium-sized enterprises, was opened on March 8th, 2005. However, a few companies have registered to list their stocks on the Centre.

144/2003/ND-CP issued by the Government on November 28th 2003, responsibilities and rights of the STC include the followings:
– organising, managing and supervising the trading of listed securities;
– managing the securities trading system;
– managing and supervising the listing of securities;
– managing and supervising the information disclosure activities of listed companies;
– managing and supervising activities of the members of the Securities Trading Centre;
– organising, managing and conducting the market information disclosure.

Securities companies

By regulation, securities companies can be established in either joint-stock or limited liability ones. Moreover, the main businesses of the securities companies could consist of brokerage, owned-trading[19], securities investment portfolio management[20], underwriting, and financial and securities investment advisory. Securities companies, which are licensed by the SSC as brokers or dealers, are eligible to register as members of the STC. Importantly, only members of the STC have been permitted to trade securities through the trading system of the STC. In order to receive a securities business license, one has to fulfil some requirements:
– having a business plan that is in line with the objectives of socio-economic development and growth of the securities industry;
– having adequate technical facilities for securities businesses;
– having a minimum levels of legal capital as prescribed for each type of securities businesses as follows:
  • brokerage: VND 3 billion;
  • owned-trading: VND 12 billion;
  • securities investment portfolio management: VND 3 billion;
  • underwriting: VND 22 billion;
  • financial and securities investment advisory: VND 3 billion.
If a securities company wants to apply for a license of various securities businesses, the required legal capital level must be a cumulative amount of minimum legal capital required for each type of a licensed business. For instance, if a company expects to be licensed all types of securities business, it must have at least VND 43 billion.

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[19] Owned-trading is defined as buying and selling activities of securities for the securities companies' own account.
[20] Securities investment portfolio management is one of businesses of the securities companies which is specialized in managing clients' funds by buying, selling and holding securities in accordance with their orders.

– having its Director, Vice-Director, and its practitioners qualified for being granted the securities practitioner certificate by the SSC;

– the underwriting license is only granted to securities companies if they have the business license of owned-dealing.

As of December 31st 2005, 13 securities companies have been licensed with a total registered capital of VND 605,750 million (USD 38.47 millions)[21]. Of these, nine companies have capital of VND 43,000 million (USD 2.73 million) or more and have conducted all kinds of securities business in the market. Additionally, three of them, Saigon Securities Incorporation, Hai Phong Securities Joint Stock Company and Eastern Asia Bank Securities Company, have capital ranging from 20,000 to VND 22,000 million. The smallest securities company in terms of capital is Mekong Securities Joint Stock Company with a capital of only VND 6,000 million.

All four largest state-owned commercial banks (Bank for Investment & Development of Vietnam, Industry and Commerce Bank of Vietnam, Bank for Agriculture and Rural Development, Bank for Foreign Trade of Vietnam) and Vietnam's largest State-owned Insurance Company (Bao Viet Insurance Company) have established their wholly owned subsidiaries. The Bank for Investment and Development of Vietnam and the Bank for Agriculture and Rural Development Securities Company are the largest ones with chartered capital of VND 100,000 million each.

Furthermore, the Asia Commercial Bank Securities Company and Thang Long Securities Company are wholly–owned subsidiaries of joint stock banks, Asia Commercial Bank and Military Bank respectively while First Securities Company is a joint-stock company whose major shareholders include Becamex (a local state-owned enterprise) and several business partners. Finally, Saigon Securities Incorporation is a privately-owned joint stock company founded by Vietnam's Pan Pacific and Saigon Business Consultancy. Saigon Securities Incorporation is considered the most 'internationally minded' of the securities companies. At the end of 2003, it reported that its share of order-matching turnover on the STC is 23.2 percent, some percentage points ahead of Bao Viet Securities Company.

Listing requirements

To ensure the credibility and integrity of the securities trading centre, the Government has placed special emphasis on the overall quality of listed companies by issuing the criteria and regulations for listing. A company must comply with all of the listing requirements prior to obtaining a listing license. Specifically, according to Decree 144/2003/ND-CP, a company has to fulfil

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[21] For more information related to securities companies, see Appendix 7.1 at the end of this chapter.

some qualifications if it wishes to list its stocks on the STC. The qualifications for listing are as follows:

−   being a joint-stock company with a minimum capital of VND 5 billion (USD 0.32 million);

−   having profits in the last two consecutive years before the year of applying for listing;

−   having the commitment made by members of the firm's Board of Directors, Board of Management, and Board of supervisors to hold at least 50 percent of their shares for three years from the date of listing;

−   having at least 50 outside investors, holding at least 20 percent of the firm's equity, as for joint-stock company having share capital of VND 100 billions or more, a rate of 15 percent is applied.

Applicants for admission to listing are required to submit some documents to the SSC, including financial statements approved by accepted auditing organisation, management structure, the firm's charter, and prospectus containing information similar to that required by Securities Industry Regulators in developed countries. Within 45 days from the date of receiving a full and complete set of application documents, the SSC will grant the listing license for the firm.

Before April 15th 2003, foreign-invested companies are not permitted to establish as joint stock companies, so they are ineligible to apply for admission to listing on the STC. Recently, the Ministry of Planning and Investment has conducted a pilot scheme that converts foreign-invested companies into joint stock companies for listing. The qualifying criteria for listing of foreign-invested joint stock companies are mostly equivalent to those applicable to local joint stock companies. At the end of 2004, 20 foreign-invested companies have applied for conversion into joint stock companies.

The stock-market listing procedure

According to Decree No. 48/1998/ND-CP issued on July 11th, 1998, the listed procedure that has applied for equitised companies consists of five steps as follow:

Step 1: Organising the Board of directors' meeting

-   Comparing the company's current conditions with listing requirements and passing the policy for listing in the case the requirements to be fulfilled;

-   Determining main issues that need to be brought for discussing at the earliest shareholders' meeting and arranging a date for such meeting.

Step 2: Organising the shareholders' meeting

- Calling for a vote on whether the company should register its shares for listing on the stock market;
- Making necessary decisions to ensure that the company's common shares can be issued and freely traded on the market in accordance with Decree No. 48/1998/ND-CP:
  • At least 20 percent of its equity will be offered to more than 100 outside investors;
  • No restrictions will be applied for transferring common shares.
- Settling issues related to stocks:
  • classifying current stocks into categories as follows: buy-on-credit shares, members of the Board of Directors' shares, non-transferable shares and transferable shares;
  • splitting down shares to ensure that they have the same par value of VND 10,000 as required by the stock market.
- Passing the resolution of the shareholders' meeting on all issues as mentioned.

Step 3: Preparing for listing on the stock market

- Preparing the company's audited financial statements
- Estimating the company's valuation;
- Estimating the market price of its stocks as initially listed;
- Preparing application documents (if necessary, financial and legal advisors could be hired to deal with these works)
- Having the Board of directors' approval for the listing plan and application documents.

Step 4: Submitting the application documents to the State Securities Commission for listing

After having all completed application documents as required, the company can submit them to the State Securities Commission for verification. Then, within 45 days from the date of receiving a full and complete set of application documents, the State Securities Commission will inform the company the results of its registration for listing (acceptance of refusion).

Step 5: Registration for listing at the Securities Trading Centre

After receiving the approval for listing from the State Securities Commission, the company has to implement some works as follows:
- Disclosing its information as required by the government;
- Preparing its prospectus and publicly disclosing at the headquarters and all of its branches;

- Submitting the application documents for listing to the Securities Trading Centre.
- Listing the company's shares on the Centre.

Listed firms' information disclosure

Listed companies are required to disclose publicly all information that is important for investors' investment decisions. The STC has implemented a full disclosure policy, allowing investors to receive accurate, adequate and timely information in order to ensure market transparency and integrity. Practically, the information disclosure is conducted through the mass media or the Bulletin of the STC. Listed firms' information, which is obligated to disclose can be classified into two groups: regular and irregular information.

Regular information includes quarterly, semi-annual, and annual financial statements. By regulation, within 10 days from the date of completing annual financial statements, listed companies have to disclose publicly their audited financial information on three consecutive issues of a national newspaper or a local newspaper at the place where the head office of a listed company is located or on the Bulletin of the STC. For the quarterly and semi-annual financial statements, listed companies have to disclose them within five days from the date of completion on the Bulletin of the STC.

Irregular information consists of any information related to events that happen irregularly and should affect investors' decisions. The listed companies are required to disclose information within 24 hours from the occurrence of any of the following events:

- having significant changes in conditions for its business activities;
- suffering from a loss equivalent to or more than 10 percent of its equity;
- the listed company, its member(s) of the Board of Directors, member(s) of the Board of Management, Board of supervisors, and Chief Accountant being prosecuted by the legal authority, being convicted by a court concerning operations of the company; and violating tax laws as stated by the tax authority;
- having changes in business strategy and scope;
- having decisions on expanding its business activities, an investment worth 10 percent or more of another company's equity, or buying or selling fixed assets worth 10 percent or more of its equity;
- falling into bankruptcy situation, making a decision on corporate merge, acquisition, split, and dissolution;
- signing a loan agreement or issuing bonds, which is worth 30 percent or more of its equity;
- changing the Chairperson of the Board of Directors, or more than one-third of the members of the Board of Directors, or Director (General Director);
- approving of the resolutions of shareholders' meeting;

–   having other events that may considerably affect the share price or investors' benefits;
–   share split, additional issuance to increase its registered capital
–   issuing bonus shares or issuing shares for paying dividends, which is worth more than 10 percent of the equity;
–   applying for de-listing.

Trading on the STC

According to the government regulations regarding to the stock market, all listed securities are required to be traded via the Securities Trading Centre (Article 31, the Decree 144/2003/ND-CP). Moreover, all securities listed on the STC are denominated in Vietnamese Dong (VND) with a standardised par value for each of VND 10,000. For the first period from July 28th, 2000 to March 1st 2002, trading session had been conducted on Monday, Wednesday and Friday, from 8.00 am to 10.00 am. From the beginning of January 2001, the trading sessions were shortened to one hour; from 9.00 am to 10.00 am. It is important to note here that as from March 1st 2002, the market has traded daily with two order matching sessions at 9.20 am and 10.30 am. Specifically, at the STC securities transactions are executed through the fully-computerised trading system, namely Automatic Order Matching and Put Through trading.

Automatic Order Matching Trading

The STC's outstanding trading feature is its Automatic Order Matching, which performs the order matching process according to price then time priority, without human intervention. Specifically, after securities brokerage companies electronically send buy or sell orders from their offices to the STC's mainframe computer, the system automatically executes an order queuing process and arranges the orders according to a price then time priority. This procedure means that orders are first grouped by price, with the best price (highest price for buying and lowest price for selling) taking precedence. Then, within each price group, orders are arranged according to time.
In this system, the trading price of a given stock is determined at a specified time (recently at 9.20 am and 10.30 am daily) and at the certain price, which generates the greatest trading volumes of the stock. In case of having two or more price levels that create the same greatest trading volumes, the closest price of the latest trading session's closing price is chosen as the trading price.
The principles of order matching process are illustrated through the following example. Suppose we have buying and selling orders information of stock A at a given trading session as follow:

Table 7.1: Illustrated information of buying and selling orders of stock A

Price (VND)	Number of selling shares	Number of buying shares
20,000	3,000	85,000
20,100	8,000	55,000
20,200	16,000	35,000
20,300	26,000	20,000
20,400	43,000	8,000

Based on the Table, it can be seen that the trading volume will be maximized (20,000 shares) at the price level of VND 20,300. Therefore, the trading price of the session is determined at this level. At the trading price of VND 20,300, the number of selling shares exceeds the amount of buying ones, so all buying orders are fulfilled. Regarding selling orders, however, only those with the offer price lower than VND 20,300 (16,000 shares) and a part of orders at the price of 20,300 (the rest 4,000 shares) are conducted. Suppose that there are three selling orders at the price of VND 20,300, but different time as follow:

Table 7.2: Selling orders at the price of VND 20,300

Selling order	Time	Price	No. of shares
Order 1	10.02	20,300	1,000
Order 2	10.03	20,300	2,000
Order 3	10.04	20,300	7,000

As mentioned above, within each price group, orders are arranged according to time, so order 1 and order 2 in Table 7.2 are fully fulfilled and order 3 is partly conducted (only 1,000 shares of 7,000 shares).

Put Through Trading

Put Through trading is a method for securities trading on the STC that allows brokers to deal directly with each other, either on behalf of their clients or for themselves. The dealing price is negotiated between the two brokers and hence, the executed price may not be the same as that of securities traded in the market on that day. Following the conclusion of negotiations and trading, dealers are

required to send details of the negotiation results to the STC's mainframe for recording purposes.

Settlement is centrally conducted through the STC using the Bank of Investment and Development of Vietnam (BIDV), a state-owned commercial bank.

Securities transactions on the STC could be halted if they fall in any of the following cases:

− unusual changes in price and trading volume;
− share split or merger;
− serious violations of information disclosure requirements;
− the listed company suffering from loss in two consecutive years;
− other cases deemed necessary to protect investors' interests or to ensure stable operations of the market.

Price limits

In order to prevent excessive changes in individual stock prices at a given trading session and to foster an orderly market, the SSC has regulated the daily price limits for all stocks listed on Ho Chi Minh Securities Trading Centre. The price limits, which bound the daily stock price movements, are determined on the basis of the previous day's closing prices and limit rates. It is observed that the limit rates have changed several times since the establishment of the stock market. Indeed, the limit rate was initially set at 2 percent during the period from July 28th, 2000 to July 31st, 2002, except the short period from June 13th, 2001 to October 8th, 2001 the rate was 7 percent. Then, the rate was adjusted to 3 percent for the period between August 1st, 2002 and December 31st, 2002, and to 5 percent over the period from January 2nd, 2003 onwards.

Foreign participation

Foreign investors (institutions and individuals) can buy or sell shares on the STC through securities companies. However, their ownership (aggregation ownership of all foreign investors) in a listed firm is limited to 30 percent of the firm's equity. In addition, foreign investors who wish to participate on the STC are required to register through a licensed custodian who holds securities on behalf of foreign investors. Currently, three foreign banks (the Hong Kong and Shanghai Banking Corporation, Deutsche Bank AG and Standard Chartered Bank) have licensed by the SSC to provide custodian services for foreign investors. Once registered, a securities transaction code is issued to the foreign investor who may then open a trading account with one or more of the thirteen securities companies for trading securities on the STC.

Moreover, foreign securities business institutions are allowed to buy shares of the Vietnamese securities and/or investment fund management companies, or contribute capital to establish a newly joint-venture securities and/or investment

fund management companies with Vietnamese partners. However, the proportion of capital contribution by foreign partners in a joint-venture is not more than 49 percent of the firms' chartered capital.

7.3. The Vietnamese stock market index (VNINDEX)

The VNINDEX is a composite index calculated from prices of all common stocks traded on the STC. Specifically, it is a market capitalisation weighted price index which compares the current market value of all listed common shares to the value on the base date of July 28th, 2000 when the first session was traded on the market. The market Index was primarily set at 100 points, and it is calculated for the following days by the following formula:

$$\text{VNINDEX} = \frac{\text{CMC}}{\text{BMC}} \times 100 = \frac{\Sigma P_{it} \times Q_{it}}{\Sigma P_{i0} \times Q_{it}} \times 100 \quad (1)$$

where:

- CMC: Current total market capitalisation of all listed common shares;
- BMC: Base date total market capitalisation of all listed common shares;
- P_{it}: Closing market price of common share i at trading session t;
- Q_{it}: Number of outstanding common share i at trading session t;
- P_{i0}: Closing market price of common share i at the base date (July 28, 2000).

In practice, the daily calculation of the VNINDEX is computed by dividing the total market capitalisation of all listed common shares by a number called the "Index Divisor". By itself, the Divisor is an arbitrary number. However, in the context of the calculation of the VNINDEX, it is the only link to the original base date value of the Index. The Divisor keeps the Index comparable over time and is the manipulation point for all Index maintenance adjustments[22].

Index maintenance includes monitoring and completing the adjustments for company additions and deletions on the STC (share changes, stock splits, and stock dividends). Some corporate actions, such as stock splits and stock dividends, require simple changes in the common shares outstanding and the stock prices of the companies in the Index. Other corporate actions, such as share issuances, change the market value of the Index and require an Index Divisor adjustment as well.

To prevent the value of the Index from changing due to corporate actions, all corporate actions, which affect the market value of the Index, require a Divisor

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[22] For more detail about VN-Index calculation and maintenance, see Appendix 7.2 at the end of this chapter.

adjustment. By adjusting the Index Divisor for the change in market value, the value of the Index remains constant. This helps to keep the value of the Index accurate as a barometer of stock market performance and ensures that the movement of the Index does not reflect the corporate actions of the companies in the Index.

7.4. The performance of the Vietnamese Stock Market

As mentioned in the first section, the Vietnamese stock market was launched on July 28th 2000 with just two firms listed, Refrigeration Electrical Engineering Joint Stock Company (REE), and Saigon Cable and Telecommunication Material Joint Stock Company (SACOM). The market's growth by number of listed companies so far has been rather slow. In fact, at the end of 2000, merely five joint stock companies were listed, and joined by only five more in 2001. The year of 2002 was recorded as the most successful year of the STC, but just a further 10 companies to be listed. By end-2005, a total of 32 joint stock companies have been given permission to float their shares on the STC[23]. Especially, all of listed firms (except North Kinh Do Food Joint-stock Company and Kinh Do Corporation) are former SOEs that were previously restructured by equitisation. Of these, 20 companies, accounting for 62.5 percent, are operational in the manufacturing sector, and the rest are in the trading and services sector.

The slow pace in progress of the STC in term of the number of listed companies could result from the following reasons. First, the main reason could be that most of joint stock companies are not willing to disclose their financial information once their shares are listed. They fear that when the financial information is publicly disclosure, their competitors can exploit the information. Consequently, their business can be suffered. Second, many companies have not realised benefits of listing on the stock market yet. They think that the benefits of listing they can get are less than the risk they have to face. Finally, the slowness of equitisation programme and related policies could be a reason that affects on the development of the STC. In addition, many equitised firms are small in term of capital, so they do not meet the capital requirement by the STC for listing[24].

Table 7.3 shows key data related to the STC for the period covering the opening year (2000) through to December 31st, 2005. During this period, with the government's considerable effort in development of the stock market, the market capitalisation has increased significantly and continuously, but the market has been rather thin. Indeed, the market capitalisation had increased from

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[23] For more information about listed firms, see Appendix 7.3 at the end of this chapter.

[24] Before the year of 2004, a minimum required capital of listed companies had been VND 10 billions. As of 2004, it is only VND 5 billions.

VND 444,000 million (USD 27.95 million) at the first trading session (July 28th, 2000) to VND 2,650,197 million (USD 166.84 million) at year-end 2002, and to VND 6,337,478 million (USD 398.96 million) on December 31st, 2005. Moreover, the data in Table 7.3 reveal that the market capitalisation on GDP ratio has been negligible although it has been fairly improved year by year. Specifically, this ratio increases to 0.55 percent in 2004 from 0.24 percent in 2000.

Table 7.3: Key indicators for the STC over the period of 2000-2005

Indicators	2000	2001	2002	2003	2004	2005
No. of listed companies	5	10	20	23	26	32
Market capitalisation (bil. VND)	1,048.76	1,661.10	2,650.20	2,514.29	3,945.31	6,337.48
Market capitalisation on GDP (%)	0.24	0.34	0.49	0.42	0.55	na
Yearly trading value (bil. VND)	91.40	925.38	762.77	422.50	1,692.99	3,275.83
Trading value on GDP (%)	0.02	0.19	0.14	0.07	0.24	na
Average daily trading value (bil. VND)	1.39	6.13	3.23	1.71	6.80	13.12
VNINDEX	206.83	235.40	183.33	166.94	239.29	307.50
Percentage change in VN-INDEX (%)	-	+ 13.8	- 22.1	- 8.9	+ 43.3	+ 28.5

Source: Own calculation on the basis of data obtained from Bank for Investment & Development of Vietnam Securities Company's website, www.bsc.com.vn.
Note: All figures are collected at the end of each year.
na: not available

The thin market is also reflected by the fact that trading value on the STC has been tiny. During the first year of trading, the average daily trading value on the STC is only VND 1,385 millions (USD 0.09 million). The average daily trading value increases significantly in 2001 to the value of VND 6,128 million (USD 0.39 million). However, it remarkably declines in two consecutive following years (2002 and 2003). Specifically, the average daily trading value has a decrease about 47 percent each year for the period of 2002-2003. Then, the average daily trading has quickly recovered. Indeed, the average daily trading value reaches VND 6.80 billion in 2004 and VND 13.12 billion in 2005.

Another indicator to refer to the thinness of the STC is trading value on GDP ratio. This ratio has been negligible, and continuously declined over the period

of 2000-2003. Indeed, it decreases from 0.20 percent in 2000 to 0.07 percent in 2003. Small total market capitalisation and commensurately small trading volumes make the Vietnamese stock market as the smallest one in the Southeast Asian region.
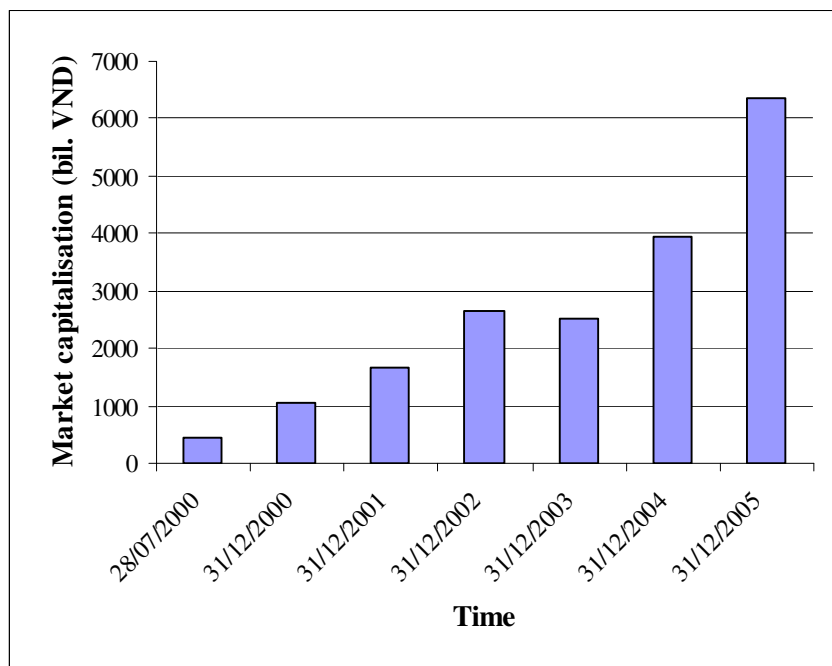
Figure 7.1: Market capitalisation of the STC for the period from July 28th, 2000 to December 31st, 2005

During the year following the STC's opening, the prices of all listed shares moved up daily. Consequently, the VNINDEX considerably and continuously increased, moving from an initial base level of 100 to the record level of 571.04 on June 25th, 2001. The main reason to explain for the stock price's steep ascent is the existence of an acute imbalance between supply and demand for shares[25]. Since then, however, with the government's great effort in creating commodities for the market by stimulating joint stock companies to list their stocks on the STC, the market index has fairly declined. In fact, the VNINDEX has slipped down continuously from the top of 571.04 to the bottom of 130.9 on October 24th 2003. After falling to the bottom, the VNINDEX has recovered and kept fairly stable at the level above 200 since January 2004. As of December 30th 2005, the VN-Index achieved the level of 307.50 points. The trend of VNINDEX changes over the period from opening date to December 30th 2005 is graphically presented in Figure 7.2.

