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## **DOCTOR OF PHILOSOPHY**

**An investigation into the effects of introducing international accounting standards on the Jordanian stock exchange.**

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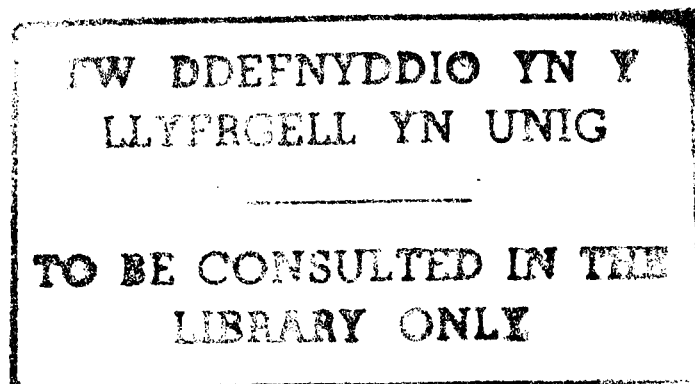
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**AN INVESTIGATION INTO  
THE EFFECTS OF INTRODUCING  
INTERNATIONAL ACCOUNTING STANDARDS  
ON THE JORDANIAN STOCK EXCHANGE**

**A THESIS  
SUBMITTED TO THE UNIVERSITY OF WALES IN  
FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE  
OF DOCTOR OF PHILOSOPHY**

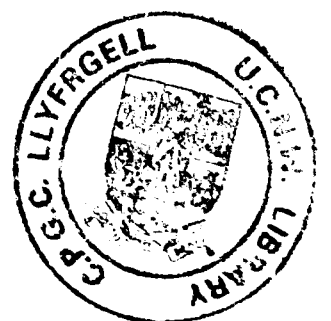


**BY**

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**June 1996**



**Dedicated with all My Love and Respect To My Parents, My  
Brothers, My Sister, My Wife and My Beloved Son Hamzeh.**

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## ABSTRACT

This thesis examines the effect of introducing international accounting standards (IASs) on the Jordanian Stock Exchange during the period 1990-1991. Literature on accounting standards in general and IASs in particular is reviewed for the likely effects of IASs adoption in Jordan. A research methodology is developed using data from Jordanian IAS adopting firms (experimental group) and IAS non-adopters (control group) for 1990 and 1991 respectively. Sub-portfolios are then constructed representing the financial sector, the service sector, the industrial sector, low traded firms, heavily traded firms, small firms, large firms, domestic-owned firms, foreign-owned firms, winner firms and loser firms. For all samples and subsamples, abnormal returns (for IAS adopters and non adopters) are analysed using the traditional market model but also using an average return model and a raw return model. The observed market reactions are then compared with those anticipated (or claimed by supporters of IASs adoption in the literature). The main findings are that IASs adoption does increase the information content of financial statements (as observed in abnormal returns) but that reaction occurs mainly prior to accounts release. An exception to this general effect is large firms where IAS adoption does not have an observable effect on abnormal returns around announcement date. The research also provides evidence that IASs adoption has little influence on Jordanian domestic-owned firms' share price reactions but a considerable effect on foreign-owned firms' share prices. The research findings are examined for their relevance for other developing countries considering replacing locally - determined accounting standards with IASs.

# CHAPTER ONE

## INTRODUCTION

### 1.1 BACKGROUND TO THE STUDY

In 1990, for the first time, a large portion of Jordanian firms changed to international accounting standards (IAS). This offers an opportunity to research the implications of IAS adoption for Jordanian firms and to consider the implications for other countries considering the same move.

The relationship between public disclosed accounting information and stock market reactions has been one of the primary streams of accounting research since Ball and Brown (1968) and Beaver (1968). This research effort, known as "market-based accounting research" (MBAR), obtained its impetus from major developments in finance theory during the late 1950s and early 1960s. This line of research takes its importance because accounting policy-making bodies such as the FASB, SEC and IASC consider the magnitude of stock market reactions to the accounting disclosure as evidence of disclosure usefulness to investors. Furthermore, these regulatory bodies usually decide issues such as the timing, frequency and components of financial reports. For making such decisions information about stock market reaction to the release of financial reports is useful.

There is a considerable empirical literature dealing with capital market reaction to accounting information. This area of research usually involves information content studies. Most of the studies on the information content of accounting data are of the "announcement type", examining whether the announcement of some economic events

(eg. earnings announcement) results in a change in the distributions of stock prices and/or trading volume activity at the time of their announcement. The empirical findings for these studies suggest that earnings releases are associated with changes in the distribution of stock performance (prices and/or trading volume). The implications of these studies is not only that earnings releases convey timely and relevant information to the market but also that investors use this information in their investment decisions.