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[25] As of June 25th 2001, only 6 joint stock companies with the total capital of VND 360,044 millions (USD 22.87 millions) listed their stock on the STC.
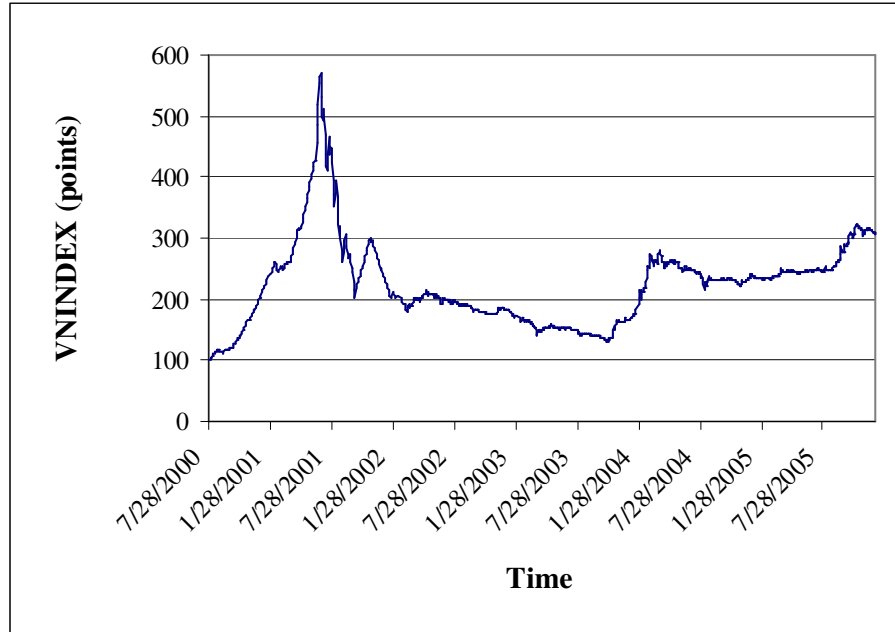
Figure 7.2: VNINDEX changes over the period from July 28th, 2000 to December 31st, 2005

7.5. Comparison of performance between non-listed equitised firms and listed equitised firms

This section provides briefly a comparison of performance between non-listed equitised firms and listed equitised firms for the period from 2002 to 2003. It is noted here that all performance measures are averaged over the period in question. The comparison is summarised in Table 7.4.

Regarding the profitability measures, Table 7.4 shows that listed equitised firms outperform non-listed ones in term of IBTS. Conversely, they underperform non-listed equitised firms in terms of IBTA and IBTE. In addition, it is found from the table that income efficiency of listed equitised firms surpasses that of non-listed equitised firms for the period of 2002-2003. On the other hand, non-listed equitised firms' sales efficiency exceeds listed equitised firms'. Moreover, listed equitised firms' size, measured by real sales and a number of employees, is bigger than non-listed equitised firms'. Specifically, real sales and a number of employees of the former group are VND 187,235 million and 892 employees comparing to VND 123,878 million and 447 employees of the later group respectively. Finally, listed equitised firms have lower debt ratio than non-listed equitised firms. However, all the differences in mean between two groups are statistically insignificant, except the difference in the number of employees.

Table 7.4: Comparison of performance between non-listed equitised firms and listed equitised firms for the period of 2002-2003

Measures	Non-listed equitised firms		Listed equitised firms		Difference in mean between two groups	Z-Statistic for difference in mean between two groups
	N	Mean	N	Mean		
Profitability						
IBTA	79	0.1175	18	0.1153	-0.0022	0.08
IBTS	79	0.0753	18	0.0907	0.0154	0.87
IBTE	79	0.2359	18	0.2220	-0.0139	0.33
Operating efficiency						
Sales efficiency (mil VND)	77	578.4	17	352.5	-225.9	0.77
Income efficiency (mil VND)	77	22.9	17	47.3	24.4	1.45
Real sales (mil. VND)	79	123,878	18	187,235	63,357	1.38
Leverage						
Total debts/total assets	79	0.5173	18	0.4673	-0.0500	0.85
Number of employees	77	447	17	892	445	2.20[b]

[b]: *Significant at the 5% level.*

7.6.   Conclusion

This chapter provides an overall description of the stock market in Vietnam. To be launched on July 28th 2000, the stock market has been supervised by the SSC, an organ belonging to the Ministry of Finance. As of December 31st 2004, 13 securities and 26 listed companies have joined the market. Practically, trading sessions had initially been conducted on Monday, Wednesday and Friday, but as from March 1st 2002, the market has traded daily with two order matching sessions. In addition, at the STC securities transactions are conducted through the fully-computerized trading system, namely Automatic Order Matching and Put Through trading. Especially, foreign investors (institutions and individuals) have been allowed trading on the STC through the securities companies. However, their ownership (aggregation ownership of all foreign investors) in a listed firm is limited at the maximum of 30 percent of the firm's equity.

With the government's great effort, the market has fairly grown in terms of number of listed companies and market capitalisation during its operation period. However, the market has rather been thin with only 26 listed firms with the total market capitalisation of about USD 250.58 millions. On the basis of the market characteristics described in this chapter, it is expected that the

Vietnamese stock market is not efficient, even in the lowest level (the weak form). Tests of the weak form efficiency for the market are conducted in the following chapter.

Appendix 7.1: Securities companies in Vietnam

Name of companies	Capital (VND bil.)	Ownership	Trading on the STC since	Estimated market share* in Jan 04 (%)
Bao Viet Securities Co.	43	100% owned by Bao Viet Insurance; a state-owned insurance company.	Jul. 28, 00	21.1
Bank for Investment & Development of Vietnam Securities Co.	100	100% owned by Bank for Investment & Development of Vietnam; a state-owned bank	Jul. 28, 00	12.4
Asia Commercial Bank Securities Co.	43	100% owned by Asia Commercial Bank, a joint stock bank	Jul. 28, 00	14.4
Thang Long Securities Co.	43	100% owned by Military Bank, a joint stock bank	Jul. 28, 00	5.4
First Securities Co.	43	Privately owned joint stock company	Jul. 28, 00	5.5
Saigon Securities Incorporation	20	Privately owned joint stock company	Jul. 28, 00	23.2
Industry Commerce Bank Securities Co.	55	100% owned by Industry Commerce Bank, a state-owned bank	Nov. 16, 00	7.5
Bank for Agriculture & Rural Development Securities Co.	100	100% owned by Bank for Agriculture & Rural Development, a state-owned bank	Nov. 05, 01	2.5
Vietcombank Securities Co.	60	100% owned by Bank for Foreign Trade of Vietnam; a state-owned bank	Jun. 21, 02	5.7
Mekong Securities Co.	6	Institutions: 30% Individuals: 70%	Apr. 02, 03	0.5
Ho Chi Minh Securities Co.	50	State: 28.8% Institutions: 57.2% Individuals: 14.0%	May 02, 03	1.7
Eastern Asia Bank Securities Co.	21	100% owned by Eastern Asia Commercial Joint Stock Bank	Sep. 15, 04	n/a
Hai Phong Securities Joint Stock Co.	21.75	State: 46% Others: 52%	Oct. 29, 03	n/a

Source: Dragon Capital Group's website, www.dragoncapital.com
* Market shares are calculated based on order matching transactions.

Appendix 7.2: An illustrated example of VN-Index calculation and maintenance

This appendix illustrates how the VN-Index is calculated and maintained over time by closely examining a simple example as follow. The example is based on trading information of the first some sessions on the STC.

Table: 7.5: Trading information of the first some sessions on the STC

Kind of share	No. of outstanding shares (mil.)	Closing price (VND 1,000)				
		28/07/00	31/07/00	02/08/00	04/08/00	07/08/00
REE	15.000	16.0	16.3	16.6	16.9	17.2
SAM	12.000	17.0	17.2	17.5	17.8	18.1
HAP	1.008	-	-	-	16.0	16.3
TMS	2.200	-	-	-	14.0	14.0

Source: Bank for Investment & Development of Vietnam Securities Company's website, www.bsc.com.vn.

In the first three sessions, only two kinds of share were listed (REE and SAM) on the market. As mentioned already, the VN-Index was set at 100 points on the base date, Jul. 28 2000. Applying formula (1) the VN-Index of Jul. 31st 2000 and Aug. 2nd 2000 are simply computed as follows:

$$\text{VN-Index (Jul. } 31^{st}) = \frac{16.3 \times 15 + 17.2 \times 12}{16.0 \times 15 + 17.0 \times 12} \times 100 = 101.55 \text{ points}$$

$$\text{VN-Index (Aug. } 2^{nd}) = \frac{16.6 \times 15 + 17.5 \times 12}{16.0 \times 15 + 17.0 \times 12} \times 100 = 103.38 \text{ points}$$

On Aug. 4th 2000, there are two new companies were listed on the STC (HAP and TMS). However, shares of these companies are not included in calculation the VN-Index for this date because changes in share price of these companies did not exist yet. Therefore, the VN-Index of Aug. 4th 2000 is determined as:

$$\text{VN-Index (Aug. } 4^{th}) = \frac{16.9 \times 15 + 17.8 \times 12}{16.0 \times 15 + 17.0 \times 12} \times 100 = 105.20 \text{ points}$$

However, after Aug. 4th 2000, the two new listed shares have to be included in the Index calculation. To prevent the value of the Index from changing due to new companies listed, a Divisor adjustment (new Divisor) is required. The new Divisor is calculated by the following formula:

$$D_1 = \frac{V_1}{V_1 - AV} \times D_0 = \frac{V_1}{V_0} \times D_0$$

where:
- D_1: A new Divisor (adjusted Divisor);
- D_0 ($\Sigma P_{i0} \times Q_{it}$): The base (last) Divisor;
- V_1: Total market capitalisation of all kinds of listed share at the time new shares added;
- AV (adjustment value): Market capitalisation of new shares at the time new shares added.
- V_0: Market capitalisation of old listed shares at the time new shares added.

According to the information above, value of new Divisor (D_1) on Aug. 4th 2000 is:

$$D_1 = \frac{16.9 \times 15 + 17.8 \times 12 + 16.0 \times 1.008 + 14.0 \times 2.2}{16.9 \times 15 + 17.8 \times 12} \times 16.0 \times 15 + 17.0 \times 12$$

$$D_1 = 488,607$$

The VN-Index of Aug. 7th 2000 now is computed as the same way with the first some sessions as follow:

$$\text{VN-Index} = \frac{17.2 \times 15 + 18.1 \times 12 + 16.3 \times 1.008 + 14.0 \times 2.2}{488,607} \times 100 = 106.92 \text{ points}$$

The Index increases 1.72 points on Aug. 7th 2000 compared to the last session (Aug. 4th 2000). The increase is only resulted from increasing in share prices, not regarding to number of new shares listed.

Appendix 7.3: Listed companies on the STC (as of Dec. 31st, 2005)

No	Date of listing	Company	Code	Sector	No. of outstanding common shares	Share price at IPO (1,000 VND)	Share price at Dec. 31st, 2005 (1,000 VND)
1	Jul. 28, 2000	Refrigeration Electrical Engineering Company	REE	Manufacture	15,000,000	16.0	34.4
2	Jul. 28, 2000	Cable and Telecommunications Material Company	SAM	Manufacture	12,000,000	17.0	47.0
3	Aug. 04, 2000	Hai Phong Paper Joint Stock Company	HAP	Manufacture	2,008,000	16.0	22.8
4	Aug. 04, 2000	Transimex Joint Stock Company	TMS	Transportation	3,300,000	14.0	43.4
5	Dec. 15, 2000	Long An Food Processing Export Company	LAF	Manufacture	1,930,082	17.0	20.3
6	Jul. 12, 2001	Saigon Hotel Corporation	SGH	Hotel	1,766,300	25.2	18.0
7	Oct. 18, 2001	Halong Canned Food Joint Stock Company	CAN	Manufacture	3,500,000	27.1	17.2
8	Nov. 26, 2001	Da Nang Plastics Joint Stock Company	DPC	Manufacture	1,587,280	35.0	12.2
9	Dec. 17, 2001	Bien Hoa Confectionery Company	BBC	Manufacture	5,600,000	27.0	21.9
10	Dec. 26, 2001	Saigon Beverages Joint Stock Company	TRI	Manufacture	3,790,300	29.0	28.0
11	Jan. 02, 2002	Binh Thanh Import-Export Production & Trade Joint Stock Company	GIL	Trade	1,700,000	38.0	32.0
12	Jan. 17, 2002	Binh Trieu Construction and Engineering Joint Stock Company	BTC	Manufacture	1,261,345	21.9	8.1
13	Apr. 11, 2002	Bim Son Packaging Company	BPC	Manufacture	3,800,000	25.0	16.2
14	Apr. 18, 2002	Chau Thoi Concrete Corporation	BT6	Construction	5,882,690	23.9	31.0
15	Apr. 22, 2002	General Forwarding & Agency Corporation	GMD	Transportation	20,000,000	42.5	69.5
16	May 02, 2002	An Giang Fisheries Import & Export Joint Stock Company	AGF	Manufacture	4,179,130	30.0	42.0

Appendix 7.3: Continued

17	May 09, 2002	Savimex Corporation	SAV	Manufacture	4,500,000	25.0	31.0
18	Aug. 29, 2002	Seafood Joint Stock Company No. 4	TS4	Manufacture	1,500,000	16.0	26.0
19	Aug. 19, 2002	Khanh Hoi Import Export Joint Stock Company	KHA	Trade	3,350,000	21.5	21.3
20	Dec. 18, 2002	Hanoi P&T Construction and Installation Joint Stock Company	HAS	Construction	1,200,000	21.5	32.8
21	Feb. 12, 2003	VTC Telecommunications Joint Stock Company	VTC	Manufacture	1,797,740	21.0	32.9
22	Nov. 04, 2003	Petroleum Mechanical Joint Stock Company	PMS	Manufacture	3,200,000	14.5	14.4
23	Mar. 15, 2004	Bach Tuyet Cotton Corporation	BBT	Manufacture	6,840,000	21.6	11.0
24	Apr. 14, 2004	Hoa An Joint Stock Company	DHA	Manufacture	3,500,000	38.5	43.0
25	Sep. 21, 2004	Saigon Fuel Joint Stock Company	SFC	Trade	1,700,000	22.8	28.5
26	Dec. 12, 2005	Kinh Do Corporation	KDC	Manufacture	25,000,000	59.0	54.0
27	Mar. 1, 2005	Southern Seed Joint-Stock Corporation	SSC	Agriculture	6,000,000	30.8	44.0
28	Mar. 21, 2005	HaNoi Maritime Holding Company	MHC	Transportation	6,705,640	19.0	23.3
29	Jul. 11, 2005	Phuong Nam Culture Joint-Stock Corporation	PNC	Trade	2,000,000	16.0	16.6
30	Jul. 20, 2005	Thien Nam Trading Import Export Corporation	TNA	Trade	1,300,000	30.0	31.0
31	Dec. 12, 2005	Kinh Do Corporation	KDC	Manufacture	25,000,000	59.0	54.0
32	Dec. 16, 2005	Nhi-Hiep Brike-Tile Joint Stock Company	NHC	Manufacture	1,336,061	23.0	24.5

Source: The State Securities Commission's website (www.ssc.gov.vn)

Chapter 8

Testing the Weak-Form Efficiency for the Vietnamese Stock-Market

8.1. Introduction

During the past decades, the efficient market hypothesis (EMH) has been at the heart of the debate in the financial literature because of its important implications. Fama (1970) defined a market as being efficient if prices fully reflect all available information, and suggested three models for testing market efficiency: the Fair Game model, the Submartingale model, and the Random Walk model. Also, according to Fama (1970), EMH can be categorised into three levels based on the definition of the available information set, namely weak form, semi-strong form, and the strong form. Following the work of Fama, the EMH has been widely investigated in both developed and emerging markets. Especially, in emerging stock markets, most empirical studies have focused on the weak form, the lowest level of EMH because if the evidence fails to support the weak-form of market efficiency, it is not necessary to examine the EMH at the stricter levels of semi-strong and strong form (Wong and Kwong, 1984). Although many empirical studies have been devoted to testing for the weak form of EMH in emerging stock markets (see the review of empirical literature in Section 8.4), no published research exists for the Vietnamese stock market. This chapter aims to seek evidence of the weak form market efficiency in the Vietnamese stock market. In order to achieve the objective, a set of complementary tests, namely autocorrelation tests, runs test and variance ratio tests, are employed in this chapter. The data used for these tests primarily comprise daily and weekly observed returns of the market index and five individual stocks listed on the market. Then, the data are adjusted for thin (infrequent) trading that is a prominent characteristic of the Vietnamese stock market and that could seriously bias the results of empirical studies on market efficiency.

The rest of this chapter is organised as follows. The theory of EMH is briefly discussed in Section 8.2. Section 8.3 provides definitions of different levels (forms) of EMH. A summary of empirical studies on the weak form efficiency in emerging stock markets is given in section 8.4. Section 8.5 is devoted to describing the data employed in this study. Statistical techniques used to test for the weak form market efficiency and empirical findings are presented in Section 8.6 and 8.7 respectively. Finally, conclusions of the chapter appear in Section 8.8.

8.2. The Theory of Efficient Market Hypothesis

The EMH, which plays an important role in the financial economics literature, relies on the efficient exploitation of information by economic actors. Generally, an asset market is referred to be efficient if the asset price in question must fully reflect all available information. If this is true, it should not be possible for market participants to earn abnormal profits. Based on the definitional statement of an efficient market above, Fama (1970) suggested three models for testing stock market: the Expected Return or Fair Game model, the Submartingale model, and the Random Walk model.

The Fair Game Model

In general, the fair game model states that a stochastic process X_t with the condition on information set I_t, is a fair game if it has the following property:

$$E(X_{t+1}|I_t) = 0 \qquad (8.1)$$

In the case of stock markets, Fama (1970) introduced a model of the EMH that is derived from the Fair Game property for expected returns and expressed it in the following equations:

$$x_{j,t+1} = p_{j,t+1} - E(p_{j,t+1}|I_t) \qquad (8.2)$$

with $E(x_{j,t+1}|I_t) = E[p_{j,t+1} - (p_{j,t+1}|I_t)] = 0 \qquad (8.3)$

where $x_{j,t+1}$ is the excess market value of security j at time t+1, $p_{j,t+1}$ is the observed (actual) price of security j at time t+1, and $E(p_{j,t+1}|I_t)$ is the expected price of security j that was projected at time t, conditional on the information set I_t or equivalently

$$z_{j,t+1} = r_{j,t+1} - E(r_{j,t+1}|I_t) \qquad (8.4)$$

with $E(z_{j,t+1}|I_t) = E[r_{j,t+1} - (r_{j,t+1}|I_t)] = 0 \qquad (8.5)$

where $z_{j,t+1}$ is the unexpected (excess) return for a security j at time t+1, $r_{j,t+1}$ is the observed (actual) return for a security j at time t+1, and $E(r_{j,t+1}|I_t)$ is the equilibrium expected return at time t+1 (projected at time t) on the basis of the information set I_t.

This model implies that the excess market value of security j at time t+1 ($x_{j,t+1}$) is the difference between actual price and expected price on the basis of the

information set I_t. Similarly, the unexpected (excess) return for a security j at time t+1 ($z_{j,t+1}$) is measured by the difference between the actual and expected return in that period conditioned on the set of available information at time t, I_t. According to the Fair Game model, the excess market value and excess return are zero. In other word, Equation 8.3 and 8.5 indicate that the excess market value sequence $\{x_{j,t+1}\}$ and $\{z_{j,t+1}\}$ respectively are fair games with respect to the information sequence $\{I_t\}$.

The Submartingale Model

The Submartingale model is the Fair Game model with a small adjustment in expected return. In this model, the expected return is considered to be positive instead of zero as in the Fair Game model. The adjustment implies that prices of securities are expected to increase over time. In other word, the returns on investments are projected to be positive due to the risk inherent of capital investment. The Submartingale model can be mathematically written as follows:

$$E(p_{j,t+1}|\ I_t) \geq\ p_{j,t} \tag{8.6}$$

$$E(r_{j,t+1}|\ I_t)\ \ =\ \ \frac{E(p_{j,t+1}|\ I_t) - p_{j,t}}{p_{j,t}}\ \geq 0 \tag{8.7}$$

This model states that the expected return sequence $\{r_{j,t+1}\}$ follows a submartingale, conditional on the information sequence $\{I_t\}$, which is meaningless in forecasting stock prices, except that the expected return, as projected on the basis of the information I_t, is equal to or greater than zero (Fama, 1970). The important empirical implication of the submartingale model is that no trading rule based only on the information set I_t can have greater expected returns than a strategy of always buying and holding the security during the future period in question.