Another group of studies test what has become known as the mechanistic hypothesis which assumes firms are able to increase their stock price by reporting increases in earnings per share, irrespective of whether that increase arises from an accounting change or from 'real' factors such as increased operating efficiency. A subset of these studies has investigated the behaviour of stock performance in the period around accounting change announcements (or announcement of earnings in which a new set of accounting methods is applied). In general these studies report mixed results neither for the mechanistic hypothesis nor against it.

Each country has its own accounting standards (Generally Accepted Accounting Principles, GAAP), which leads to considerable differences across countries in the determination of firm's earnings (international accounting diversity). Recently, many leading US policy-makers and government officials have expressed concern that international accounting diversity is an obstacle for US investors who attempt to interpret and rely upon foreign financial statements. They argue that accounting information of foreign firms which is understood and relied upon by investors in the home (foreign) market can often be misleading or misunderstood by US investors, resulting in home market investors having an informational advantage over US investors.

To date, evidence on whether international accounting diversity is an obstacle to investors is mixed. Choi and Levich (1990) interviewed a sample of 52 institutional investors, corporate issuers, investment underwriters, market regulators, and rating agencies in Germany, Japan, Switzerland, the United Kingdom, and the United States. Overall, half of those interviewed stated that their capital market decisions are affected by accounting diversity. A major implication of Choi and Levich's study is that accounting differences are important and affect the capital market decisions of the large number of market participants surveyed, regardless of nationality, size, experience, scope of international activity, and organizational structure. Based on the results of their survey, Choi and Levich (1990) conclude that international accounting diversity poses a problem for international investors. In addition, they argue that additional research in international accounting needs to be conducted in order to

*"determine quantitatively the impact of international accounting diversity on the prices of securities and on the volume and location of trading in these securities."*

Research specifically aimed at examining the information content of earnings figures prepared under different GAAP regimes in relation with firms' stock returns is relatively new. Empirical research in this area is of interest for several reasons:

- i. It may be possible to interpret the information content of earnings measured under different accounting standards for investors;
- ii. empirical research can give an indication of the success of standard-setters in different countries in meeting information needs of stock markets; and finally,
- iii. empirical results can provide further insight into implications of the current impetus towards international accounting harmonization.

The US-GAAP are still the dominating benchmark in stock market research. However, the SEC has recently accepted the cash flow statement based on IAS 7 as equivalent to US-GAAP. If SEC is going forward in easing the listing requirements at

the NYSE and accepting also full accounts based on international accounting standards (IAS) as equivalent to the US-GAAP (Auer, 1995, pp. 7-8) an important question arises over whether IAS-based (instead of US-GAAP). earnings figures convey more information than earnings based on home (domestic) accounting standards of the country under investigation. In other words, is IAS-GAAP more informative than the GAAP of the country investigated?

The need for international accounting research has grown in importance due to the increased globalization of economic, social and political relationships. Gray (1989) recognizes the importance of IAS for developing countries and points out that, in an attempt to develop their capital markets, they need knowledge of the extent of necessary regulation and investor protection. To that end, Gray (1989) suggests inquiries into the relevance of International Accounting Standards (IAS) in a stock market context. Therefore, a new area for more market-based accounting research (MBAR) has been opened.

Market-based accounting research (MBAR) on the information content of earnings figures based on the IAS and its association with stock returns is relatively scarce. What is available is conflicting in its conclusions, so there is a need for more research in this area.

This study is one of the first empirical studies on the information content of IAS-figures. It is an attempt to examine a change in home standard which is expected to result in an improvement of information content for investors. The primary purpose of this study is to examine whether IAS-based earnings figures contain higher information than earnings based on the Jordanian accounting practices which have differed from the IASs. The study is of importance because it is one of very few studies on the Jordanian stock market in particular and, indeed, other countries considering IAS

adoption. Previous studies of the Jordanian stock market include Errunza and Losq (1985), Al-Hmoud (1987) and El-Issa (1988b). None of these studies examined whether IAS-based earnings numbers contain incremental information for investors over earnings numbers based on the Jordanian accounting rules. The study is therefore important because it is the first attempt to investigate the usefulness of IAS by measuring share price reactions around earnings announcements based on IASs and those based on traditional Jordanian accounting practices.

## 1.2 AIMS AND METHODOLOGY OF THE STUDY

The main purpose of this study is to investigate the effects of introducing International Accounting Standards (IAS) on the Jordanian Stock Exchange. More specifically, the study examines whether IAS-based earnings figures contain incremental information over earnings based on the Jordanian accounting practices. In particular, answers to the following questions are sought:

1. Has the introduction of IAS influenced the process of stock market price formation?
2. Do earnings figures releases based on IASs have higher information content than earnings figures releases based on "old" Jordanian accounting rules?
3. Do differences in price reactions vary between economic sectors?
4. Are differences in price reactions for IAS adopters and non-adopters associated with factors such as
  - ◆ trading frequency
  - ◆ size of company
  - ◆ degree of foreign ownership
  - ◆ company performance?
5. What are the wider implications of IAS adoption for other countries considering the move?