The Random Walk Model

According to Fama (1970) an efficient market is a market in which prices reflect all available information. In the stock market, the intrinsic value of a share is equivalently measured by the future discounted value of cash flows that will accrue to investors. If the stock market is efficient, share prices must reflect all available information which is relevant for the evaluation of a company's future performance, and therefore the market price of share must be equal to its intrinsic value. Any new information, which is expected to change a company's future profitability, must be immediately reflected in the share price because any delay in the diffusion of information to price would result in irrationality, as some subsets of available information could be exploited to forecast future profitability. Thus, in an efficient market, price changes must be a response only

to new information. Since information arrives randomly, share prices must also fluctuate unpredictably. The Random Walk model can be stated in the following equation:

$$P_{t+1} = P_t + \varepsilon_{t+1} \tag{8.8}$$

where:

P_{t+1}: price of share at time t+1;

P_t : price of share at time t;

ε_{t+1}: random error with zero mean and finite variance.

Equation 8.8 indicates that the price of a share at time t+1 is equal to the price of a share at time t plus given value that depends on the new information (unpredictable) arriving between time t and t+1. In other word, the change of price, $\varepsilon_{t+1} = P_{t+1} - P_t$, is independent of past price changes.

Fama (1970) argued that the random walk model is an extension of the expected return or fair game model. Specifically, the fair game model just indicates that the conditions of market equilibrium can be stated in terms of expected returns while the random walk model gives the details of the stochastic process generating returns. Therefore, he concluded that empirical tests of the random walk model are more powerful in support of the EMH than tests of the fair game model.

8.3.   The Forms of EMH

The EMH can be more specifically defined with respect to the available information set (I_t) to market participants. Fama (1970) classified the information set into three subsets and suggested three forms (levels) of EMH, depending on the definition of the relevant information subsets, namely the weak, semi-strong, and strong form. This section highlights these forms with their practical implications.

The weak form of EMH

The weak form of EMH is the lowest form of efficiency that defines a market as being efficient if current prices fully reflect all information contained in past prices. This form implies that past prices cannot be used as a predictive tool for future stock price movements. Therefore, it is not possible for a trader to make abnormal returns by using only the past history of prices.

Semi-strong form of EMH

The semi-strong form of the EMH states that current market prices reflect all publicly available information, such as information on money supply, exchange rate, interest rates, announcement of dividends, annual earnings, stock splits, etc.

This means that it is impossible for market participants to make consistently superior returns just by analyzing annual reports or other published information because market prices will be immediately adjusted to any good or bad news contained in such reports as they are revealed.

Strong form of EMH

If by increasing the information set to include private information, it is not possible for a market participant to earn abnormal profits, then the market is referred as strong form of EMH. In other words, under the strong form of EMH market prices of securities reflect all relevant information, including both public and private information. The strong form of EMH implies that private information (inside information) is hard to obtain for making abnormal returns because if a market participant wants to have it, he/she has to compete with many active investors in the market. It is important to note that an assumption for the strong form is that inside information cost is always zero. However, this assumption hardly exists in reality, so the strong form of EMH is not very likely to hold.

8.4.   Review of empirical literature on the Weak Form efficiency in emerging stock markets

The aim of this section is to draw a broad picture of empirical literature on the weak form efficiency in emerging stock markets. A summary of selected studies are given in Table 8.1.

As previously mentioned, the weak form of EMH implies that current market prices of stocks are independent on their past prices. In other words, a market is efficient in the weak form if stock prices follow a random walk process. Therefore, tests of weak form efficiency are naturally based on an examination of the interrelationship between current and past stock prices (Fawson et al., 1996). Practically, several statistical techniques, such as runs test, unit root test, serial correlation tests, and spectral analysis, have been commonly used for testing weak form efficiency[26]. Most studies on the weak form of EMH in emerging stock markets have used the runs test and/or unit root test as a principle method for detecting a random walk, a necessary condition for market efficiency in the weak form. Specifically, Table 8.1 shows that the runs test is adopted by Sharma and Kennedy (1997), Barnes (1986), Dickinson and Muragu (1994), Urrutia (1995), Karemera et al. (1999), Wheeler et al. (2002), Abraham et al. (2002), and the unit root test was employed by Groenwold et al. (2003), Buguk and Brorsen (2003), and Seddighi and Nian (2004) while Fawson et al.

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[26] Some of these techniques are presented in the following Section (Section 8.5).

(1996), Moorkerjee and Yu (1999), and Abeysekera (2001) conducted both techniques in their study. A further test for market efficiency in the weak form that has been applied by a number of researchers is the serial correlation test, including the correlation coefficient test, Q-test, and variance ratio tests. Indeed, a combination of correlation coefficient test (testing for significance of individual serial correlation coefficient) and Q-test (testing for significance of a set of coefficients) is adopted by Dickinson and Muragu (1994), Fawson et al. (1996), Moorkerjee and Yu (1999), Abeysekera (2001), and Groenwold et al. (2003) while Urrutia (1995), Dockery and Vergari (1997), Grieb and Reyes (1999), Karemera et al. (1999), Alam et al. (1999), Chang and Ting (2000), Cheung and Coutts (2001), Abraham et al. (2002), and Lima and Tabak (2004) apply variance ratio tests as the main methodology to determine the weak form of market efficiency in their study. Finally, a few researchers use some other techniques, such as spectral analysis (Sharma and Kennedy, 1977; Fawson et al., 1996), GPH (Geweke and Porter-Hudak) fractional integration test (Buguk and Brorsen, 2003), and autoregressive conditional heteroscedasticity (ARCH) test (Seddighi and Nian, 2004) in order to find evidence for market efficiency.

Data obtained for testing weak form of EMH in emerging stock markets include stock price indices and/or individual stock prices series. Specifically, stock price indices are used in studies of Sharma and Kennedy (1997), Urrutia (1995), Fawson et al. (1996), Dockery and Vergari (1997) Abeysekera (2001), Abraham et al. (2002), Lima and Tabak (2004), while individual stock prices are employed by Dickinson and Muragu (1994), Olowe (1999), Wheeler et al. (2002). Especially, Barnes (1986), Grieb and Reyes (1999), Seddighi and Nian (2004) employed both kinds of data for their tests in order to detect the weak form of market efficiency. Another aspect of data used for testing weak form efficiency hypothesis in emerging stock markets is frequency of time series. Based on this respect, the data consist of daily (Mookerjee and Yu, 1999; Cheung and Coutts, 2001; Groenewold et al., 2003, Lima and Tabak, 2004 and Seddighi and Nian, 2004), weekly (Dickinson and Muragu, 1994; Dockery and Vergari, 1997; Grieb and Reyes, 1999; Abraham et al., 2002; and Buguk and Brorsen, 2003), monthly (Sharma and Kennedy, 1977; Barnes, 1986; Fawson et al., 1996; Olowe, 1999; Karemera et al., 1999; and Alam et al., 1999) and even yearly time series (Chang and Ting, 2000).

Empirical findings derived from the studies in emerging stock markets have been mixed. Indeed, some studies provide empirical results to reject the null hypothesis of weak form market efficient while the others show evidence to support the weak form of EMH. Regarding emerging European stock markets, for instance, the empirical evidence obtained from Wheeler et al. (2002) fails to support the weak form efficient hypothesis for the Warsaw Stock Exchange (Poland). On the other hand, Dockery and Vergari (1997) document that the Budapest Stock Exchange is efficient in the weak form. In addition, Karemera et al. (1999) and Buguk and Brorsen (2003) show empirical evidence to support

the null hypothesis of weak form market efficiency for the stock market in Turkey. Surprisingly, in the perspective of Africa, Dickinson and Muragu (1994), and Olowe (1999) find that the Nairobi and Nigerian stock exchanges respectively are efficient in the weak form.

Turning to stock markets in the Latin American region, Urrutia (1995) provides mixed evidence on the weak form efficiency for the stock markets in Argentina, Brazil, Chile, and Mexico. Specifically, results of the variance ratio test reject the random walk hypothesis for all markets while findings from the run tests indicate that these markets are weak form efficient. Consistent with the results reported by Urrutia (1995), Grieb and Reyes (1999) show empirical findings, which are obtained from the variance ratio tests, to reject the hypothesis of random walk for all stock market indexes and most individuals stock in Brazil and Mexico. Moreover, Karemera et al. (1999) find that stock return series in Brazil, Chile, and Mexico do not follow the random walk, based on the results of single variance ratio tests, but Argentina does. However, when the multiple variance ratio test is applied, the market index returns in Brazil is observed to follow the random walk process (the others are not changed).

Empirical studies on weak form efficiency in Asian stock markets have been extensively conducted in recent years. Indeed, in the Chinese stock markets, Mookerjee and Yu (1999) and Groenewold et al. (2003) consistently document that these markets (Shanghai and Shenzhen stock exchanges) are not weak form efficient. In addition, Lima and Tabak (2004) find that the B shares index for both Shanghai and Shenzhen Stock Exchange do not follow the random walk. However, they also report that the hypothesis of weak form efficiency can not be rejected for A shares indexes of the two exchanges. Moreover, Seddighi and Nian (2004) document that the Shanghai Stock Exchange is weak form efficiency for the period from Jan. 4th 2000 to Dec. 31st 2000. Regarding the Taiwanese stock market, it is proved that the market is efficient in the weak form (Fawson et al., 1996; Alam et al., 1999; and Chang and Ting, 2000). Similarly, the null hypothesis of random walk can not be rejected for the Hong Kong stock market (Karemera et al., 1999; Alam et al., 1999; Cheung and Coutts, 2001; and Lima and Tabak, 2004). In addition, it is documented that stock market in the ASEAN region (Indonesia, Malaysia, Thailand and Singapore) follow the weak form of EMH (Barnes, 1986; Karemera et al., 1999; Alam et al., 1999). In the Southern part of Asia, Sharma and Kennedy (1977) and Alam et al. (1999) report that the random walk hypothesis can not be rejected for stock price changes on the Bombay (India) and Dhaka Stock Exchange (Bangladesh) respectively. However, Abeysekera (2001) and Abraham (2002) show evidence to reject the hypothesis of weak form efficiency for stock markets in Sri Lanka, Kuwait, Saudi Arabia and Bahrain.

Table 8.1: Summary of empirical studies on the Weak Form efficiency in emerging stock markets

Study	Methodology	Data	Findings
Sharma and Kennedy (1977)	- Run test - Spectral analysis	Monthly stock price index for the Bombay Variable Dividend Industrial Share Index covering the period from 1963 to 1973	Stock price changes on the Bombay stock exchange follow a random walk process.
Barnes (1986)	- Serial correlation tests - Run test - Spectral analysis	Monthly stock prices series of 30 individual stocks and 6 sector indices on the Kuala Lumpur Stock Exchange for the 6 years ended June 30, 1980	Overall, the market is efficient in the weak form (only a few individual stocks do not follow the random walk process).
Dickinson and Muragu (1994)	- Autocorrelation tests - Run test	Weekly price series of 30 individual stocks listed on the Nairobi Stock Exchange for the period of 1979-1989	The majority of individual stock price series satisfy conditions of weak form of EMH.
Urrutia (1995)	- Variance ratio test - Run tests	Monthly data for market indexes in Argentina, Brazil, Chile and Mexico covering from Dec. 1975 to March 1991	Results of the variance ratio test reject the random walk hypothesis for all markets. However, findings from the run tests can not reject the hypothesis.
Fawson, et al. (1996)	- Autocorrelation tests - Taylor's Binomial Distribution test - Run test - Unit root test	Monthly stock market returns for the index of the Taiwan Stock Exchange during the period between Jan. 1967 and Dec. 1993	The null hypothesis of weak form efficiency cannot be rejected for the market.
Dockery and Vergari (1997)	- Variance ratio test	Weekly stock market index of the Budapest Stock Exchange covering the period from Jan. 1991 to May 1995	The Budapest Stock Exchange is efficient in the weak form.

Table 8.1: Continued

Mookerjee and Yu (1999)	- Autocorrelation tests - Run test - Unit root test	Daily stock price indices of Shanghai and Shenzhen stock exchange for the period from Dec. 19 1990 to Dec. 17 1993 and from Apr. 3 1991 to Dec. 17 1993 respectively	The weak form of EMH is rejected for both exchanges.
Olowe (1999)	- Autocorrelation tests	Monthly returns data of 59 individual stocks listed on the Nigerian Stock Market over the period Jan. 1981-Dec. 1992	The null hypothesis of market efficiency in the weak form can not be rejected for the Nigerian Stock Market.
Grieb and Reyes (1999)	- Variance ratio test	Weekly stock price series for the market indexes and individual stocks in Brazil and Mexico during the period from Dec. 30 1988 to Jun. 30 1995	The hypothesis of weak form efficiency is rejected for all market indexes and most individual stocks.
Karemera et al. (1999)	- Variance ratio tests - Run test	Monthly stock market indexes for 15 emerging stock markets (Argentina, Brazil, Chile, Hong Kong, Indonesia, Israel, Jordan, Korea, Malaysia, Mexico, the Philippines, Singapore, Taiwan, Thailand and Turkey) during the period from Dec. 1987 to May 1997 (eleven markets) and from Jan. 1986 to Apr. 1995 (the remaining four markets)	Ten of fifteen markets follow the random walk under multiple variance ratio test (Argentina, Brazil, Hong Kong, Indonesia, Israel, Jordan, Korea, Malaysia, Singapore and Thailand) while only six of fifteen markets are found to be consistent with the random walk hypothesis under single variance ratio test (Argentina, Hong Kong, Israel, Korea, Malaysia, and Singapore). Findings of the run tests show nine of the total markets to be efficient in the weak form (Brazil, Hong Kong, Indonesia, Jordan, Korea, Malaysia, Mexico, Thailand and Turkey).

Table 8.1: Continued

Alam et al. (1999)	- Variance ratio test	Monthly return data for market index of Hong Kong, Malaysia, Taiwan, Sri Lanka and Bangladesh covering from Nov. 1986 to Dec. 1995	The hypothesis of weak form efficiency can not be rejected for all markets, except Sri Lanka.
Chang and Ting (2000)	- Variance ratio test	Weekly, monthly, quarterly and yearly returns for the market index of Taiwanese stock market for the period from Jan. 9 1971 to Jan. 6 1996	The random walk hypothesis can not be rejected for all series, except weekly series.
Cheung and Coutts (2001)	– Variance ratio test	Daily stock market index of the Hong Kong Stock Exchange over the period Jan. 1 1985 – Jun. 30 1997	Empirical evidence fails to reject the null hypothesis of weak form efficiency for the market.
Abeysekera (2001)	– Run test – Autocorrelation tests – Unit root test	Daily, weekly and monthly returns of two stock market indices of the Colombo Stock Exchange (Sri Lanka) for the period from Jan. 1991 to Nov. 1996	The weak form of EMH can not be accepted for the Colombo Stock Exchange.
Wheeler et al. (2002)	- Autocorrelation tests - Run test	Daily returns series of 16 individual stocks listed on the Warsaw Stock Exchange covering from 1991 to 1996.	The empirical evidence fails to support the null hypothesis of weak form of market efficiency for most of the individual stocks.
Abraham et al. (2002)	- Variance ratio test - Run test	Weekly market price indexes for the three major Gulf stock markets (Kuwait, Saudi Arabia, and Bahrain) during the period between Oct. 1992 and Dec. 1998	Weak form efficiency is rejected for the Gulf stock markets when the observed indices are used, but it can not be rejected when infrequent trading of these markets is corrected.

Table 8.1: Continued

Groenewold et al. (2003)	– Autocorrelation tests – Unit root test	Daily returns series for seven indices of the Shanghai, Shenzhen stock exchange (China) for the 1992-2001 period	The weak form of EMH is rejected for the Chinese stock exchanges. In addition, the empirical evidence reveals the positive effects of banks' participation on the market efficiency.
Buguk and Brorsen (2003)	– Unit root test – GPH (Geweke and Porter-Hudak) fractional integration test - Variance ratio tests	Weekly market index of the Istanbul Stock Exchange's composite, industrial, and financial index for the period from 1992 to 1999	The results obtained from the augmented Dickey-Fuller, GPH fractional integration, and single variance ratio test consistently indicate that all three series are a random walk. However, the rank- and sign-based variance ratio test shows some evidence to reject the null hypothesis of weak form efficiency.
Lima and Tabak (2004)	– Variance ratio test	Daily stock prices index of Shanghai, Shenzhen (China), Hong Kong, and Singapore Stock Exchange over the period from Jun. 1992 to Dec. 2000	The null hypothesis of weak form efficiency cannot be rejected for Hong Kong and A shares for both the Shanghai, Shenzhen stock exchange. However, it is rejected for Singapore stock exchange and B shares of both two exchanges.
Seddighi and Nian (2004)	- Autocorrelation tests - Unit root test - ARCH test	Daily data of the market index and eight individual shares listed on the Shanghai Stock Exchange for the period from Jan. 4 2000 to Dec. 31, 2000	The null hypothesis of weak form efficiency is accepted for the case of market index and most of individual stock prices series.

8.5. Data description

The data used in this study primarily consist of daily and weekly price series of the market index (VNINDEX) and the five oldest stocks listed on the Ho Chi Minh City stock exchange. Specifically, the market index, namely VNINDEX, is a composite that is calculated from prices of all stocks traded on the STC while individual stocks selected for this study are REE, SAM, HAP, TMS and LAF[27]. All data are obtained over the period from July 28th 2000 (the first trading session of the stock exchange) to Dec. 31st 2004 from the Bank for Investment & Development of Vietnam Securities Co.'s website (www.bsc.com.vn). Then, a natural logarithmic transformation is performed for the primary data. To generate a time series of continuously compounded returns, daily returns are computed as follows:

$$r_t = \log(p_t) - \log(p_{t-1}) = \log(p_t / p_{t-1}) \tag{8.9}$$

where p_t and p_{t-1} are the stock prices at time t and $t-1$.
Similarly, the weekly returns are calculated as the natural logarithm of the index and the stock prices from Wednesday's closing price minus the natural logarithm of the previous Wednesday's close. If the following Wednesday's price is not available, then Thursday's price (or Tuesday's if Thursday's is not available) is used. If both Tuesday's and Thursday's prices are not available, the return for that week is reported as missing. The choice of Wednesday aims to avoid the effects of weekend trading and to minimize the number of holidays (Huber, 1997).
As mentioned in chapter 7, in the first stage of the market, from July 28th 2000 to March 1st 2002, only three sessions are traded every week. Afterward, the market has traded daily (five sessions). Therefore, the stock prices of the first stage in question are not included in the daily data that are used in this study. The weekly data are not affected by the frequent trading of the market, so the sample period for the observed series is from July 28th 2000 up to the end of the year 2004. Descriptive statistics for daily and weekly returns of the VNINDEX and the individual stocks are presented in Table 8.2.

8.6. Methodology

According to Fama (1970), market efficiency under the random walk model implies that successive price changes of a stock are independently and identically distributed, so the past movement or trend of a stock price or market cannot be used to predict its future movement. As reviewed in Section 8.4, in

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[27] For more detail of the five stocks, see Appendix 3 in chapter 7.

order to test the weak-form of EMH many techniques have been applied in empirical studies. Following these studies, a set of complementary tests are used to detect the random walk in the observed series of the Vietnamese stock market. First, the parametric autocorrelation test is used to examine whether the consecutive stocks returns are independent each other. Moreover, the results of the Jarque-Bera test (presented in Table 8.2), indicate that the stocks returns are not normally distributed, so a non-parametric test is likely to be more appropriate in testing for the random walk. Consequently, the runs test is also applied in chapter. Furthermore, the variance ratio tests, proposed by Lo and MacKinlay (1988), are conducted to examine whether uncorrelated increments exist in the series, under both assumptions of homoscedastic and heteroscedastic random walks.

Table 8.2: Descriptive statistics for the VNINDEX and the individual stocks returns

	VNINDEX	REE	SAM	HAP	TMS	LAF
Daily returns						
Observations	709	709	709	709	709	709
Mean	0.0001	-6.35E-05	0.0002	-0.0003	-6.28E-05	9.38E-05
Median	-0.0003	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	0.0204	0.1811	0.1798	0.2168	0.2942	0.1447
Minimum	-0.0206	-0.1811	-0.1798	-0.2117	-0.2942	-0.1567
Std. Dev.	0.0046	0.0138	0.0152	0.0196	0.0182	0.0110
Skewness	0.9	-2.8	-2.0	-1.3	-1.1	-0.8
Kurtosis	7.9	121.5	106.2	83.5	204.3	100.3
Jarque-Bera	800.7[a]	415,586.2[a]	314,917.0[a]	191,786.2[a]	1,196,997.0[a]	279,808.7[a]
Weekly returns						
Observations	225	225	225	224	224	205
Mean	0.0016	0.0007	0.0014	0.0007	0.0016	0.0013
Median	0.0003	0.0000	0.0011	0.0011	0.0000	0.0000
Maximum	0.0840	0.0834	0.0853	0.1718	0.2850	0.1567
Minimum	-0.0894	-0.1774	-0.1768	-0.2553	-0.3010	-0.1467
Std. Dev.	0.0189	0.0259	0.0240	0.0365	0.0376	0.0283
Skewness	-0.4	-1.5	-2.0	-3.1	-0.97	-0.1
Kurtosis	8.0	13.6	17.8	26.4	36.97	11.0
Jarque-Bera	239.9[a]	1,129.9[a]	2,201.8[a]	5485.9[a]	10,808.3[a]	543.5[a]

[a] : Indicates that the null hypothesis of normality is rejected at the 1% significant level

Autocorrelation tests

The first approach to detecting the random walk of the stock returns summarised here is the autocorrelation test. Autocorrelation (serial correlation coefficient) measures the relationship between the stock return at current period and its value in the previous period. It is given as follows:

$$\rho_k = \frac{\sum_{t=1}^{N-k}(r_t - \bar{r})(r_{t+k} - \bar{r})}{\sum_{t=1}^{N}(r_t - \bar{r})^2} \tag{8.10}$$

where ρ_k is the serial correlation coefficient of stock returns of lag k; N is the number of observations; r_t is the stock return over period t; r_{t+k} is the stock return over period t+k; $\bar{r}$ is the sample mean of stock returns; and k is the lag of the period.

The test aims to determine whether the serial correlation coefficients are significantly different from zero. Statistically, the hypothesis of weak-form efficiency should be rejected if stock returns (price changes) are serially correlated (ρ_k is significantly different from zero).

To test the joint hypothesis that all autocorrelations are simultaneously equal to zero, the Ljung–Box portmanteau statistic (*Q*) is used. The Ljung–Box *Q*-statistics are given by:

$$Q_{LB} = N(N+2)\sum_{j=1}^{k}\frac{\rho_j^2}{N-j} \tag{8.11}$$

where ρ_j is the jth autocorrelation and N is the number of observations. Under the null hypothesis of zero autocorrelation at the first k autocorrelations ($\rho_1 = \rho_2 = \rho_3 = \ldots = \rho_k = 0$), the Q-statistic is distributed as chi-squared with degrees of freedom equal to the number of autocorrelations (k).

Runs test

The runs test is a non-parametric test that is designed to examine whether or not an observed sequence is random. The test is based on the premise that if a series of data is random, the observed number of runs in the series should be close to the expected number of the runs. A run can be defined as a sequence of consecutive price changes with the same sign. Therefore, price changes of stocks can be categorized into three kinds of run: upward run (prices go up), downward run (prices go down) and flat run (prices do not change). Under the null hypothesis of independence in share price changes (share returns), the total expected number of runs (m) can be estimated as:

$$m = \frac{\left\{N(N+1) - \sum_{i=1}^{3} n_i^2\right\}}{N} \tag{8.12}$$

where N is the total number of observations (price changes or returns) and n_i is the number of price changes (returns) in each category ($N = \sum_{i=1}^{3} n_i$). For a large number of observations ($N > 30$), the sampling distribution of m is approximately normal and the standard error of m (σ_m) is given by:

$$\sigma_m = \left\{\frac{\sum_{i=1}^{3} n_i^2 \left[\sum_{i=1}^{3} n_i^2 + N(N+1)\right] - 2N\sum_{i=1}^{3} n_i^3 - N^3}{N^2(N-1)}\right\}^{\frac{1}{2}} \tag{8.13}$$

The standard normal Z-statistics that can be used to test whether the actual number of runs is consistent with the hypothesis of independences is given by:

$$Z = \frac{R \pm 0.5 - m}{\sigma_m} \tag{8.14}$$

where R is the actual number of runs, m is the expected number of runs, and 0.5 is the continuity adjustment (Wallis and Roberts, 1956) in which the sign of the continuity adjustment is negative (- 0.5) if $R \geq m$, and positive otherwise. Since there is evidence of dependence among share returns when R is too small or too large, the test is a two-tailed one.

Variance ratio test

The variance ratio test, proposed by Lo and MacKinlay (1988), is demonstrated to be more reliable and as powerful as or more powerful than the unit root test (Lo and MacKinlay, 1988; Liu and He, 1991). The test is based on the assumption that the variance of increments in the random walk series is linear in the sample interval. Specifically, if a series follows a random walk process, the variance of its q-differences would be q times the variance of its first differences.

$$Var(p_t - p_{t-q}) = qVar(p_t - p_{t-1}) \tag{8.15}$$

where q is any positive integer. The variance ratio, VR(q), is then determined as follows:

$$VR(q) = \frac{\frac{1}{q}\text{Var}(p_t - p_{t-q})}{\text{Var}(p_t - p_{t-1})} = \frac{\sigma^2(q)}{\sigma^2(1)} \tag{8.16}$$

For a sample size of *nq + 1* observations (p_0, p_1, …, p_{nq}), the formulas for computing $\sigma^2(q)$ and $\sigma^2(1)$ are given in the following equations:

$$\sigma^2(q) = \frac{\sum_{t=q}^{nq}(p_t - p_{t-q} - q\hat{\mu})^2}{h} \tag{8.17}$$

where

$$h = q(nq + 1 - q)(1 - \frac{q}{nq}) \tag{8.18}$$

and

$$\hat{\mu} = \frac{1}{nq}\sum_{t=1}^{nq}(p_t - p_{t-1}) = \frac{1}{nq}(p_{nq} - p_0) \tag{8.19}$$

$$\sigma^2(1) = \frac{\sum_{t=1}^{nq}(p_t - p_{t-1} - \hat{\mu})^2}{(nq-1)} \tag{8.20}$$

Under the assumption of homoscedasticity and heteroscedasticity increments, two standard normal test-statistics, Z(q) and Z^*(q) respectively, developed by Lo and MacKinlay (1988), are calculated by Equation (8.21) and (8.22) below:

$$Z(q) = \frac{VR(q) - 1}{[\phi(q)]^{1/2}} \approx N(0,1) \tag{8.21}$$

$$Z^*(q) = \frac{VR(q) - 1}{[\phi^*(q)]^{1/2}} \approx N(0,1) \tag{8.22}$$

where $\phi(q)$ is the asymptotic variance of the variance ratio under the assumption of homoscedasticity, and $\phi^*(q)$ is the asymptotic variance of the variance ratio under the assumption of heteroscedasticity:

$$\phi(q) = \frac{2(2q-1)(q-1)}{3q(nq)} \tag{8.23}$$

$$\phi^*(q) = \sum_{j=1}^{q-1} \left[\frac{2(q-j)}{q} \right]^2 \hat{\delta}(j) \tag{8.24}$$

where $\hat{\delta}(j)$ is the heteroscedasticity – consistent estimator and computed as follows:

$$\hat{\delta}(j) = \frac{\sum_{t=j+1}^{nq} (p_t - p_{t-1} - \hat{\mu})^2 (p_{t-j} - p_{t-j-1} - \hat{\mu})^2}{\left[\sum_{t=1}^{nq} (p_t - p_{t-1} - \hat{\mu})^2 \right]^2} \tag{8.25}$$

Estimating the true returns-correcting for thin (infrequent) trading

As mentioned in Chapter 7, the Vietnamese stock market is characterised by thin and infrequent trading. Many studies have pointed out that thin (or infrequent) trading can seriously bias the results of empirical studies on market efficiency (see Cohen *et al.*, 1978; Lo and MacKinlay, 1990a; Stoll and Whaley, 1990; Miller *et al.*, 1994). To deal with this problem while testing the weak-form of EMH for the Vietnamese stock market, the methodology proposed by Miller *et al.* (1994) is employed in this study. To remove the effect of thin trading, the model basically suggests that a moving average model which reflects the number of non-trading days should be estimated, and then returns are adjusted accordingly. However, due to difficulties in determining the non-trading days, Miller *et al.* (1994) show that it is equivalent to achieve the non-trading adjustment by estimating an AR(1) model. Specifically, the model can be stated in the following equations:

$$R_t = \alpha_0 + \alpha_1 R_{t-1} + \varepsilon_t \tag{8.26}$$

Then, using the residuals from Equation 8.26, adjusted returns are computed as follows:

$$R_t^{Adj} = \frac{\varepsilon_t}{1-\alpha_1} \tag{8.27}$$

where R_t^{Adj} is the adjusted return for thin trading at time t.

It is important to note here that the above model assumes the non-trading adjustment to be constant over time. The assumption may be correct for developed markets, but it is not likely to be the case for emerging market (Antoniou et al., 1997). Therefore, in this study Equation 8.26 is recursively estimated on a yearly basis.

All tests are conducted with both observed and corrected data. The results of these tests are discussed in the following section.

8.7.   Empirical findings

8.7.1.   Autocorrelation tests

To test the weak form of EMH for the Vietnamese stock market, first the autocorrelation tests with 12 lags are performed for daily weekly returns of the VNINDEX and five individual stocks. The results of these tests are summarised in Table 8.3, Table 8.4, Table 8.5 and Table 8.6.

Results for daily returns

Table 8.3 and Table 8.4 shows the results of the autocorrelation tests for daily observed and corrected returns for thin (infrequent) trading respectively. When the observed returns are used, it is found that the null hypothesis of random walk is rejected for all studied series (except HAP). Specifically, for the VNINDEX, it is evident that autocorrelation coefficients are significant with a positive sign for 1st, 4th, 5th, 6th and 7th lag[28]. It is worth to note here that the positive sign of the autocorrelation coefficients indicates that consecutive daily returns tend to have the same sign, so that a positive (negative) return in the current day tends to be followed by an increase (decrease) of return in the next several days. Especially, the results of the Liung-Box Q-test reveal that the autocorrelation coefficients of all 12 lags are jointly significant at 1% level. Regarding the individual stocks returns, it is observed that serial correlation coefficients are significant at 1st, 4th, 5th, 6th and 7th lag for REE; at 1st, 2nd, 3rd and 6th for TMS; at 1st, 7th and 10th lag for SAM and at 1st and 3rd lag for LAF. Importantly, the results of Q-test fail to support the joint null hypothesis that all autocorrelation coefficients of 12 lags are equal to zero for all individual stocks return series in question.

The empirical results for the corrected returns, presented in Table 8.4, again reject the random walk hypothesis for the Index and all selected individual stocks (except HAP). However, the rejection of the null hypothesis is less pronounced for REE and LAF when observed returns are corrected for thin

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[28] They are significantly different from zero.

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trading. Specifically, the joint hypothesis that all autocorrelation coefficients are simultaneously equal to zero is only rejected for some lags, not all 12 lags as in the case of observed returns presented above.

Results for weekly returns

Similar to the results for the daily observed returns, it is found that autocorrelation coefficients of the weekly observed index returns are significant with a positive sign at 1st, 2nd, 3rd, 4th, and 5th lags. Additionally, based on the Q-statistics, the null hypothesis of no autocorrelation on the index returns for all lags selected is strongly rejected at the one percent significant level. Furthermore, results of the autocorrelation tests on weekly observed returns for the individual stocks, summarised in Table 8.5, show significant autocorrelation coefficients at the first lags for each individual stock returns series. Specifically, significant autocorrelation coefficients are found at 1st, 2nd, and 4th lag for REE; at 1st, 2nd, 4th, and 5th lag for SAM; at 1st and 2nd lag for HAP; at 1st, 2nd, 3rd, 4th, 5th and 7th lag for TMS; and at 1st, 2nd, 3rd, and 5th lag for LAF. Once again, the Q-statistics fail to support the joint null hypothesis that all autocorrelation coefficients from lag 1 to 12 are equal to zero for all individual stocks observed return series.

Further, the results of the autocorrelation tests for the corrected returns indicate that the random walk hypothesis is also rejected for the market index and all selected individual stocks, except REE. However, the extent of rejection is less pronounced for these series, especially for the market index, SAM and HAP, as the returns are adjusted for thin trading.

On the basis of the empirical results obtained from autocorrelation tests for the observed returns, it can be concluded that the null hypothesis of random walk is rejected for the market index and all selected individual stocks (except HAP). When the corrected returns for thin trading are used, the random walk hypothesis is also rejected for the market index and four out of five selected individual stocks although the extent of rejection is less pronounced.

8.7.2. Run tests

To detect for the weak form efficiency of the Vietnamese stock market, the non-parametric runs test is also used in this study. The runs test is considered more appropriate than the parametric autocorrelation test since all observed series do not follow the normal distribution[29]. Results of the runs tests for daily and weekly returns of the index and the selected individual stocks are reported in Table 8.7. Specifically, the results of the runs test for daily observed returns

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[29] See the Jarque-Bera test results in Table 8.2.

Table 8.3: Results of autocorrelation tests for the daily observed returns data

Lag	VNINDEX		REE		SAM		HAP		TMS		LAF	
	AC	Q-stat	AC	Q-stat	AC	Q-stat	AC	Q-stat	AC	Q-stat	AC	Q-stat
1	0.380^a	102.553^a	0.166^a	19.504^a	0.237^a	39.937^a	0.055	2.175	0.083^b	4.858^b	0.132^a	12.381^a
2	-0.041	103.779^a	0.019	19.774^a	-0.056	42.132^a	0.004	2.189	-0.106^a	12.831^a	-0.002	12.384^a
3	-0.039	104.869^a	0.067	22.994^a	0.055	44.292^a	-0.018	2.422	-0.105^a	20.735^a	-0.109^a	20.938^a
4	0.081^b	109.552^a	0.079^b	27.486^a	0.057	46.591^a	-0.011	2.508	-0.026	21.202^a	0.039	22.049^a
5	0.101^a	116.923^a	0.083^b	32.405^a	0.015	46.758^a	0.019	2.769	0.009	21.262^a	-0.000	22.049^a
6	0.090^b	122.668^a	0.094^b	38.722^a	0.067	49.939^a	-0.035	3.645	0.144^a	36.179^a	0.067	25.225^a
7	0.110^a	131.329^a	0.097^a	45.535^a	0.108^a	58.319^a	-0.007	3.680	-0.024	36.579^a	0.004	25.238^a
8	0.046	132.829^a	0.018	45.772^a	0.026	58.799^a	-0.037	4.643	0.021	36.892^a	0.025	25.679^a
9	0.004	132.839^a	-0.021	46.079^a	-0.032	59.557^a	0.007	4.674	0.003	36.898^a	0.008	25.722^a
10	0.031	133.548^a	0.018	46.307^a	0.017	59.762^a	0.007	4.707	0.017	37.101^a	-0.011	25.813^a
11	0.063	136.404^a	0.070	49.845^a	0.075^b	63.826^a	-0.003	4.715	0.035	37.978^a	-0.050	27.597^a
12	0.021	136.716^a	0.022	50.207^a	0.038	64.869^a	-0.002	4.717	0.044	39.359^a	-0.059	30.121^a

$^{a, \, b}$: *Significant at the 1% and 5% levels, respectively.*

Table 8.4: Results of autocorrelation tests for the daily corrected returns data

Lag	VNINDEX		REE		SAM		HAP		TMS		LAF	
	AC	Q-stat	AC	Q-stat	AC	Q-stat	AC	Q-stat	AC	Q-stat	AC	Q-stat
1	0.082^b	4.748^b	-0.003	0.0073	0.046	1.494	-0.002	0.003	0.066	3.084	0.007	0.030
2	-0.209^a	35.818^a	-0.061	2.6738	-0.135^a	14.519^a	-0.002	0.007	-0.111^a	11.846^a	-0.024	0.439
3	-0.076^b	39.915^a	0.055	4.8596	0.053	16.526^a	-0.024	0.425	-0.107^a	19.952^a	-0.120^a	10.677^b
4	0.075^b	43.886^a	0.058	7.2573	0.059	19.047^a	0.004	0.434	-0.030	20.600^a	0.044	12.061^b
5	0.059	46.391^a	0.047	8.8458	-0.026	19.524^a	0.008	0.480	0.019	20.868^a	-0.019	12.307^b
6	0.030	47.037^a	0.071	12.423	0.047	21.113^a	-0.033	1.257	0.135^a	33.868^a	0.068	15.638^b
7	0.086^b	52.375^a	0.094^b	18.718^a	0.106^a	29.099^a	-0.009	1.321	-0.019	34.124^a	-0.019	15.903^b
8	0.011	52.460^a	-0.002	18.721^b	0.009	29.164^a	-0.024	1.745	0.021	34.437^a	0.027	16.442^b
9	-0.030	53.095^a	-0.041	19.953^b	-0.052	31.143^a	0.001	1.745	0.006	34.461^a	-0.006	16.466
10	0.011	53.175^a	0.013	20.080^b	0.003	31.147^a	0.012	1.847	0.023	34.856^a	-0.012	16.577
11	0.058	55.595^a	0.076^b	24.242^b	0.078^b	35.579^a	-0.006	1.873	0.027	35.363^a	-0.052	18.528
12	0.000	55.595^a	-0.004	24.251^b	0.040	36.754^a	-0.002	1.875	0.044	36.740^a	-0.057	20.858

$^{a,\ b}$: *Significant at the 1% and 5% levels, respectively.*

Table 8.5: Results of autocorrelation tests for the weekly observed returns data

Lag	VNINDEX		REE		SAM		HAP		TMS		LAF	
	AC	Q-stat	AC	Q-stat	AC	Q-stat	AC	Q-stat	AC	Q-stat	AC	Q-stat
1	0.328^a	24.554^a	0.266^a	16.090^a	0.175^a	6.986^a	-0.188^a	8.016^a	0.200^a	9.106^a	0.164^b	5.588^b
2	0.250^a	38.905^a	0.177^a	23.271^a	0.144^b	11.712^a	0.310^a	29.971^a	0.246^a	22.922^a	0.219^a	15.633^a
3	0.155^b	44.434^a	0.120	26.589^a	0.040	12.085^a	-0.066	30.968^a	0.178^a	30.196^a	0.215^a	25.379^a
4	0.206^a	54.280^a	0.201^a	35.946^a	0.172^a	18.921^a	0.063	31.883^a	0.151^b	35.418^a	0.097	27.372^a
5	0.239^a	67.540^a	0.118	39.169^a	0.170^b	25.666^a	0.090	33.762^a	0.232^a	47.884^a	0.226^a	38.241^a
6	0.075	68.838^a	0.077	40.550^a	-0.039	26.029^a	0.015	33.817^a	0.088	49.692^a	0.128	41.709^a
7	0.089	70.685^a	0.066	41.577^a	0.064	26.993^a	-0.002	33.818^a	0.136^b	54.008^a	0.009	41.727^a
8	-0.013	70.725^a	0.096	43.739^a	-0.031	27.214^a	0.008	33.833^a	0.078	55.431^a	-0.083	43.212^a
9	0.098	72.993^a	-0.034	44.020^a	0.105	29.817^a	0.068	34.936^a	0.059	56.246^a	0.094	45.123^a
10	-0.077	74.391^a	0.016	44.082^a	-0.091	31.773^a	-0.002	34.937^a	0.027	56.419^a	-0.097	47.192^a
11	0.069	75.516^a	-0.007	44.093^a	0.018	31.850^a	0.061	35.809^a	0.051	57.037^a	0.022	47.297^a
12	0.031	75.741^a	0.006	44.103^a	-0.007	31.861^a	0.048	36.369^a	0.047	57.561^a	0.021	47.393^a

$^{a,\ b}$: *Significant at the 1% and 5% levels, respectively.*

Table 8.6: Results of autocorrelation tests for the weekly corrected returns data

Lag	VNINDEX		REE		SAM		HAP		TMS		LAF	
	AC	Q-stat	AC	Q-stat	AC	Q-stat	AC	Q-stat	AC	Q-stat	AC	Q-stat
1	-0.055	0.687	-0.033	0.244	-0.005	0.005	-0.010	0.022	-0.079	1.406	-0.046	0.448
2	0.143^b	5.377	0.055	0.939	0.069	1.095	0.238^a	12.863^a	0.165^b	7.578^b	0.181^a	7.270^b
3	0.017	5.442	0.047	1.455	-0.022	1.209	0.025	13.006^a	0.058	8.345^b	0.165^b	12.927^a
4	0.099	7.707	0.100	3.761	0.162^b	7.213	-0.011	13.035^b	-0.008	8.360	-0.004	12.930^b
5	0.178^a	15.016^a	0.081	5.265	0.162^b	13.305^b	0.089	14.846^b	0.243^a	21.917^a	0.211^a	22.340^a
6	-0.040	15.386^b	0.008	5.280	-0.107	15.944^b	0.016	14.904^b	-0.011	21.945^a	0.062	23.152^a
7	0.093	17.410^b	0.051	5.881	0.056	16.662^b	-0.053	15.569^b	0.147^b	26.992^a	0.026	23.300^a
8	-0.104	19.948^b	0.006	5.889	-0.053	17.320^b	-0.006	15.576^b	-0.080	28.496^a	-0.171^b	29.549^a
9	0.144^b	24.800^a	0.001	5.889	0.139^b	21.887^a	0.051	16.175	0.110	31.308^a	0.131	33.260^a
10	-0.170^b	31.648^a	-0.044	6.345	-0.128	25.769^a	-0.018	16.249	-0.098	33.548^a	-0.139^b	37.422^a
11	0.107	34.366^a	0.018	6.425	0.024	25.911^a	0.069	17.392	0.075	34.865^a	0.024	37.546^a
12	-0.055	34.438^a	0.003	6.427	-0.000	25.911^b	0.045	17.872	0.123	38.488^a	0.045	37.986^a

^{a}, ^{b}: *Significant at the 1% and 5% levels, respectively.*

Table 8.7: Results of the runs test for VNINDEX and selected individual stocks

Variables	Obs. (N)	Actual runs (R)	Expected runs (m)	Z-statistic
Panel A: Daily data				
Observed returns				
VN-INDEX	709	246	354	-8,27[a]
REE	709	390	469	-6,28[a]
SAM	709	398	474	-5,99[a]
HAP	709	425	474	-3,83[a]
TMS	709	412	474	-4,87[a]
LAF	709	415	472	-4,55[a]
Corrected returns				
VN-INDEX	708	320	352	-2.37[b]
REE	708	323	352	-2.14[b]
SAM	708	310	355	-3.34[a]
HAP	708	320	342	-1.70
TMS	708	316	352	-2.71[a]
LAF	708	342	350	-0.56
Panel A: Weekly data				
Observed returns				
VN-INDEX	225	81	113	-4.27[a]
REE	225	111	135	-3.35[a]
SAM	225	100	125	-3.52[a]
HAP	224	123	131	-1.09
TMS	224	103	129	-3.67[a]
LAF	205	105	124	-2.76[a]
Corrected returns				
VN-INDEX	224	95	113	-2.34[b]
REE	224	103	113	-1.24
SAM	224	92	113	-2.71[a]
HAP	223	86	104	-2.50[b]
TMS	223	92	112	-2.59[a]
LAF	204	93	103	-1.33

[a], [b]: *Significant at the 1% and 5% levels, respectively.*

indicate that the actual runs of all series are significantly smaller than their corresponding expected runs at 1% level, so that the null hypothesis of independence among stock returns is rejected for these series. Moreover, the results of runs test based on the corrected returns also support the null hypothesis of random walk for VNINDEX, REE, SAM and TMS. However, these results fail to reject the null hypothesis for HAP and LAF.

The empirical results of the runs test for weekly observed and corrected returns are presented in Panel B of Table 8.7. For the weekly observed returns, the results indicate that the null hypothesis of independence among stock returns is rejected for the market index and all selected individual stocks, except HAP. However, when the corrected returns are used, the results of the runs test reveal that the null hypothesis can not be rejected for HAP, but it is rejected for REE and LAF. For the remaining series, the rejection of the null hypothesis is unchanged, but the extent is less pronounced as compared with the results for the weekly observed data.