To answer the above questions an event study methodology is used. In common with previous research the standard market model (MM) is used to calculate daily unexpected abnormal returns and to calculate cumulative abnormal returns (CARs) to measure the unexpected security revisions associated with firms' earning announcements. This methodology differs from previous studies, however, in two important respects. Firstly, results of the MM method are augmented by two further sets of tests to provide results from an average return model (ARM) and raw return model (RRM). Secondly, subdivision of data into subportfolios enables a much more sensitive analysis and interpretation of results than studies which simply ask "is there an effect?".

### **1.3 PLAN OF THESIS**

This thesis is divided into ten chapters. Chapter 2 introduces the Jordanian economy and the Jordanian Stock Exchange to provide a brief background of the economy of the country from which the data for this study are taken. Chapter 3 examines the pre-IAS Jordanian accounting profession and the framework for financial information disclosure in Jordan. It covers accounting education, legislation for the accounting profession and auditing practices in Jordan. It also covers the nature of disclosure and disclosure laws and regulation in Jordan.

Chapter 4 examines the role of accounting standards and the relationships between accounting and economic growth. The environmental factors and the influence of International Accounting Standards Committee (IASC) are examined. The chapter also contains a review of the IASC, its objectives, its role in achieving harmonization. Finally "old" Jordanian accounting practices and IAS practices are compared and important differences noted.

Chapter 5 reviews previous empirical studies on capital market reactions to the release of the accounting information. The definition of 'information content' is discussed along with methodologies that have been used in previous information content studies.

Chapter 6 describes the methodology used in this thesis to investigate the changes in market prices associated with the change to new accounting standards (IAS).

Chapter 7 presents descriptive statistics and a preliminary analysis of the data used. Chapter 8 reports and interprets results of the empirical analysis and examines whether IAS-based earnings figures contain incremental information over and above earnings figures based on Jordanian accounting rules.

Chapter 9 completes the analysis of results which began in chapter eight. Firstly, findings are summarised and then interpretations are offered. Next, an overview of the main findings is provided and followed by a discussion. Chapter 10 presents the conclusions and identifies the strengths and limitations of this study. Finally, some suggestions for future research are offered.

# **CHAPTER TWO**

## **THE JORDANIAN ECONOMY AND STOCK MARKET**

### **2.1 INTRODUCTION**

The purpose of this chapter is to introduce the Jordanian economy and the Jordanian Stock Exchange to provide a background to this study.

The chapter is divided into three Sections. Section 2.2 deals with the characteristics of the Jordanian economy and investment incentives in Jordan. Section 2.3 is concerned with the Amman Financial Market (AFM), its structure, development, environment, objectives and relevant prior empirical studies on the AFM.

### **2.2 THE JORDAN ECONOMY AND INVESTMENT TRENDS**

#### **2.2.1 Characteristics of the Jordanian Economy**

Jordan is a small developing country with an area of 96,188 square kilometres. The economy depends mainly on the exportation of phosphate, remittances from Jordanian workers abroad and foreign aid.

Jordan is bordered by Syria on the north, Iraq on the northeast, Saudi Arabia on the south and east, and on the west Israel and the West Bank. The eastern part of the country is a vast desert plateau and the western part is a mountainous region. The Rift Valley lies between the East Bank and the West Bank mountains which is 200-400 metres below sea level. The average annual rainfall ranges from 500 mm in the north-west (the most fertile land ) to less than 50 mm in the desert. The East Bank population

increased from 680,000 in 1952 to 2.06 million in 1978 and to 4.15 million in 1993. The population growth rate is one of the highest in the world: it was 4.8% during the period 1961-1979, then declined to 3.9% during the period 1980-1985 and sharply increased to 5.6% during 1986-1993.

Regarding the Jordanian labour force, Table 2.1 shows that the percentage of the labour force in the agricultural sector decreased from 11.5% in 1979 to 7.4% in 1992, whereas the percentage of the labour force in the services sector increased from 66.3% in 1979 to 71.2% in 1992.

The Jordanian labour market can be described as both an exporter and importer of labour. Central Bank sources (Central Bank of Jordan, 1994) show that the total labour force in 1992 was 706,000, of which 106,000 (15%) were foreign workers; at the same time, the number of Jordanian workers working abroad was estimated by the Ministry of Labour at 450-500 thousands of workers.