In summary, the runs test provides evidence to reject the null hypothesis of random walk for both daily and weekly observed returns of the market index and all selected individual stocks (except weekly returns for HAP). However, when the corrected returns are used, the empirical results obtained from the test fail to reject the null hypothesis for HAP and LAF with the daily data and for REE and LAF with the weekly one.

8.7.3. *Variance ratio tests*

This study employs variance ratio tests for both null hypotheses, namely the homoscedastic and heteroscedastic increments random walk. In addition, the variance ratio is calculated for intervals (q) of 2, 4, 8, 16 and 32 observations. The results of the variance ratio tests are reported in Table 8.8, Table 8.9, Table 8.10 and Table 8.11.

Results for daily returns

Empirical evidence obtained from the variance ratio tests for daily observed returns indicates that the random walk hypothesis under the assumption of homoscedasticity is rejected for all series. In the case of VNINDEX, for instance, the Z-statistics suggest that the variance ratios are significantly different from one for all values of q at the one percent level. Therefore, the null hypothesis of random walk is strongly rejected for the market index series. Similarly, the empirical findings reveal that the null hypothesis of random walk for all selected individual stocks can not be accepted for all levels of q at the one percent level of significance.

Moreover, the rejections of the random walk hypothesis under both homoscedasticity and heteroscedasticity assumptions for all series do not change

even when the daily corrected returns for thin trading are used. Indeed, all the test-statistics of Z(q) and Z*(q) are still larger than the critical statistic at one percent level of significance (2.57).

Results for weekly returns

Results of the variance ratio tests on the weekly observed return data, presented in Table 8.9, confirm again that the null hypothesis of random walks under the assumption of homoscedasticity is strongly rejected for all series at all cases of q. Indeed, all Z-statistics are greater than the conventional critical value (1.96 for the five percent level). In addition, the heteroscedasticity-consistent variance ratio test provides consistent evidence that the null hypothesis of random walk can not be accepted for all weekly observed return series. Specifically, a comparison the Z^*-statistic to the conventional critical value reveals that the random walk hypothesis is rejected at q = 2, 4, 8, and 16 for TMS and REE, and at q = 2, 4, and 8 for VNINDEX and LAF. Moreover, the evidence against the null hypothesis under the assumption of heteroscedasticity in the case of HAP is weak because only two rejections (q=2 and q=4) are reported.

Further, when the corrected returns are employed, similar results are obtained from the tests. Specifically, the null hypothesis of random walks under the assumption of homoscedasticity is strongly rejected for all series at all cases of q while the null under the assumption heteroscedasticity can not be accepted for all series at some cases of q. The rejection of the null hypothesis is less pronounced for VNINDEX, REE, TMS and LAF, but more pronounced for SAM and HAP as compared with the results for the weekly observed returns.

On the basis of empirical evidence provided above, it can be concluded that the null hypothesis of random walk is rejected for the market index and all selected individual stocks. Moreover, thin trading is unlikely to affect the market efficiency.

8.8.   Conclusions

This chapter first provides an overview of the theoretical literature on the EMH. Specifically, three theoretical models suggested by Fama (1970), namely the Fair Game model, the Sub-martingale model, and the Random Walk model, are briefly summarised. The theoretical models of efficient market consistently imply that the future price of stock is unpredictable with respect to the current information, so market participants cannot earn abnormal profits. Additionally, this chapter also highlights three different levels of EMH, weak form, semi-strong form, and the strong form.

Following the theoretical literature, empirical studies on the weak form of EMH in emerging stock markets have been extensively conducted, especially in recent

years. The empirical evidence obtained from these studies is mixed. Indeed, while some studies show empirical results that reject the null hypothesis of weak form market efficiency, the others report evidence to support the weak form of EMH. In general, emerging stock markets are unlikely to be efficient in weak form possibly due to their inherent characteristics, such as low liquidity, thin and infrequent trading, and lack of experienced market participants.

On the basis of the theoretical and empirical literature that is reviewed in this chapter, the weak form of market efficiency for the market index and five selected individual stocks is tested by using both daily and weekly return data for the period from March 1st 2002 to December 31st 2004 and from July 28th 2000 to December 31st 2004. In addition, to deal with the problem of thin (infrequent) trading, which would seriously bias the results of the empirical study on market efficiency, the observed returns are corrected by using the methodology proposed by Miller et al. (1994). Moreover, in order to test the weak form of EMH for the Vietnamese stock market, three different techniques are employed, namely autocorrelation, runs, and variance ratio tests. The results obtained from the autocorrelation indicate that the null hypothesis of random walk is conclusively rejected for the market index and four out of five selected individual stocks, even in the case where the returns are corrected for thin trading. In addition, the runs test shows evidence to reject the null hypothesis of a random walk for both daily and weekly observed returns of the market index and all selected individual stocks (except weekly returns for HAP). However, when the corrected returns are used, the empirical results given by the tests fail to reject the null hypothesis for the daily returns of HAP and LAF and weekly returns for REE and LAF. Moreover, the results of the Lo and MacKinley's variance ratio test under both homoscedastic and heteroscedasticity assumptions for both observed and corrected returns fail to support the random walk hypothesis for the market index and all selected individual stocks. In general, it can be concluded that the Vietnamese stock market is inefficient in the weak form. A question arises here is whether investors can make abnormal profits by establishing a trading strategy on the basis of past information. Motivated by this interesting question, further studies on the issue of of market efficiency are conducted. Empirical results of these studies are presented in the following chapter.

Table 8.8: Variance ratio test results for the daily observed return data

Variables	Number nq of base observations	Number q of base observations aggregated to form variance ratio				
		2	4	8	16	32
VNINDEX	708					
VR(q)		0.84	0.37	0.19	0.10	0.05
Z(q)		-4.22[a]	-8.93[a]	-7.25[a]	-5.42[a]	-3.94[a]
Z*(q)		-2.77[a]	-5.15[a]	-4.47[a]	-3.65[a]	-2.89[a]
REE	708					
VR(q)		0.59	0.28	0.15	0.08	0.04
Z(q)		-10.94[a]	-10.27[a]	-7.65[a]	-5.56[a]	-4.00[a]
Z*(q)		-3.46[a]	-3.85[a]	-3.65[a]	-3.31[a]	-2.86[a]
SAM	708					
VR(q)		0.69	0.31	0.16	0.08	0.04
Z(q)		-8.15[a]	-9.80[a]	-7.54[a]	-5.53[a]	-3.99[a]
Z*(q)		-5.34[a]	-5.72[a]	-4.61[a]	-3.70[a]	-2.97[a]
HAP	708					
VR(q)		0.54	0.27	0.14	0.07	0.03
Z(q)		-12.33[a]	-10.40[a]	-7.72[a]	-5.63[a]	-4.02[a]
Z*(q)		-5.15[a]	-5.00[a]	-4.30[a]	-3.55[a]	-2.87[a]
TMS	708					
VR(q)		0.60	0.28	0.14	0.07	0.04
Z(q)		-10.53[a]	-10.22[a]	-7.77[a]	-5.60[a]	-4.02[a]
Z*(q)		-7.05[a]	-6.84[a]	-5.54[a]	-4.22[a]	-3.20[a]
LAF	708					
VR(q)		0.58	0.28	0.14	0.07	0.04
Z(q)		-11.20[a]	-10.27[a]	-7.72[a]	-5.61[a]	-4.02[a]
Z*(q)		-7.90[a]	-7.11[a]	-5.59[a]	-4.36[a]	-3.35[a]

[a]: *Significant at the 1% level.*

Table 8.9: Variance ratio test results for the weekly observed return data

Variables	Number nq of base observations	Number q of base observations aggregated to form variance ratio				
		2	4	8	16	32
VNINDEX	224					
VR(q)		0.56	0.30	0.20	0.10	0.06
Z(q)		-6.56[a]	-5.59[a]	-4.05[a]	-3.05[a]	-2.21[b]
$Z^*(q)$		-2.92[a]	-2.80[a]	-2.19[b]	-1.71	-1.39
REE	224					
VR(q)		0.58	0.31	0.19	0.11	0.06
Z(q)		-6.23[a]	-5.49[a]	-4.09[a]	-3.01[a]	-2.20[b]
$Z^*(q)$		-3.11[a]	-3.16[a]	-2.68[a]	-2.14[b]	-1.76
SAM	224					
VR(q)		0.52	0.25	0.17	0.08	0.05
Z(q)		-7.14[a]	-5.97[a]	-4.18[a]	-3.11[a]	-2.22[b]
$Z^*(q)$		-3.26[a]	-2.89[a]	-2.16[b]	-1.71	-1.38
HAP	223					
VR(q)		0.36	0.18	0.10	0.06	0.03
Z(q)		-9.59[a]	-6.57[a]	-4.55[a]	-3.19[a]	-2.26[b]
$Z^*(q)$		-2.63[a]	-2.17[b]	-1.95	-1.80	-1.60
TMS	223					
VR(q)		0.52	0.31	0.18	0.10	0.06
Z(q)		-7.20[a]	-5.46[a]	-4.11[a]	-3.05[a]	-2.20[b]
$Z^*(q)$		-3.91[a]	-3.32[b]	-2.75[a]	-2.22[b]	-1.79
LAF	204					
VR(q)		0.47	0.27	0.17	0.08	0.05
Z(q)		-7.55[a]	-5.55[a]	-4.01[a]	-2.98[a]	-2.14[b]
$Z^*(q)$		-3.80[a]	-3.05[a]	-2.29[b]	-1.83	-1.51

[a], [b]: Significant at the 1% and 5% levels, respectively.

Table 8.10: Variance ratio test results for the daily corrected return data

Variables	Number nq of base observations	Number q of base observations aggregated to form variance ratio				
		2	4	8	16	32
VNINDEX	707					
VR(q)		0.66	0.25	0.14	0.07	0.04
Z(q)		-9.04[a]	-10.61[a]	-7.76[a]	-5.60[a]	-4.02[a]
Z^*(q)		-4.39[a]	-5.52[a]	-4.68[a]	-3.77[a]	-2.97[a]
REE	707					
VR(q)		0.53	0.24	0.13	0.07	0.03
Z(q)		-12.51[a]	-10.86[a]	-7.85[a]	-5.64[a]	-4.03[a]
Z^*(q)		-5.27[a]	-5.34[a]	-4.68[a]	-3.88[a]	-3.10[a]
SAM	707					
VR(q)		0.60	0.25	0.13	0.07	0.03
Z(q)		-10.75[a]	-10.70[a]	-7.81[a]	-5.63[a]	-4.03[a]
Z^*(q)		-5.14[a]	-5.40[a]	-4.33[a]	-3.45[a]	-2.74[a]
HAP	707					
VR(q)		0.55	0.27	0.14	0.07	0.03
Z(q)		-11.95[a]	-10.44[a]	-7.73[a]	-5.62[a]	-4.02[a]
Z^*(q)		-5.87[a]	-5.72[a]	-4.73[a]	-3.82[a]	-3.00[a]
TMS	707					
VR(q)		0.60	0.28	0.13	0.07	0.04
Z(q)		-10.75[a]	-10.28[a]	-7.80[a]	-5.61[a]	-4.02[a]
Z^*(q)		-7.61[a]	-7.22[a]	-5.81[a]	-4.44[a]	-3.37[a]
LAF	707					
VR(q)		0.52	0.24	0.12	0.06	0.03
Z(q)		-12.86[a]	-10.79[a]	-7.88[a]	-5.66[a]	-4.04[a]
Z^*(q)		-8.57[a]	-7.28[a]	-5.67[a]	-4.38[a]	-3.36[a]

[a]: *Significant at the 1% level.*

Table 8.11: Variance ratio test results for the weekly corrected return data

Variables	Number nq of base observations	Number q of base observations aggregated to form variance ratio				
		2	4	8	16	32
VNINDEX	223					
VR(q)		0.41	0.22	0.14	0.06	0.04
Z(q)		-8.82[a]	-6.24[a]	-4.35[a]	-3.18[a]	-2.25[b]
Z^*(q)		-3.33[a]	-2.69[a]	-2.08[b]	-1.63	-1.32
REE	223					
VR(q)		0.45	0.23	0.13	0.07	0.04
Z(q)		-8.14[a]	-6.17[a]	-4.38[a]	-3.14[a]	-2.25[b]
Z^*(q)		-3.11[a]	-2.75[a]	-2.24[b]	-1.80	-1.52
SAM	223					
VR(q)		0.46	0.21	0.14	0.07	0.04
Z(q)		-7.99[a]	-6.33[a]	-4.34[a]	-3.16[a]	-2.24[b]
Z^*(q)		3.68[a]	3.14[a]	2.35[b]	1.85	1.49
HAP	222					
VR(q)		0.45	0.20	0.11	0.06	0.04
Z(q)		-8.18[a]	-6.35[a]	-4.46[a]	-3.16[a]	-2.25[b]
Z^*(q)		-3.21[a]	-2.96[a]	-2.51[b]	-2.15[b]	-1.81
TMS	222					
VR(q)		0.38	0.24	0.13	0.06	0.04
Z(q)		-9.21[a]	-6.03[a]	-4.38[a]	-3.18[a]	-2.24[b]
Z^*(q)		-3.05[a]	-2.34[b]	-1.96[b]	-1.60	-1.30
LAF	203					
VR(q)		0.39	0.24	0.15	0.07	0.04
Z(q)		-8.62[a]	-5.76[a]	-4.11[a]	-3.02[a]	-215[b]
Z^*(q)		-3.34[a]	-2.48[b]	-1.85	-1.48	-1.24

[a], [b]: *Significant at the 1% and 5% levels, respectively.*

Chapter 9

Testing Anomalies in Stock Returns for the Vietnamese Stock-Market

9.1. Introduction

As presented in Chapter 8, the Vietnamese stock market is not efficient in the weak form. This evidence implies that stock price anomalies could be present in the market so that investors can earn abnormal returns by using a trading strategy based on past information. Among such anomalies, the day-of-the-week and overreaction effects are seen as the most important patterns and have been extensively studied and documented in the financial literature for the last decades. However, no study has been found on this issue for the Vietnamese stock market. This chapter tries to enrich the literature by testing for the existence of these effects in the Vietnamese stock market.

The remainder of this chapter is organised as follows. Section 9.2 deals with the day-of-the-week effect on stock returns and stock volatility. Then, the stock market overreaction is investigated in Section 9.3. Finally, Section 9.4 concludes the chapter.

9.2. Day-of-the-week effect on stock returns and stock volatility

The day-of-the-week effect indicates that returns are abnormally higher on some days of the week than on other days. Specifically, results derived from many empirical studies have documented that the average return on Friday is abnormally high, and the average return on Monday is abnormally low. In this section, the day-of-the-week effect on both returns and volatility is closely examined for the VNINDEX (the market index of the Vietnamese stock market).

9.2.1. *Empirical literature review*

This sub-section reviews the findings from empirical studies on the day-of-the-week effect in both developed and emerging stock markets. Because it is not possible to list all the relevant studies here, the review just focuses on those which are supposed to be re-presentable for this field. For the reason of convenience, the empirical evidence on the daily seasonal anomaly in developed and emerging stock markets are separately examined. A summary of these studies is given in Table 9.1 and Table 9.2.

Day-of-the-week effect in developed stock markets

It is observed that the day-of-the-week effect on stock returns is primarily reported for the U.S. stock market. Indeed, French (1980), Gibbon and Hess (1981), Condoyanmi et al. (1987), Jaffe and Westerfield (1985), Dubois and Louvet (1996) document that the mean return is significantly negative on Monday, but it is significantly positive on Friday. Similarly, a daily seasonal anomaly is found in the Canadian stock market with a negative Monday and positive Friday effect as observed in the U.S. stock market [Jaffe and Westerfield (1985), Condoyanmi et al. (1987), Dubois and Louvet (1996) and Kiymaz and Berument (2003)].

In Europe, the day-of-the-week effect is observed in all developed stock markets. In fact, a significant negative Monday effect is reported for the U.K., Germany, France, and Switzerland, and a significant positive Friday effect is observed in France [Jaffe and Westerfield (1985), Condoyanmi et al. (1987), Dubois and Louvet (1996) and Kiymaz and Berument (2003)]. In addition, a significant negative mean return on Tuesday is reported for the U.K. Germany, France, Austria and the Netherlands [Jaffe and Westerfield (1985), Condoyanmi et al. (1987), Balaban et al. (2001)]. Moreover, a negative Friday effect is abnormally identified for Germany and Austria [Balaban et al. (2001)].

Turning to stock markets in the Pacific Rim region, it is evident that the highest mean return is observed on Friday while the lowest mean return occur on Tuesday for both the Japanese and Australian stock markets occur on Tuesday [Jaffe and Westerfield (1985), Condoyanmi et al. (1987) and Dubois and Louvet (1996)]. The findings of negative Tuesday effect in these markets are completely different from those derived from the empirical studies in the U.S. stock market. According to Jaffe and Westerfield (1985), the negative Tuesday effect in the Japanese and Australian stock markets could result from the time zone differences between such markets and the U.S. market. However, their empirical evidence indicates that the time zone difference could only explain the daily seasonal anomaly in the

Australian stock market, but it is not able to explain the day-of-the-week effect in the Japanese one.

It is clear that the day-of-the-week effect is present in all papers that are reviewed above. Further, some studies have tried to bring various explanations for the day-of-the-week effect. Lakonishok and Levi (1982) argue that the day-of-the-week effect can be partly derived from the delay between trading and settlements in stocks and in clearing checks. Specifically, they explain that the buyer will have eight calendar days before losing funds for stock purchases on a business day other than Friday based on rules of the U.S. stock market while for Friday purchases, the buyer will have ten calendar days. In other words, the buyer has two more days of interest earning. Therefore, the buyer would be willing to pay extra for stocks bought on Fridays. Another explanation for the daily seasonal anomaly, proposed by Fortune (1991) is that companies and governments tend to release good news during market trading when it is easily absorbed, and keep bad news until the close on Friday when investors can not react to the information until the Monday opening. Furthermore, according to Keim and Stambaugh (1984), measurement errors would partly contribute to the weekend effect. They hypothesise that the low Monday returns could result from positive "errors" in prices on Friday. However, none of these studies can provide satisfactory explanations for the daily seasonal anomaly (Chen et al., 2001; Oguzsoy and Guven, 2003).

It is important to note here that most surveyed studies investigate the daily seasonal anomaly for the periods before 1990. In the most recent period, Kohers et al. (2004) find that the day-of-the-week effect has disappeared in most developed stock markets. Specifically, they document that the daily seasonal anomaly is observed in the U.S., Japan, the U.K., France, Germany, Canada, Italy, the Netherlands, Switzerland, and Australia for the period from 1980 to 1990, but conversely it is no longer in all markets, except Japan, during the period between 1991 and 2002. These findings indicate that long-term improvements in market efficiency would have diminished the day-of-the-week effect on stock returns.

Beside day-of-the-week effect on stock returns, the day-of-the-week effect on stock volatility is also documented in the literature. Indeed, Balaban et al. (2001) find that day-of-the-week effect on volatility is present in Austria, Belgium, Denmark, France, Italy, Norway, Switzerland, and the U.S. for the period from July 1993 to July 1998. Specifically, a significant negative effect is observed on Tuesday for Belgium, Denmark, France, Italy and Switzerland, on Wednesday and Thursday for Italy, and on Friday for Italy and Norway while a positive effect on Tuesday is reported for Austria, on Thursday for Austria, Denmark and the U.S. In addition, Berument and Kiymaz (2001) show that the lowest and highest volatility occurs on Wednesday and Friday respectively for returns of the S&P 500. Furthermore, Kiymaz and Berument (2003) document the highest Monday volatility for Japan

and Germany, the highest Thursday volatility for the U.K., and the highest Friday volatility for the U.S. and Canada.

Day-of-the-week effect in emerging stock markets

A number of empirical studies on the daily seasonal anomaly have been recently conducted in emerging stock markets. In Eastern European stock markets, Poshakwale and Murinde (2001) report that the day-of-the-week effect does not exist in Budapest and Warsaw stock exchanges during the period of 1994-1996. Moreover, Ajayi et al. (2004) find that the day-of-the-week effect is present in only four of eleven studied markets (Estonia, Lithuania, Russia and Slovenia). Specifically, the significantly negative Monday effect is observed in Estonia and Lithuania while positive Monday and Friday effects are found in Russia and Slovenia respectively. Furthermore, regarding the Turkish stock market, Balaban (1995) documents that mean return is significantly highest on Friday for the period from January 1988 to August 1994. Then, Oguzsoy and Guven (2003) reexamine the daily seasonal anomaly in this market by extending the studied period to November 1999 and find that the Turkish stock market exhitbits the significant negative effect on Monday and Tuesday and positive effect on Friday.

Turning to the Asian region, it is surprising to find that the day-of-the-week effect is not present in the Taiwanese stock market for the early stage from 1975 to 1988 [Wong et al. (1992)], but it exists in the recent periods, from January 1990 to June 1995 with a significantly negative mean return on Tuesday [Choudhry (2000)] and from December 1989 to January 1996 with the negative average return on Wednesday [Brooks and Persand (2001)]. Moving to the South Korea stock market, the empirical evidence on daily seasonal anomaly is mixed. Indeed, Choudhry (2000) report that the day-of-the-week effect exists in South Korea with a negative effect on Tuesday while Brooks and Persand (2001) find no evidence to support the presence of day-of-the-week effect in this market. The difference in findings between the two studies may result from the different methods used in these studies because the data employed in these studies are almost the same. In China, Mookerjee and Yu (1999) document that a significant positive effect on Thursday and Friday is present in the Shanghai Securities Exchange, but the daily seasonal anomaly does not exist in the Shenzhen Securities Exchange for the period between April 1991 and April 1994. Finally, the Indian stock market exhibits a positive effect on Friday [Choudhry (2000)].

Table 9.1: Summary of empirical studies on the day-of-the-week effect in developed stock markets

Study	Methodology	Data	Main findings
French (1980)	The OLS method with dummy variables for each day of the week	Daily returns of S&P 500 for the period between 1953 and 1977	Significant negative Monday effect and positive Wednesday, Thursday and Friday effect
Gibbons and Hess (1981)	The OLS method with dummy variables for each day of the week	Daily returns of the S&P 500, the value- and equal-weighted portfolios constructed by the Center for Research in Securities Prices (CRSP) over the period from Jul. 2 1962 to Dec. 28, 1978	Negative mean return on Monday
Jaffe and Westerfield (1985)	The OLS method with dummy variables for each day of the week	Daily returns for stock market index of Japan, Canada, Australia, the U.K., and the U.S (S&P 500) during the period of 1970-1983, 1976-1983, 1973-1983, 1950-1983, and 1962-1983 respectively.	Significant negative Monday effect in the U.S., Canada and the U.K.; negative Tuesday effect in Japan and Australia and the U.K.; and positive Friday effect in all the markets, except the U.K.
Condoyanni, et al. (1987)	The OLS method with dummy variables for each day of the week	Daily returns for stock market index of the U.S., Canada, the U.K., France, Australia, Japan and Singapore for the 1969-1984 period (except Australia from 1980-1984)	A significantly negative Monday mean return to be observed in the U.S., Canada and the U.K, but a significantly Monday positive effect in Japan; a significantly negative Tuesday effect to be present in France, Australia, Japan and Singapore; and a significantly positive Friday effect for Canada, France, Australia and Singapore

Table 9.1: Continued

Dubois and Louvet (1996)	Parametric and non-parametric tests with the null hypothesis that mean returns of each day in the week are equal	Daily returns for 11 stock market indexes in 9 developed countries (Canada, the U.S., Japan, Hong Kong, Australia, Germany, France, Switzerland, and the U.K. from Jan. 2, 1969 to Dec. 30, 1992	Significant negative Monday effect for the stock market indexes in Canada, the U.S., Germany, France, the U.K., Switzerland and Hong Kong; negative Tuesday effect for Japan and Australia; and positive Friday effect for most the markets
Berument and Kiymaz (2001)	The OLS, GARCH (1,1) and modified GARCH (1,1) models with dummy variables for each day of the week in both return and variance equations	Daily returns of the S&P 500 during the period from Jan. 1973 to Oct. 1997	The day-of-the-week effect to be present in both market returns and volatility: the significantly lowest and highest mean returns on Monday and Wednesday, and the lowest and highest volatility on Wednesday and Friday respectively
Balaban, et al. (2001)	GARCH(1,1)-M with dummy variables for each day of the week in both return and variance equations	Daily returns of stock market indexes for 19 countries (Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Italy, Japan, the Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, the U.K., and the U.S. over the period from Jul. 20, 1993 to Jul. 1, 1998.	Day-of-the-week effect on returns to be present in Austria, Germany, Hong Kong, Japan, the Netherlands, and New Zealand with specific results as follows: significant negative Tuesday effect to be found in Austria, Germany, and Netherlands; positive Tuesday effect in Japan; negative Friday effect in Austria and Germany Day-of-the-week effect on stock market volatility to be observed in Austria, Belgium, Denmark, France, Italy, Norway, Switzerland, and the U.S.: significant negative effect on Tuesday for Belgium, Denmark, France, Italy and Switzerland, on Wednesday and Thursday for Italy, and on Friday for Italy and Norway; positive effect on Tuesday for Austria, on Thursday for Austria, Denmark and the U.S.

Table 9.1: Continued

Kiymaz and Berument (2003)	The OLS, GARCH (1,1) and modified GARCH (1,1) models with dummy variables for each day of the week in both return and variance equations	Daily return for stock market indexes in four developed countries (the U.S., Canada, the U.K., Germany and Japan for the period from Jan. 1988 to Jun. 2002.	A significantly negative Monday mean return in Canada, Japan and the U.K.; the significantly highest volatility of market returns to be observed on Monday for Japan and Germany, on Thursday for the U.K., and on Friday for the U.S. and Canada
Kohers, et al. (2004)	ANOVA and Kruskal-Wallis tests to test the null hypothesis that mean return is equal across days of the week	Daily return for stock market indexes of 11 developed countries (the U.S., Japan, the U.K., France, Germany, Canada, Italy, the Netherlands, Switzerland, Hong Kong, and Australia) during the period from Jan. 1980 to Jun. 2002.	Daily seasonal anomaly to be present in all the markets (except Hong Kong) for the period from 1980 to 1990, but conversely the day-of-the-week effect to be no longer in all cases (except Japanese case) over the 1991-2002 period The first period: a significantly negative Monday effect to be observed in the U.S., the U.K., France, Canada, Italy, the Netherlands, and Switzerland; a negative Tuesday effect in Japan, France, Italy, Switzerland and Australia The second period: a significantly negative Monday return exhibited in Japan The main conclusion to be drawn from this study as that long-term improvements in market efficiency would have diminished the day-of-the-week effect on stock returns

Table 9.2: Summary of empirical studies on the day-of-the-week effect in emerging stock markets

Study	Methodology	Data	Main findings
Wong et al. (1992)	Non-parametric tests for the difference in mean returns across days of the week	Daily data for stock market indexes of Singapore, Malaysia, Hong Kong, Taiwan and Thailand over the 1975-1988 period	Day-of-the-week effect to be present in all market (except Taiwan) with specific results as follows: the negative Monday effect in Singapore, Malaysia and Hong Kong; the negative Tuesday effect in Thailand, and Friday positive effect in the four markets
Balaban (1995)	The standard OLS method	Daily data of the Istanbul Securities Exchange Composite Index for the period between Jan. 4, 1988 and Aug. 5, 1994	Significant positive Wednesday and Friday effect
Wong and Yuanto (1999)	Non-parametric test and the standard OLS method	Daily returns of the Jakarta Composite Index (Indonesia) over the period from Apr. 1, 1983 to May 30, 1997	Significant negative and positive effect for Tuesday and Friday respectively
Mookerjee and Yu (1999)	The OLS method with dummy variables for each day of the week	Daily stock market indexes of the Shanghai and Shenzhen securities exchanges for the period from Dec. 19, 1990 and Apr. 3, 1991 respectively to Apr. 11, 1994	Significant positive Thursday and Friday effects in the Shanghai securities exchange, but no day-of-the-week effect in the Shenzhen securities exchange for the whole studied period
Choudhry (2000)	GARCH (1,1) model	Daily returns for stock market index of India, South Korea, Taiwan, Indonesia, Malaysia, the Philippines, and Thailand during the period from Jan. 1990 to Jun. 1995	Significant negative Monday mean return in Indonesia, Malaysia and Thailand; negative Tuesday mean return in South Korea, Taiwan and Thailand; and positive Friday mean return in India, Malaysia, the Philippines and Thailand Significant positive Monday effect on volatility in all markets except India, negative Friday effect in the Philippines

Table 9.2: Continued

Brooks and Persand (2001)	The OLS model with and without including market risk factors	Daily returns for stock market indexes of South Korea, Malaysia, Thailand, Taiwan, and the Philippines over the period between Dec. 1989 and Jan. 1996	Day-of-the-week effect existing in three of the five markets (Malaysia, Thailand and Taiwan): a positive Monday mean return in Thailand and Malaysia, and a negative Wednesday effect in Taiwan Average risk levels varying across the days of the week that partly explain for the day-of-the-week effect
Poshakwale and Murinde (2001)	GARCH-M model	Daily data of stock market indexes in Hungary and Poland for the period from Jan. 1 and Apr. 16, 1994 respectively to Jun. 30, 1996	No day-of-the-week effect in these markets
Chusanachoti and Kamath (2002)	The standard OLS and GARCH (1,1) methods	Daily returns for the index of the Stock Exchange of Thailand during the period from Jan. 1990 to Dec. 1998	The significant lowest and highest mean return for Monday and Friday respectively, a negative effect also to be observed for Tuesday and Thursday
Oguzsoy and Guven (2003)	The standard OLS method	Daily returns of the Istanbul Securities Exchange Composite Index for the period from Jan. 18, 1988 to Nov. 30 1999	Significant negative mean return on Monday and Tuesday, but positive mean return on Friday
Lian and Chen (2004)	The standard OLS and GARCH models	Daily returns for stock market index of five ASEAN countries (Indonesia, Malaysia, the Philippines, Thailand and Singapore) over the period from Jan. 1992 to Aug. 2002, including three sub-periods: pre-crisis, crisis and post-crisis	Pre-crisis period: significant negative Monday effect in Malaysia, Singapore and Thailand; positive Friday effect for Indonesia, and positive Wednesday and Thursday for the Philippines Crisis period: No daily seasonal anomaly for all markets Post-crisis period: significant negative Monday and positive Friday effect in Thailand, and significant negative Tuesday effect in the Philippines

Table 9.2: Continued

| Ajayi, et al. (2004) | The standard OLS method | Daily returns of 11 stock market indexes in Eastern European countries (Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Slovakia and Slovenia) for the period from the inception of each market index to Sep. 6, 2002 (the longest and shortest period as from Sep. 1, 1994 and Jul. 20, 1999 respectively to Sep. 6, 2002) | Significant negative Monday effect in Estonia and Lithuania, positive Monday effect in Russia, negative Tuesday effect in Lithuania, and positive Friday effect in Slovenia |

In ASEAN, the day-of-the-week effect is likely to be present in all stock markets for a certain period. Indeed, the Singapore stock market exhibits a negative Monday and positive Friday effect for the period of 1975-1988 and only a negative Monday effect for the period from January 1992 to January 1997 [Wong et al. (1992), and Lian and Chen (2004) respectively], but no day-of-the-week effect for the period from February 1997 to August 2002 [Lian and Chen (2004)]. The findings indicate that improvements in market efficiency over time may have faded away the daily seasonal anomaly effect on stock returns. In Thailand, Wong et al. (1992), Choudhry (2000), Chusanachoti and Kamath (2002) and Lian and Chen (2004) find that the mean returns are significant negative on Monday and Tuesday, but positive on Friday. These results are consistent with those obtained from the studies in the developed stock markets. Moreover, Brooks and Persand (2001) report a significantly positive Monday effect for Thailand over the period from December 1989 to January 1996. Similar to these ASEAN stock markets, the negative Monday and positive Friday effects are observed in the Malaysian stock market [Wong et al. (1992), Choudhry (2000)]. Furthermore, Wong et al. (1992), Wong and Yuanto (1999), Choudhry (2000), and Lian and Chen (2004) find that the negative effect on Monday and Tuesday and positive Friday effects exist in the Jakarta Composite Index (Indonesia). Finally, the empirical evidence on the day-of-the-week effect in the Philippines stock market is mixed. Specifically, Choudhry (2000) and Lian and Chen (2004) report the positive Friday and negative Tuesday mean returns for the period from January 1990 to June 1995 and from October 1998 to August 2002 respectively while Brooks and Persand (2001) show no day-of-the-week effect in the Philippines stock market. Like the case of South Korea, the difference may due to the different methods employed in these studies.
It is clear that the daily seasonal anomaly in emerging stock markets has received special attention recently. However, no study has been found on this issue for the Vietnamese stock market. Therefore, it provides a fertile area for research.

9.2.2. *Data and methodology*

The data used to investigate the daily seasonal anomaly in the Vietnamese stock market is the daily returns series of the market index (VNINDEX) that is derived from the daily market index series as described in chapter 8. Descriptive statistics on day-of-the-week returns for the index are summarised in Table 9.3.
To test for the presence of a day-of-the-week-effect on stock returns and stock volatility in the Vietnamese stock market, a set of regression models are employed in this study. The first model, which is employed to examine the day-of-the-week-effect on stock returns, is the OLS (Ordinary Least Square) regression with the following form:

Table 9.3: Summary statistics on stock returns by day of the week

	Monday	Tuesday	Wednesday	Thursday	Friday
Observations	141	144	142	141	141
Mean	-0.00040	-0.00050	0.00028	0.00047	0.00081[b]
Median	-0.00075	-0.00038	-0.00022	-0.00006	-0.00006
S.D.[*]	0.00463	0.00489	0.00428	0.00458	0.00439

[*]: *Standard deviation*
[b]: *Significant at the and 5% level using t-test.*

$$R_{it} = \alpha_1 D_{1t} + \alpha_2 D_{2t} + \alpha_3 D_{3t} + \alpha_4 D_{4t} + \alpha_5 D_{5t} + \varepsilon_t \qquad \varepsilon_t \approx N(0, h_t) \qquad (9.1)$$

where R_{it} is the log return of the market index; D_{1t}, D_{2t}, D_{3t}, D_{4t} and D_{5t} are dummy variables for Monday, Tuesday, Wednesday, Thursday, and Friday respectively (i.e., $D_{1t} = 1$ if observation t falls on a Monday and 0 otherwise); and ε_t is an error term and assumed to be independently and identically distributed (iid).

It is likely to be that the assumption of homocesdaticity (the variance of the errors is constant over time) is usually violated in the context of financial time series. Moreover, according to Brooks (2002), if the assumption is not satisfied and the OLS model is still employed, the standard errors could be wrong and thus any inferences drawn from the model could be misleading. To deal with this issue, Engle (1982) proposed the class of ARCH models (ARCH stands for "autoregressive conditional heteroscedasticity") in which the variance of errors allows to evolve over time as a function of past errors. Then, Bollerslev (1986) generalised the ARCH models as GARCH that allows the conditional variance to be dependent upon earlier own lags. In this study, the simplest form of GARCH [GARCH (1,1)] is employed. To examine the day-of-the-week effect on the market returns, the GARCH (1,1) takes the following form:

$$R_{it} = \alpha_1 D_{1t} + \alpha_2 D_{2t} + \alpha_3 D_{3t} + \alpha_4 D_{4t} + \alpha_5 D_{5t} + \varepsilon_t \qquad \varepsilon_t \approx N(0, h_t)$$
$$h_t = \omega + \delta h_{t-1} + \gamma \varepsilon_{t-1}^2 \qquad (9.2)$$

If any significant coefficients (α_i) are found in the simple OLS and GARCH (1,1) models, which are mentioned above, the hypothesis of day-of-the-week-effect can be accepted. However, it is worth to note here that these models ignore risk factors that can be varied across the days of the week in explaining the seasonality in stock

returns. To take into account risk factors while testing day-of-the-week-effect, the so-called "market model", which was empirically applied by Brooks and Persand (2001), is also used in this study. Specifically, in the market model, the market risk of the VNINDEX is represented by the returns on the World Price Index. The market model under the OLS form can be expressed by the following equation:

$$R_{it} = \sum_{i=1}^{5} \alpha_i D_{it} + \sum_{i=1}^{5} \beta_i D_{it} RMI_{it} + \varepsilon_t \qquad \varepsilon_t \approx N(0, h_t) \qquad (9.3)$$

where RMI_{it} is the returns on World Price Index that are used as proxy for the market risk of the VNINDEX, and all terminology is remained as for Equation 9.1. Furthermore, the market model under GARCH is formulated and tested by combining Equation 9.3 (return equation) with Equation 9.2 (variance equation).

Finally, to test for the presence of day-of-the-week-effect on stock volatility, this study employs the GARCH (1,1) with additive dummy variables for each day of the week in the conditional variance equation (hereafter it is called as volatility model), which was used in studies of Berument and Kiymaz (2001) and Kiymaz and Berument (2003). To avoid the problem of collinearity in the regression model, only four out of five days in the week are included in the variance equation as the dummy variables. Specifically, the conditional variance Equation 9.2 is modified as follows:

$$h_t = \omega + \beta_1 D_{1t} + \beta_2 D_{2t} + \beta_3 D_{3t} + \beta_4 D_{4t} + \delta h_{t-1} + \gamma \varepsilon_{t-1}^2 \qquad (9.4)$$

where D_{1t}, D_{2t}, D_{3t} and D_{4t} are dummy variables for Monday, Tuesday, Thursday, and Friday respectively (Wednesday is not included in the Equation 9.4). The volatility model is conducted for two cases: without and with including market risk by jointly estimating Equation 9.1 and 9.4, and 9.3 and 9.4 respectively.

In short, in order to investigate the presence of seasonality in stock returns and stock volatility, this study employs a set of six models, including the simple OLS, GRACH (1,1), market model with OLS, market model with GARCH (1,1), volatility model without market risk, and volatility model with market risk. Specifications of these models are summarised in Table 9.4.

9.2.3. Empirical results

The results of day-of-the-week effect on returns and volatility in the Vietnamese stock market are presented in Table 9.5. The results of the OLS model (Model 1) show that the average return on Friday is significantly higher than other days of the week. In other words, the Friday effect is presence in the VNINDEX. The market

model with the OLS form (Model 3) confirms that mean return of the INDEX is still significant positive at the five percent level on Friday. Moreover, it is observed that all beta coefficients in Model 3 are insignificant. On the basis of these results, it can be concluded that day-of-the-week effect (Friday effect) is presence in the stock returns and that average market risk levels (proxied by World Price Index) are likely to be the same across the days of the week.

Table 9.4: Specifications of six employed models

Name	Specifications
Model 1 (OLS)	$R_{it} = \alpha_1 D_{1t} + \alpha_2 D_{2t} + \alpha_3 D_{3t} + \alpha_4 D_{4t} + \alpha_5 D_{5t} + \varepsilon_t$
Model 2 [GARCH (1,1)]	$R_{it} = \alpha_1 D_{1t} + \alpha_2 D_{2t} + \alpha_3 D_{3t} + \alpha_4 D_{4t} + \alpha_5 D_{5t} + \varepsilon_t$ $h_t = \omega + \delta h_{t-1} + \gamma \varepsilon_{t-1}^2$
Model 3 (Market model with OLS)	$R_{it} = \sum_{i=1}^{5} \alpha_i D_{it} + \sum_{i=1}^{5} \beta_i D_{it} RMI_{it} + \varepsilon_t$
Model 4 [Market model with GARCH (1,1)]	$R_{it} = \sum_{i=1}^{5} \alpha_i D_{it} + \sum_{i=1}^{5} \beta_i D_{it} RMI_{it} + \varepsilon_t$ $h_t = \omega + \delta h_{t-1} + \gamma \varepsilon_{t-1}^2$
Model 5 (Volatility model without market risk)	$R_{it} = \alpha_1 D_{1t} + \alpha_2 D_{2t} + \alpha_3 D_{3t} + \alpha_4 D_{4t} + \alpha_5 D_{5t} + \varepsilon_t$ $h_t = \omega + \beta_1 D_{1t} + \beta_2 D_{2t} + \beta_3 D_{3t} + \beta_4 D_{4t} + \delta h_{t-1} + \gamma \varepsilon_{t-1}^2$
Model 6 (Volatility model with market risk)	$R_{it} = \sum_{i=1}^{5} \alpha_i D_{it} + \sum_{i=1}^{5} \beta_i D_{it} RMI_{it} + \varepsilon_t$ $h_t = \omega + \beta_1 D_{1t} + \beta_2 D_{2t} + \beta_3 D_{3t} + \beta_4 D_{4t} + \delta h_{t-1} + \gamma \varepsilon_{t-1}^2$

It is important to note here that the conclusion above is based on the OLS method, which ignores the time-varying volatility (ARCH effect) that is suspected to be presence in the observed series. If ARCH effect exists in the market returns, the GARCH (1,1) model should be applied. To check for the presence of ARCH effect, the Lagrange Multiplier (LM) test, proposed by Engel (1982), is conducted, using 5 lags[30]. The results of ARCH-LM test strongly indicate that ARCH effect is presence in the Model 1 and Model 3 since the test statistics of the two models are

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[30] We also perform several lag orders and the basic results remain the same.

296.493 and 294.993 respectively while the LM-critical value is 15.086 at the one percent level significant. Clearly, due to ARCH effects in the series, GARCH (1,1), which takes into account time-varying variance, is more appropriate than the OLS method in testing for the daily seasonal volatility in the market returns. Results of GARCH estimates without and with including risk factors are summarised in the second and fourth column. The findings of GARCH model without including risk factors (Model 2) reveal that a negative Tuesday effect exists in the market returns, but the positive Friday effect in the first model (OLS) disappears. Furthermore, results derived from the market model with GARCH (1,1) (Model 4) are consistent with results of Model 2 that the negative Tuesday effect is present in the VNINDEX returns. These results combined with insignificant betas for all days of the week in Model 4 confirm again that the mean market risk levels do not have any significant changes across the days of the week.

Finally, to investigate the day-of-the-week effect on stock volatility, the GARCH (1,1), with dummy variables for each day of the week in the conditional variance equation are performed for two cases, without and with including the market risk (Model 5 and Model 6 respectively). The last two columns reports results of these models. With respect to market returns, results of both Model 5 and Model 6 consistently indicate that the estimated coefficients of the Tuesday and Thursday dummy variables are negative and statistically significant at the five percent level. Such results are somewhat different to compared ones where the significantly Thursday effect is never observed. Returning to the main objective of the last two models, the results for the conditional variance equations strongly reject the hypothesis of day-of-the-week effect on stock market volatility for the Vietnamese stock market.

In summary, the day-of-the-week effect exists in the VNINDEX return. Specifically, a negative Tuesday effect is observed in the GARCH (1,1) method. Moreover, when the GARCH (1,1) with dummy variables for each day of the week to be added in the conditional variance equation are conducted, a negative Tuesday and Thursday effect are present in the market returns. However, no evidence is found to support the hypothesis of day-of-the-week effect on stock market volatility in the VNINDEX.

9.3 Testing for the short-term overreaction hypothesis

The stock market overreaction hypothesis states that extreme movements in stock returns will be followed by extreme movements in the opposite direction (De Bondt and Thaler, 1985). If this hypothesis holds, investors can earn abnormal returns by simply using a contrarian strategy. Therefore, empirical studies of stock market

Table 9.5: Day-of-the-week effect on the VNINDEX returns and volatility

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Conditional mean equation						
Monday	-0.040	-0.030	-0.038	-0.035	-0.033	-0.035
	(-1.021)	(-1.388)	(-0.984)	(-1.691)	(-1.647)	(-1.718)
Tuesday	-0.050	-0.046	-0.051	-0.048	-0.039	-0.041
	(-1.226)	(-2.337)[b]	(-1.241)	(-2.474)[b]	(-2.042)[b]	(-2.15)[b]
Wednesday	0.028	-0.017	0.028	-0.021	-0.023	-0.024
	(0.779)	(-0.805)	(0.762)	(-0.959)	(-1.169)	(-1.227)
Thursday	0.047	-0.041	0.047	-0.042	-0.043	-0.044
	(1.216)	(-1.878)	(1.213)	(-1.949)	(-1.975)[b]	(-2.021)[b]
Friday	0.081	-0.033	0.079	-0.037	-0.038	-0.041
	(2.192)[b]	(-1.505)	(2.103)[b]	(-1.600)	(-1.899)	(-1.870)
Beta-Monday			0.101	0.072		0.062
			(1.266)	(1.151)		(1.006)
Beta-Tuesday			0.037	0.039		0.018
			(0.405)	(0.880)		(0.390)
Beta-Wednesday			0.001	0.039		0.032
			(0.003)	(0.836)		(0.667)
Beta-Thursday			0.020	-0.008		-0.010
			(0.238)	(-0.155)		(-0.203)
Beta-Friday			0.060	0.037		0.039
			(0.645)	(0.762)		(0.821)
ARCH-LM tests (5 lags)	296.493	3.024	294.993	2.897	3.797	3.337
Conditional variance equation						
ω		0.015		0.016	0.004	0.007
		(4.731)[a]		(4.895)[a]	(0.579)	(0.972)
ε^2_{t-1}		0.727		0.749	0.705	0.738
		(6.501)[a]		(6.507)[a]	(6.551)[a]	(6.631)[a]
h_{t-1}		0.345		0.333	0.378	0.351
		(6.393)[a]		(6.204)[a]	(7.441)[a]	(6.933)[a]
Monday					0.013	0.010
					(1.327)	(1.103)
Tuesday					0.018	0.013
					(1.152)	(0.945)
Thursday					0.018	0.016
					(1.089)	(0.991)
Friday					0.000	0.000
					(-0.003)	(-0.019)

Notes: [a, b] *significant at the 1% and 5% level respectively, t-values in parentheses.*
The Chi-square critical values at 1% and 5% are 15.09 and 11.07 respectively

overreaction provide important implications for both academics and practitioners. The overreaction hypothesis has been tested both from a long-term and a short-term perspective. Specifically, DeBondt and Thaler (1985, 1987), Chopra *et al*. (1992) find long-term stocks return reversals while Otchere and Chan (2003), Wang *et al*. (2004) and Ma *et al*. (2005) report some evidence of short-run overreaction. This section tries to find empirical evidence of the short-term overreaction for the Vietnamese stock market by using weekly return data of all stocks listed on the market from May 2002 to August 2005.

9.3.1. Literature review

The stock market overreaction has been extensively studied for the U.S. market in the last decades, but not for emerging countries (Antoniou and Galarriotis, 2005). The first empirical evidence to support the hypothesis of stock market overreaction comes from De Bondt and Thaler (1985). Using monthly return data for the New York Stock Exchange common stocks during the period from January 1926 to December 1982, they form two portfolios, namely winner and loser, based on abnormal returns of stocks and monitor them for a period of three years (tracking period). As a result, the portfolio of prior losers significantly outperforms the portfolio of prior winners by 24.6 percent. According to De Bondt and Thaler (1985), the evidence implies that the stock market is not efficient in the weak form. In a follow-up study, De Bondt and Thaler (1987) also find systematic stock price reversals for the U.S. However, they argue that the stock price overreaction can not be attributed to size and risk measurement effects.

Moreover, the stock market overreaction for the U.S. is confirmed by Howe (1986). Indeed, using weekly returns data obtained from the CRSP for the period of 1963-1981, he reports that stocks with good news (large positive returns) significantly underperform the market during a 50-week period after the event while stocks with bad news (large negative returns) significantly outperform the market during the 20-week period. Additionally, the differences in cumulative average return between the stocks with bad news and stock with good news are positive for the whole tracking period. In addition, similar studies conducted by Brown and Harlow (1988), Chopra et al. (1992) and Ma et al. (2005) provide strong evidence to support for the presence of overreaction in the U.S. stock market.

In anther study, Zarowin (1990) reexamines the evidence of stock price overreaction as reported by De Bondt and Thaler. Using a similar data set that De Bondt and Thaler employ, he finds a significantly positive difference in abnormal returns between the loser and winner portfolios for the U.S. stock market. Contrary to the findings of De Bondt and Thaler (1987), he argues that this result is due to the size of losers to be smaller than winners', but it does not result from investor

overreaction. In addition, similar evidence is given by Clare and Thomas (1995) who investigate the stock market overreaction for the U.K. by using monthly stock returns data over the period from 1955 to 1990.

Lo and MacKinlay (1990b) examine whether contrarian profits are mainly due to stock market overreaction by employing weekly returns of 551 stocks from the CRSP's data over the period from July 1962 to December 1987. They find that stock returns are usually positive cross-autocorrelation indicating that a contrarian strategy would be established in order to make abnormal returns even if no stock overreacts to information. Specifically, the authors point out that the contribution of stock price overreaction to profitability of contrarian strategies would be minor while the lead or lag relation among stock returns is the major source of contrarian profits.

Similar to Lo and MacKinlay (1990b), Jegadeesh and Titman (1995) investigate the overreaction, delayed reaction and contrarian profitable strategy for the U.S. stock markets from 1963 to 1990. They report that stock prices overreact to firm-specific information, but underreact to common factors. Contrary to findings of Lo and MacKinlay (1990b), Jegadeesh and Titman (1995) document that most of profit obtained from a contrarian strategy is attributed to stock price overreaction while a very small portion of such profit is due to lead-lag relationship among stock returns.

Contrary to most empirical studies mentioned above, Davidson III and Dutia (1989), by using a sample of virtually all stocks listed on New York Stock Exchange (NYSE) and American Exchange (AMEX) from 1963 to 1985, report evidence against the hypothesis of stock price overreaction. Specifically, they document that prior winners continue to be winners and losers keep on losing for at least one year. In other word, the stock prices are delayed reaction to information.

Further, Baytas and Cakici (1999) investigate the overreaction hypothesis for seven developed stock markets (the U.S., Canadian, the U.K., Japanese, German, French and Italian stock markets) by using stock return data over the period between 1982 and 1991. As a result, they find empirical evidence to support the hypothesis of overreaction for all markets, expect the U.S.

In emerging stock markets, Da Costa (1994) investigates the overreaction for the Brazilian stock market during a period from 1970 to 1989. Using both the market adjusted and the CAPM adjusted models, he reports that the prior loser portfolio significantly outperforms the market by 17.63 percent while the prior winner one underperforms the market by 20.25 percent for the 24-month period from the formation of portfolios. In anther study, Bowman and Iverson (1998) test for the presence of short-run overreaction in the New Zealand stock market by employing weekly return data for the period from 1967 to 1986. The main findings of the study indicate that the hypothesis of short-run overreaction can not be rejected for

the New Zealand stock market. Specifically, the abnormal return of prior loser and winner stocks in the week after the portfolios formation are 2.4 percent and -1.5 percent respectively.

In Asia, Otchere and Chan (2003) examine the short-run overreaction for the Hong Kong stock market by using the daily return data over the period from March 1996 to June 1998. In general, the empirical evidence obtained from this study indicates that overreaction is present in the Hong Kong stock market. Specifically, price reversals of winners and losers are more pronounced in the period of the pre-financial crisis in Asia than in the crisis period. However, after accounting for transaction costs the authors find that investors can not earn abnormal returns based on a contrarian trading strategy. Furthermore, Wang et al. (2004) examine the short-run overreaction effect for the Chinese stock market by using weekly return data of 301 individual stocks for the period from August 1994 to July 2000. They find significant evidence of the short-run overreaction for the Chinese stock market. Specifically, for the whole sample of 301, the prior loser portfolio significantly outperforms the market by 0.55 percent while the prior winner one significantly underperforms the market by 0.52 percent in the consecutive week after the portfolios formation.

In a recent study, Antoniou et al. (2005) investigate the presence of contrarian profits and sources of such profits for the Athens Stock Exchange (ASE) by employing weekly price data for all stocks listed on the ASE over the period from January 1990 to August 2000. Results of this study are similar to that of Jegadeesh and Titman (1995) on the U.S. stock market. Specifically, the authors document presence of contrarian profits in the ASE for both cases: without and with risk and market frictions adjustment. Furthermore, they report that the contribution of stock price overreaction to firm specific information to such profits is larger than the delayed reaction to the common factors.

In summary, stock market overreaction is detected in many markets, including developed and emerging ones. Moreover, some evidence of the delayed reaction in stock prices is found for the U.S. market. On the basis of this survey, it is expected that the stock price overreaction or underreaction could be present in the Vietnamese stock market, which is proved to be inefficient in the weak form.

9.3.2. Data and methodology

Data

The data used in this section comprises the weekly continuously compounded returns, which are derived from the weekly stock price observations as described in chapter 8, for all stocks listed on the Ho Chi Minh Stock Exchange during the

period from May 2nd, 2002 to August 24th, 2005. The number of stocks listed on the stock market over the time is shown in Table 9.6.

Table 9.6: Number of stocks listed on the market over the time

Time	May. 2, 2002	Dec. 25, 2002	Dec. 31, 2003	Dec. 29, 2004
Number of stocks	16	19	22	26

Methodology

To determine whether the short-run overreaction is present in the Vietnamese stock market, this study employs the method which is used by Wang et al. (2004). Following this method, first the abnormal returns for each stock are calculated by using the market adjusted model as follows:

$$AR_{i,t} = R_{i,t} - R_{m,t} \tag{9.5}$$

where $AR_{i,t}$ is the abnormal return on stock i for week t, $R_{i,t}$ is the actual return on stock i for week t and $R_{m,t}$ is the return on the market index for week t.

The stocks are then ranked in descending order on the basis of $AR_{i,t}$, and winner and loser portfolios are formed. Due to limitation of the number of stocks traded on the market, only the top seven stocks are grouped to the winner portfolio, and the bottom seven stocks are assigned to the loser portfolio. Next, the winner and loser portfolios are monitored over the next 12 weeks. The mean abnormal returns for each week following the formation of the portfolios are computed for both the winner and loser portfolios by using the following equation:

$$AR_{p,t} = \frac{1}{7} \left(\sum_{i=1}^{7} AR_{i,t} \right) \tag{9.6}$$

where $AR_{p,t}$ is the mean abnormal return for each portfolio (p = W for the winner and p = L for the loser portfolio) at week t. Subsequently, the average cumulative abnormal returns (ACAR) are calculated for each test period (tracking period) as follows:

$$ACAR_{p,t} = \frac{1}{n}\sum_{t=1}^{n} AR_{p,t} \tag{9.7}$$

where $ACAR_{p,t}$ is the average cumulative abnormal returns for each portfolio ($p =$ W for the winner and $p =$ L for the loser portfolio) at observed week t and n is the tracking period ($n = 2,3, 4, 8$ and 12). Finally, tests of the overreaction hypothesis are based on the difference of average cumulative abnormal returns between the winner and loser portfolio which is given as follows:

$$ACAR_{D,t} = ACAR_{L,t} - ACAR_{W,t} \tag{9.8}$$

If $ACAR_{D,t}$ is insignificantly different from zero, the null hypothesis of overreaction is rejected. However, a significant positive or negative value of $ACAR_{D,t}$ implies that overreaction or underreaction respectively exists in the stock market.

9.3.3. Empirical results

Empirical results of the overreaction tests are presented in Table 9.7 and Table 9.8. Specifically, Table 9.7 reports differences in the mean abnormal returns between winner and loser portfolios for each week following the formation of the portfolios while the differences in mean cumulative abnormal returns for each tracking period between these portfolios are summarised in Table 9.8. It can be readily observed in Table 9.7 that the winner portfolio outperforms the market by 1.28 percent while the loser portfolio underperforms the market by 1.44 percent for the week when the portfolios are formed. Especially, the empirical results suggest that the overreaction hypothesis can not be accepted for all single-weeks following the formation of the portfolios. However, it is found that the differences in the mean abnormal returns between winner and loser portfolios are likely to be negative, indicating that the stock prices are delayed reaction. For instance, the winner stocks continue to outperform the market by 0.11 percent, and the loser stocks underperform the market by 0.36 percent for the week T + 5. The resultant return of -0.47 percent on the difference between winner and loser portfolios is marginally significant (p-value equal to 6 percent).
Further, a comparison of mean cumulative abnormal returns between the winner and loser portfolios, presented in Table 9.8, reveals that losers tend to continue to be losers for all test periods (n = 2, 3, 4, 8, and 12). In other word, the differences in mean cumulative abnormal returns between the loser and winner portfolios

(ACAR$_D$) are negative, but all of them are statistically insignificant difference from zero. The findings indicate that the hypothesis of overreaction is strongly rejected for the Vietnamese stock market. In contrary, stock prices seem to be delayed reaction.

Table 9.7: Differences in the mean abnormal returns between winner and loser portfolios following the formation of the portfolios

Week	Winner	Loser	Loser - winner	
	AR	AR	AR	*p*-value
F	0.0128	-0.0144	-0.0272	0.00
T+1	-0.0007	-0.0047	-0.0040	0.44
T+2	-0.0041	-0.0024	0.0018	0.62
T+3	0.0002	0.0002	0.0000	0.99
T+4	-0.0033	-0.0039	-0.0006	0.79
T+5	0.0011	-0.0036	-0.0047	0.06
T+6	0.0001	-0.0001	-0.0003	0.87
T+7	0.0019	-0.0022	-0.0042	0.19
T+8	0.0001	-0.0036	-0.0037	0.27
T+9	-0.0004	-0.0020	-0.0016	0.48
T+10	-0.0025	-0.0044	-0.0019	0.17
T+11	-0.0011	-0.0037	-0.0026	0.51
T+12	0.0004	-0.0011	-0.0015	0.43

Note: F is the formation (observation) week; p-value is based on one-sample t test of the null hypothesis that the differences in the mean abnormal returns between winner and loser portfolios are zero.

In summary, based on the findings derived from the tests of the differences in abnormal returns between the winner and loser portfolios, it can be concluded that the overreaction effect is not present in the Vietnamese stock market. However, it should be noted here that the observed period of the sample may be too short to correctly identify overreaction. Therefore, further research which is based on longer observation periods is needed to come to an unambiguous conclusion regarding possible overreaction effects on the stock market in Vietnam. Concerning another aspect of the issue, to wit the phenomenon of trending in the sense that stock prices tend to move in the same direction for some periods, also known as the "momentum" effect (Jegadeesh and Titman, 1993; Chan *et al.,* 1996; Rouwenhorst,

1998), the findings of the study are likely to support the hypothesis that such an effect is present in the Vietnamese stock market.

Table 9.8: The difference in mean cumulative abnormal returns between the winner and loser portfolios

Week	$ACAR_L$	$ACAR_W$	$ACAR_D$	*p*-value
T+2	-0.0071	-0.0049	-0.0023	0.75
T+3	-0.0069	-0.0047	-0.0022	0.77
T+4	-0.0108	-0.0079	-0.0029	0.76
T+8	-0.0204	-0.0046	-0.0158	0.30
T+12	-0.0316	-0.0082	-0.0234	0.22

Note: p-value is based on one-sample t test of the null hypothesis that the difference in the mean cumulative abnormal returns between winner and loser portfolios is zero

9.4. Conclusions

This chapter is devoted to further investigating some special issues regarding the EMH for the Vietnamese stock market. First, the day-of-the-week effect is examined by using a set of regression models. Then, the Chapter deals with the stock market overreaction that has been widely documented in the financial literature, especially for the U.S. market.

The empirical results derived from the regression models generally indicate that the day-of-the-week effect is present in the Vietnamese stock market. Specifically, the negative Tuesday effect on market returns are found when the GARCH (1,1) model is employed. Furthermore, the empirical evidence obtained from the GARCH (1,1) with day-of-the week dummy variables to be added in the conditional variance equation documents that a negative effect is observed for Tuesday and Thursday. However, the empirical findings fail to support the hypothesis of day-of-the-week effect on stock market volatility for the Vietnamese stock market.

Moreover, the tests of the differences in abnormal returns between the winner and loser portfolios reveal that the short-run overreaction does not exist in the Vietnamese stock market. However, it is observed that the stock prices are likely to be delayed reaction to information. However, the limitation of this study regarding the issue is that the studies period is too short (about three years), and the sample of observed stocks are not large.

Part IV:

Conclusions and Recommendations

Chapter 10

Conclusions and Recommendations for Further Research

10.1. Introduction

This dissertation focuses on two important issues in Vietnam, namely the process of equitisation and stock-market development. This chapter aims at summarizing the main findings of the study and indicating some limitations of the thesis that could lead to interesting topics for further research. The rest of this chapter is structured as follows. Section 10.2 draws conclusions on the basis of the findings of the study. Section 10.3 proposes some topics for further research based on the limitations of the dissertation's results.

10.2. Conclusions

10.2.1. The process of equitisation in Vietnam

As a part of the State-Owned Enterprise Reform Programme, in the context of general economic reform, the Vietnamese government launched an equitisation programme in 1992. The programme is divided into two stages, a pilot stage (from 1992 to 1996) and an expansion stage from 1996 onwards. It is observed that most SOEs selected for equitisation are small and medium-sized. "Strategic" SOEs have not been included in the programme. Remarkably, the state and insiders (employees and managers) hold a substantial portion of the shares in the equitised firms. This characteristic makes the Vietnamese equitisation different from privatisation in the usual western sense.

Regarding the impact of equitisation on firm performance in Vietnam, it is found that profitability (measured by income before tax on assets, income before tax on sales, and income before tax on equity), efficiency (measured by real sales efficiency and income efficiency), real sales, and employee income significantly increase following equitization. These findings are in line with growing empirical evidence that firms become more profitable and efficient following privatisation. In the case of Vietnam, the performance improvement is, however, remarkable since the equitisation process is such that the state retains a considerable portion of the shares of equitised firms and employees of the firms acquire a substantial portion of the shares, whereas in the literature the performance improvement of privatisation often is ascribed to control by outside shareholders (see, *e.g.*, Earle and Estrin, 1996).

Furthermore, consistent with the results of Megginson et al. (1994), Boubakri & Cosset (1998), and D'Souza & Megginson (1999), the study reports an increase in employment for the equitised firms after equitisation, although the increase is not statistically significant. This finding is at odds with the model of Boycko *et al.* (1996) where the positive effect of privatisation on firm performance hinges on the redress of excess labour spending. An explanation for the absence of a negative employment effect of equitisation in Vietnam may be that employees hold substantial portions of the shares of equitised firms and consequently are able to influence firms' decision-making in the sphere of employment and wages. It is remarkable, however, that the employment and employee-income effects of equitisation do not seem to lead to negative effects in terms of profitability and efficiency of equitised firms, which could indicate that the rise in employees' income after privatisation has positive incentive effects in the sense of stimulating improvement in labour productivity.

Given the empirical evidence of performance gains after equitisation, the thesis proceeds to identify the sources of these improvements. The cross-sectional regression results show significant negative effects of firm size on the change of the profitability and efficiency measures, thus supporting the hypothesis that smaller firms may be more flexible in the necessary adjustment process after privatisation. On the other hand, firm size appears to have a significant positive impact on employment change of equitised firms in the Vietnamese case. Next, ownership and corporate governance are uncovered as key determinants of the performance improvements of firms after equitisation. Indeed, the empirical results document a significant negative relationship between state ownership and the change in before-tax income on sales, and between state ownership and the change in income efficiency. Similarly, the regression analyses reveal that firms that have a chairperson of the board of directors who represents the state experience a significantly lower increase in real sales, sales efficiency, income efficiency, and

employment compared to firms having a chairperson of the board of directors from the private sector. Contrary to the predictions, the results show a significant negative effect of stock-market listing on profitability changes and income efficiency improvement. However, being listed has a significant positive impact on real sales and sales efficiency.

Overall, the empirical results suggest that equitisation in Vietnam works in the sense of improving firm performance in terms of most performance measures. Apart from equitisation, performance improvements could, however, be attributable to other determinants of firm performance, such as macroeconomic developments. Through application of the "difference-in-difference" (DID) method the study has tried to correct for this possible bias. The outcomes of the DID analysis suggest that the performance improvements of equitised firms, especially those in terms of the profitability of the firms in question, after having been corrected for the impact of other determinants, still can be associated with equitisation.

10.2.2. The development of the stock market in Vietnam

Along with the equitisation programme, a stock market was opened in Vietnam on July 28, 2000. With great government effort the market has grown in terms of the number of listed companies and market capitalisation during its operation period. However, the market is still rather thin. Initially, trading sessions were conducted on Mondays, Wednesdays and Fridays, but as from March 1, 2002, the market trades daily, with two order-matching sessions. It is important to note here that foreign investors (institutions and individuals) have been allowed to trade on the market through securities companies. However, their ownership (aggregate ownership of all foreign investors) in a listed firm is limited, with a maximum of 30 percent of the firm's equity.

The second part of the thesis is mainly devoted to investigating weak-form market efficiency for the Vietnamese stock market. The empirical findings derived from the autocorrelation tests for the observed returns conclusively reject the null hypothesis of the existence of a random walk for the market index and four out of the five selected individual stocks. When the corrected returns for thin trading are used, the random walk hypothesis is still rejected for the market index and four out of the five selected individual stocks, but the extent of rejection is less pronounced. Moreover, the results obtained from the runs test fail to support the null hypothesis of the existence of a random walk for both daily and weekly observed returns of the market index and all selected individual stocks (except weekly returns for the Hai Phong Paper Joint-Stock Company). However, when the corrected returns are used, the empirical results given by this test cannot reject the null hypothesis for the daily returns of the Hai Phong Paper Joint-Stock Company and the Long An Food

Processing Export Company and weekly returns for the Refrigeration Electrical Engineering Company and the Long An Food Processing Export Company. Furthermore, the Lo and MacKinley variance-ratio tests under both homoscedasticity and heteroscedasticity assumptions for both observed and corrected returns provide empirical evidence to reject the random walk hypothesis for the market index and all selected individual stocks. In general, it can be concluded that the Vietnamese stock market is inefficient in the weak form.

Given the empirical evidence that the stock market is weak-form inefficient, it is believed that anomalies in stock returns could be existent in the market. Therefore, the last part of the dissertation examines whether the day-of-the-week and overreaction effects, two important patterns of such anomalies, are present in the Vietnamese stock market. Generally, the study finds that a day-of-the-week effect is existent in the market. Specifically, a negative Tuesday effect on market returns is observed in the GARCH (1,1) model. Moreover, the results derived from the GARCH (1,1) with day-of-the week dummy variables to be added in the conditional variance equation indicate that negative Tuesday and Thursday effects are present in the market. However, the empirical results reject the hypothesis of a day-of-the-week effect on stock market volatility for the Vietnamese stock market. Finally, it is found that short-run overreaction is not present in the Vietnamese stock market. Conversely, it is observed that stock prices seem to show a delayed reaction to information. The finding is in contrast with most empirical results that have been documented in the literature.

10.3. Limitations of the dissertation and suggestions for further research

Although this thesis has broadened our understanding of the process of equitisation, especially the impact of equitisation on firm performance, and of stock-market development in Vietnam, it still has some limitations which should be addressed in further research.

First, a limitation is concerned with weaknesses in the data that are used to measure the impact of equitisation on firm performance. As described in Chapter 5, some public officers who have worked for Local SOEs Reform Boards and researchers of the Ho Chi Minh City (HCMC) Institute for Economic Research were selected to serve as interviewers of the survey. The selection of such interviewers may cause biases in the data. In addition, the sample firms are fairly small and mainly located in the south of Vietnam. These characteristics of the sample may detract from the validity and reliability of the results.

Second, this dissertation measures the effects of equitisation on firm performance by using the pre-post comparison method and the DID technique with equitised

firms and SOEs serving as treatment and control group, respectively. Although the empirical findings obtained from these methods consistently indicate that equitisation has positive effects on firm performance, further study could focus on comparing the performance of equitised firms to the performance of fully private firms in order to provide further evidence on the impact of equitisation on firm performance in Vietnam.

Third, the study reports that performance improvements of equitised firms are associated with equitisation. However, this finding could suffer from shortcomings of the methodologies used. Specifically, the process of equitisation may be endogenous in that only "good" firms are selected to be equitised. This would, however, not seem plausible in light of the finding that equitised firms, which we now would have to take to be "good" firms, systematically succeed in still improving their performance. This endogenity bias might, however, affect the DID analysis, where the difference between the treatment and control group would not be firm ownership, as we presume, but being "good" (equitised) or "bad" firms (SOEs that are not selected to be equitised). Further research would be needed to correct for this possible bias.

Fourth, the literature has documented that ownership structure and corporate governance have significant effects on the performance of privatised firms. This thesis examines the impact of state ownership, the background of the chairperson of the board of directors, and the background of the chairperson of the board of supervisors, on performance improvements of firms following equitisation. Apart from these factors, other aspects of ownership and corporate governance, such as different types of inside ownership (inside workers and inside managers), ownership concentration, involvements of foreign investors in equitised firms, and management turnover could affect firm performance in Vietnam. These issues would be a fertile area for further research.

Fifth, one of the important conclusions derived from the thesis is that the Vietnamese stock market is not efficient in the weak form for the whole period from July 28, 2000 to December 31, 2004. However, the thesis does not examine the evolution of the market over time. It is usually hypothesised that the degree of stock-market inefficiency would increase through time. Therefore, further studies could also focus on this issue in order to complete the picture of the market in terms of informational efficiency. An approach which can be use to deal with the issue, employed by Emerson (1997), Zalewsha-Mitura and Hall (1999), and Rockinger and Urga (2000), is a multi-factor model with time-varying coefficients and generalised auto-regressive conditional heteroscedastic (GARCH) errors.

Sixth, to test for weak-form market efficiency of the Vietnamese stock market, the thesis employs a set of techniques and both observed and corrected returns for thin (infrequent) trading. However, the dissertation does not take into account the issue

of price limits, which would cause bias inference about market efficiency. The price limits confine the observed prices within a certain range on the basis of the previous day's closing price, so they could make stock prices less volatile. Moreover, price limits may induce autocorrelation in observed stock prices where independence of successive price changes may be present if price changes are unlimited. For example, if an increase in stock prices is limited, and good news arrives at a certain day, it is not fully reflected in observed prices and stock prices would continue to increase on the following day. Studies on this issue could result in interesting and relevant results.

Seventh, the study concludes that a day-of-the-week effect (a negative Tuesday effect) is present in the Vietnamese stock market. However, the thesis has not provided any explanations for this anomaly. Therefore, investigating the source of the day-of-the-week effect could be an interesting topic for further study.

Eighth, this dissertation provides evidence to reject the null hypothesis of stock-price overreaction for the Vietnamese stock market. However, the tests on this issue have the limitation that the period studied is rather short (about three years), and the sample of observed stocks is small. This interesting topic should be reexamined in the future as the market has matured.

Although the rather long list of limitations might suggest otherwise, we still think that our positive results concerning the impact of equisation on firm performance are robust enough to justify a policy recommendation to the government of Vietnam to continue and even speed-up the programme of equitisation of state-owned enterprises

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Questionnaires

Form A
(Used for equitised firms)

Name of Firm: ……………………………………………………………………..

Headquarter address: …………………………………...……………….……………..

 Telephone: ………………………….. Fax: ……………………………..……

Interviewee: ………………………………………………….………………..

Position of interviewee: ……………………………………………………….

Interviewee's telephone: ……………………………………………………

Interviewer: ……………………………………………………………………

Date of interview: …………………………………………………………..

Questionnaire code: …………………………………………………………

1. The equitisation process

1.1. The name of the firm before equitisation:

……………………………………………………………………………………….

And when was it originally established? ……………...………………………….

1.2. Which of the following categories best describes the firm before equitisation?
1. Centrally-controlled SOE
2. Locally-controlled SOE
3. Member of a state corporation or a large SOE
4. Other: …………………………..…………………………………………….

1.3. What is the main business of firm?
1. Foods processing
2. Mechanical and electrical engineering
3. Chemicals and pharmaceuticals
4. Textile and sewing industry
5. Service and trade
6. Utility industry (water and electricity supply, telecommunication)
7. Other: …………………………………………………………………………..

1.4. Where is the headquarters of the firm?
1. The Mekong River Delta
2. Ho Chi Minh City
3. The North part of Vietnam
4. The Central part of Vietnam

1.5. Duration of equitisation process: …………………….... months

1.6. The date on which the firm started operation as an equitised firm: …………….

1.7. Charter capital (registered capital): . . . .

1.8. What are the main reasons that you dicided to equitize your firm (give a scale from 1 to 5)?

Reasons	Scale				
	Not important				Very important
1. Tax advantages	1	2	3	4	5
2. Improving firm performance	1	2	3	4	5
3. Mobilizing more capital with low cost	1	2	3	4	5
4. Obligated from the government	1	2	3	4	5
5. Other: …………………………..…… ………………………………………..	1	2	3	4	5

1.9. Do you think that the process of equitisation has been slow?
   1. Yes
   2. No

1.10. If yes, what are the main constraints and problems often encountered in the equitisation process of Vietnamese enterprises that you think it is the causes of the slowness in the equitisation process? (Please indicate the range of importance from given answers)

Constraints and problems	Scale				
	Not important				Very important
1. Method of assets valuation (regulated by the State)	1	2	3	4	5
2. Legal constraints	1	2	3	4	5
3. Administration constraints (complicated procedures, many steps in the equitisation process)	1	2	3	4	5
4. Lack of equitisation experts	1	2	3	4	5
5. Unwillingness of the SOEs'directors	1	2	3	4	5
6. Welfare of employees after equitisation	1	2	3	4	5
7. Debt settlement	1	2	3	4	5
8. Others (please specify): ………………………… ...………………………………………………………	1	2	3	4	5

2. Corporate governance

2.1. What is the ownership structure of the firm at the first shares issue?
   1. State: …………………………………………… *%*
Insiders:
   2. Managers: ……………………………………. *%*

3. Workers: ……………………………………… %

Outsiders:

4. Domestic individual investors: ……………….. %
5. Domestic institutional investors: ……………... %
6. Foreign investors: ……………………………. %
7. Others (explain …………………): …………... %

2.2. Up to now, have the ownership structure changed?

1. Yes
2. No
3. N/A

2.3. If yes, what is ownership structure now?

1. The state: ……..……………………………… %

Insiders:

2. Managers: ……………………………………. %
3. Workers: …………………………………………%

Outsiders:

4. Domestic individual investors: ……………….. %
5. Domestic institutional investors: ……………...%
6. Foreign investors: ……………………………..%
7. Others (explain …………………): …………...%

2.4. What is the composition of the board of management (directors)?

1. No. of persons representing the state: ……………………
2. No. of persons representing insiders: ……………………..
3. No. of persons representing outside shareholders: ………..

Total No. of Directors: …………….

2.5. Whom does the chairperson of the board represent for?

1. The State
2. Insiders
3. Outsiders

2.6. What is the composition of the board of supervisors?

1. No. of persons representing insiders: ……..…
2. No. of persons representing outsiders: ……….

Total No. of supervisors: ………………..……

2.7. Whom does the chairperson of the board represent for?
    1. Insiders
    2. Outsiders

2.8. Whom does the general director (CEO) represent for?
    1. The state
    2. Insiders
    3. Outsiders

3. Employment

3.1. How many full-time employees were in this enterprise three years before and after equitisation?

	Pre-equitisation			Post-equitisation				
	-3	-2	-1	+1	+2	+3	+4	+5
Total employees								

3.2. Have you fired any employees since equitisation?
    1. Yes
    2. No

3.3. If yes, how many? ………….
and what kinds of employee are fired?
    1. Trained employees
    2. Untrained employees
    3. Both

3.4. Have you hired any new full-time employees since equitisation?
    1. Yes
    2. No

3.5. If yes, how many? ………….
and what kinds of employee are hired?
    1. Trained employees
    2. Untrained employees
    3. Both

4. Finance

Please complete the following table:

In VND million

	Pre-equitisation			Post-equitisation				
	-3	-2	-1	+1	+2	+3	+4	+5
Sales Revenues								
Total production costs (Cost of goods sold)								
Wage costs								
Income before tax								
Net income								
Total assets								
– Total current assets								
– Total fixed assets								
Total liabilities and equity								
Liabilities								
– Short term debts								
– Long term debts								
– Other liabilities								
Equity								

Form B
(Used for SOEs)

Name of Firm: …………………………………………………………………………..

Headquarter address: ………………………………..…………………………………..

 Telephone: ………………………….. Fax: …………………………….………

Interviewee: ……………………………………………….…………………..

Position of interviewee: ………………………………………………………….

Interviewee's telephone: ……………………………………………………………

Interviewer: ……………………………………………………………………………

Date of interview: ………………………………………………………………..

Questionnaire code: ……………………………………………………………………

1. What is the main business of the firm?
    1. Foods processing
    2. Mechanical and electrical engineering
    3. Chemicals and pharmaceuticals
    4. Textile and sewing industry
    5. Service and trade
    6. Utility industry (water and electricity supply, telecommunication)
    7. Other: …………………………………………………………………..

2. Where is the headquarters of the firm?
    1. The Mekong River Delta
    2. Ho Chi Minh City
    3. The North part of Vietnam
    4. The Central part of Vietnam

3. How many full-time employees have been in the firm?

	1998	1999	2000	2001	2002	2003
Total employees						

4. Please complete the following table

In VND million

	1998	1999	2000	2001	2002	2003
Net sales Revenues						
Total production costs (cost of goods sold)						
Wage costs						
Income before Tax						
Net Income						
Total assets						
Total Current Assets						
Total Fixed Assets						
Total Liabilities and Equity						
Total Liabilities						
Short Term Debts						
Long Term Debts						
Other Liabilities						
Equity						

Samenvatting

In deze dissertatie worden twee belangrijke vraagstukken met betrekking tot het proces van economische hervorming in Vietnam behandeld, te weten de Vietnamese variant van privatisering (*equitisation*) en de ontwikkeling van de aandelenbeurs. Deze vraagstukken staan wederzijds met elkaar in verband in die zin dat *equitisation*, voor zover die ook tot een beursgang van de betrokken bedrijven leidt, de hoeveelheid te verhandelen aandelen op de beurs en daarmee het ontwikkelingspotentieel van de beurs vergroot, terwijl de beschikbaarheid van een goedwerkende beurs *equitisation* en een daaropvolgende beursgang aantrekkelijker kan maken.

Equitisation komt in het eerste deel van het proefschrift aan de orde. Het programma tot het doorvoeren van deze Vietnamese variant van privatisering start in 1992. Het programma bestaat uit twee fasen, een testfase (1992-1996) en een expansiefase daarna. Duidelijk is dat de meeste staatsbedrijven die zijn uitgekozen voor *equitisation* klein tot middelgroot zijn en dat strategische bedrijven nog niet in het programma zijn opgenomen. Opmerkelijk is dat, anders dan doorgaans in privatiseringsprogramma's in westerse landen het geval is, het resterende aandeel van de staat en *insiders* (werknemers en managers) in het aandelenkapitaal van de betrokken bedrijven zeer aanzienlijk is.

Waar het gaat om de invloed van *equitisation* op de prestaties van de betrokken bedrijven in Vietnam wordt gevonden dat de wintsgevendheid (gemeten door de ratio's inkomen-voor-belasting/activa, inkomen-voor-belasting/verkopen en inkomen-voor-belasting/aandelenkapitaal) de efficiëntie (gemeten door de efficiëntie van reële verkopen en inkomensefficiëntie), de reële vekopen en het inkomen van werknemers toenemen na *equitisation*. Deze bevindingen zijn in overeenstemming met de groeiende hoeveelheid resultaten uit de internationale empirische literatuur dat bedrijven winstgevender en efficiënter worden na privatisering. In het geval van Vietnam is dit resultaat echter opmerkelijk in het licht van het gegeven dat in het proces van *equitisation* de staat en werknemers een aanzienlijk belang in de desbetreffende bedrijven behouden, terwijl in de literatuur de verbeterde prestaties van geprivatiseerde bedrijven veelal worden toegeschreven aan de controle door aandeelhouders van buitenaf (zie bij voorbeeld Earle en Estrin, 1996).

Verder maakt deze studie, in overeenstemming met de resultaten van Megginson *et al.* (1994), Boubakri & Cosset (1998), en D'Souza & Megginson (1999), melding van een toename in werkgelegenheid bij bedrijven na hun *equitisation*, hoewel de toename niet statistsch significant is. Deze uitkomst is in strijd met het model van

Boycko *et al.* (1996), waarin het positieve effect van privatisering op de prestaties van bedrijven voortkomt uit het corrigeren van overmatige arbeidsuitgaven. Een mogelijke verklaring voor de afwezigheid van een negatief werkgelegenheidseffect van *equitisation* in Vietnam is dat de werknemers een aanzienlijk belang in het aandelenkapitaal van de betrokken bedrijven bezitten en bijgevolg in staat zijn invloed uit te oefenen op de besluitvorming aangaande werkgelegenheid en lonen. Het is daarbij echter opmerkelijk dat de effecten op werkgelegenheid en loonhoogte niet schijnen te leiden tot negatieve effecten voor de winstgevendheid en efficiëntie Dit kan erop wijzen dat de stijging van het inkomen van werknemers na de *equitisation* een positieve uitwerking heeft in de sfeer van prikkels om de arbeidsproductiviteit te doen stijgen.

De volgende stap in deze dissertatie is een poging de bronnen van de geconstateerde prestatieverbeteringen van bedrijven na *equitisation* te identificeren. Resultaten van dwarsdoorsnede-regressieberekeningen tonen significante negatieve effecten van de omvang van bedrijven op de verandering in hun winstgevendheid en efficiëntie, aldus de hypothese bevestigend dat kleine bedrijven flexibeler zijn in het noodzakelijke aanpassingsproces na *equitisation*. Aan de andere kant heeft de omvang van bedrijven een significante positieve invloed de verandering in werkgelegenheid bij bedrijven na *equitisation*. Vervolgens worden eigendomsverhoudingen en *corporate governance* neergezet als prominente determinanten van de prestatieverbeteringen van bedrijven na *equitisation*. De empirische resultaten laten een significant negatieve relatie zien tussen het percentage resterend staatseigendom en de verandering in de ratio inkomen-voor-belasting/verkopen en tussen het percentage resterend staatseigendom en de verandering in inkomensefficiëntie. Verder komt naar voren dat bedrijven waar de voorzitter van de raad van bestuur de staat vertegenwoordigt, een significant lagere toename in de reële verkopen, efficiëntie van de verkopen, inkomensefficiëntie en werkgelegenheid laten zien dan bedrijven waar de voorzitter van de raad van bestuur afkomstig is uit de private sector. In tegenspraak met wat zou worden verwacht, laten de resultaten een significant negatief effect zien van beursnotering op de verbetering in winstgevendheid en inkomensefficiëntie. Een beursnotering heeft echter een positieve invloed op de reële verkopen en de efficiëntie van de verkopen.

Over de gehele linie suggereren de resultaten van het empirische onderzoek in deze studie dat *equitisation* in Vietnam effectief is in de zin van het doen verbeteren van de prestaties van bedrijven bij de meeste indicatoren daarvoor. De prestatieverbetereingen zouden echter in principe ook toe te schrijven kunnen zijn aan de invloed van andere determinanten, zoals macro-economische ontwikkelingen. Door het hanteren van de *difference-in-difference* (DID)-methode is getracht te corrigeren voor deze mogelijke vertekening. De uitkomsten van de

DID-analyse suggereren dat de prestatieverbeteringen van bedrijven na *equitisation*, met name in de sfeer van de winstgevendheid, na te zijn gecorrigeerd voor de invloed van andere determinanten, nog steeds in verband kunnen worden gebracht met *equitisation*.

Wat betreft het tweede thema van dit proefschrift, de ontwikkeling van de aandelenbeurs in Vietnam, moet in de eerste plaats worden opgemerkt dat de Vietnamese aandelenbeurs een tamelijk recent fenomeen is; de beurs ging van start op 28 juli 2000. Onder invloed van een actief regeringsbeleid is de markt sindsdien aanzienlijk gegroeid in termen van het aantal beursgenoteerde bedrijven en de marktkapitalisatie. Nadat er oorspronkelijk slechts drie handelssessies per week zijn is er vanaf 1 maart 2002 sprake van dagelijkse handel, met twee handelssessies per dag. Ondanks deze ontwikkelingen is de beurshandel nog steeds te karakteriseren als dun.

Buitenlandse beleggers hebben de mogelijkheid gekregen op de beurs te opereren via effectenbedrijven. Het buitenlandse belang in Vietnamese beursgenoteerde bedrijven is echter gebonden aan een maximum van 30 %.

Het hoofdbestanddeel van het tweede deel van deze dissertatie betreft onderzoek naar de vraag of de Vietnamese aandelenmarkt efficiënt is in de zwakke vorm. De empirische bevindingen uit autocorrelatietoetsen op waargenomen opbrengsten verwerpen duidelijk de nulhypothese dat de marktindex en, in vier van de vijf onderzochte gevallen, de nulhypothese dat individuele aandelen een *random walk* vertonen. Wanneer de opbrengsten worden gecorrigeerd voor infrequente handel blijft deze bevinding in stand, zij het in minder uitgesproken mate. In dezelfde richting wijzen de resultaten van een *runs*-toets: bij zowel dagelijkse als wekelijkse opbrengsten van de marktindex en alle geselecteerde individuele aandelen (behalve bij de wekelijkse opbrengsten voor de Hai Phong Paper Joint-Stock Company) ondersteunen zij niet de nulhypothese van het bestaan van een *random walk*. Wanneer echter gecorrigeerde opbrengsten worden gebruikt, kunnen de resultaten van deze toets niet leiden tot een verwerping van de nulhypothese in het geval van de dagelijkse opbrengsten van de Hai Phong Paper Joint-Stock Company en de Long An Food Processing Export Company en in het geval van de wekelijkse opbrengsten van de Refrigeration Electrical Engineering Company en de Long An Food Processing Export Company. Verder verschaffen de Lo-MacKinley *variance-ratio*-toetsen onder zowel homoskedasticiteit als heteroskedasticiteit zowel voor waargenomen als gecorrigeerde opbrengsten empirisch bewijs dat moet leiden tot een verwerping van de *random-walk*-hypothese voor de marktindex en alle geselecteerde individuele aandelen.

In het algemeen kan worden gesteld dat het empirische onderzoek in deze dissertatie naar de efficiëntie van de Vietnamese aandelenmarkt in de zwakke vorm moet leiden tot de conclusie dat hiervan geen sprake is.

Deze uitkomst leidt tot de vervolgvraag of er in de Vietnamese aandelenbeurs sprake is van anomalieën in de prijsvorming, zoals dag-van-de-week- en overreactie-effecten. Dag-van-de-weekeffecten worden inderdaad gevonden. In een GARCH (1,1)-model wordt een negatief dinsdageffect gevonden; in een GARCH (1,1)-model waarin *dummy variables* voor de dag van de week worden toegevoegd aan de conditionele-variantievergelijkingen worden negatieve dinsdag- en donderdageffecten gevonden. Er worden geen aanwijzingen gevonden voor het bestaan van dag-van-de-weekeffecten in de sfeer van de volatiliteit van de Vietnamese aandelenbeurs.

Ten slotte kan worden vermeld dat er op de Vietnamese aandelenbeurs geen sprake lijkt te van overreactie. Daarentegen wordt een vertraagde reactie van de koersen op nieuwe informatie gevonden.

Stellingen

behorende bij het proefschrift

Equitisation and Stock-Market Development

The Case of Vietnam Truong Dong Loc

1. Privatisation is the most efficient way to restructure gOEs in order to improve their performance in transition economies.

2. Equitisation has positive effects on firm performance in Vietnam, notwithstanding the fact that equitisation in Vietnam differs from privatisation in most other transition and non-transition economies in that residual state ownership after equitisation and the percentage of shares transferred to insiders are quite substantial.

3. The difference-in-differences (DID) method is a well-developed approach to overcome shortcomings of the pre-post comparison method in measuring effects of a policy or policy programme.

4. Emerging stock markets are usually inefficient even in the weak form, possibly implying that investors would be able to obtain abnormal returns by establishing trading strategies based on information about past price patterns.

5. A daily seasonal anomaly is present in the Vietnamese stock market in the form of a negative Tuesday effect.

6. Accession to the World Trade Organisation provides Vietnam both with opportunities and challenges.

7. The most difficult part in doing research in Vietnam, especially in corporate finance, is collection of data.

8. Microfinance is an effective instrument to improve the livelihoods and to reduce poverty in developing countries.

9. Corruption is a serious problem that has stalled economic growth of poor countries in general and of Vietnam in particular.

10. Beauty is only skin-deep (Vietnamese saying).