**Table 2.1: Jordanian Labour Force According to Economic Activity (Percentages)**

	1979	1985	1989	1991	1992
<b>Agriculture</b>	11.5	7.8	7.2	7.4	7.4
<b>Mining and Manufacturing</b>	8.6	10.6	10.4	10.3	10.3
<b>Electricity and Water</b>	0.6	1.1	1.4	1.3	1.1
<b>Construction</b>	13.0	11.0	9.7	9.8	10.0
<b>Services Sectors</b>	66.3	69.5	71.3	71.2	71.2
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Sources : Jordan , Ministry of Planning , Five Year Plan 1986-1990 , p. 63 , and Central Bank of Jordan , Monthly Statistical Bulletin 1994 .

Civelek and El-Khoury (1991) cited Abu-Nassar and Rutherford (1995, p.129) who state that:

*" Jordan is a small, fairly prosperous country with an open economy and a free*

*capital market and a Parliamentary system of government. Industry is dominated by the service sector, with mining and manufacturing contributing only some 17 percent of GDP. The country's stock market (the Amman Financial Market) commenced operations in 1978 with quotations covering 57 companies; this number rose to 120 in 1988 but has since fallen slightly as a result of merger activity."*

Jordan has suffered repeatedly from the conflict in the Middle East since World War I. In spite of such difficulties, Jordan has attempted to maximise and utilise its scarce resources and to increase productivity through economic and social development plans to raise the standard of living of its citizens. This has been achieved by establishing a number of large industrial projects, implementation of successive economic plans for development. The initial Seven Year Plan (1964-1970) was followed by the Three Year Plan (1973-1975), and further five year plans (1976-1980), (1981-1985), (1986-1990). Jordan is currently implementing the 1993-1997 Five Year Plan. Jordan has been experiencing a continuously increasing unemployment rate which was 6.5% in 1983, 14.8% in 1987, 17.1% in 1991 and 14% in 1994 (Prime Minister of Jordanian Government in his speech in the session of the Jordanian Parliament, December 26, 1994).

The main characteristics of Jordanian economic environment can be summarised by:

#### **1. Lack of natural resources**

It is well known that Jordan suffers from a lack of natural resources such as mining, petrol, water ... etc. This makes Jordan heavily dependent on foreign sources of materials, productive imports and aid.

#### **2. Dependence on foreign aid**

An important aspect of Jordan is that it is dependent on foreign aid for its survival and it is certain to remain heavily dependent on aid from oil states in the Arab World and Western countries such as the UK and the USA.

Arui (1972, p.61) states that:

*" The weakness of Jordan's economy is further manifested in a chronic deficit in the budget and the balance of trade. Since the very inception of the Emirate of Transjordan, domestic revenue has consistently lagged behind expenditures. Grants from abroad were always needed to cover expenditures, which the country was never able to meet with its own resources."*

### **3. The need to attract foreign capital and resources**

This characteristic is the one most relevant to this thesis since adoption of IAS may have important implications.

#### **2.2.2 Investment Incentives in Jordan**

Jordan enjoys political stability and a free economic system, and is therefore, considered a reasonable environment for investment. Furthermore, Jordan has an adequate labour force, modern transport and communication systems and broad financial regulations which offer incentives for financial investment. Investments in Jordan increased after the signing of the Peace Treaty with Israel.

Taw (1994) points out that, in spite of the fact that Jordan has no oil, it is still one of the most developed economies in the Middle East and constitutes the most suitable point of entry to the Middle East. He adds that, since Jordan has the highest rate of qualifications in the Arab world, it can provide skilled labour at a low cost in comparison to Taiwan and other developed countries.

The experience of the last two decades confirms that the Jordanian economy is becoming increasingly capable of absorbing larger investments. Therefore, the Jordanian government extends investment opportunities to foreign investors as well as local investors to establish their business in Jordan. This is evidenced by incentives, facilities, exemptions, and favourable legislation necessary for attracting Arab as well

as other foreign capital. The following section deals with some of these incentives and instruments.

### **2.2.2.1 The Encouragement of Investment Laws (1972, 1984)**

The 1972 Encouragement of Investment Law in Jordan was initiated to encourage investment and the establishment of economic projects in line with government's economic policies under which domestic and foreign investments are treated equally. The incentives granted under this law are:

1. Exemption from taxes on real estate owned by approved economic projects for a period of five years. Where the project takes the form of a public share holding company or is established outside Amman, the exemption period could be up to seven years.
2. Exemption of profits from income tax for six years. This period is extended to nine years if either of the following conditions prevail:
  - a. The project is located outside the capital (Amman);
  - b. The project is organised as a public shareholding company.

Later, Encouragement of Investment Law No. 6, 1984, was initiated to grant the following additional incentives to approved economic projects in Jordan:

3. Exemptions from custom duties on spare parts not more than 10% of the value of imported fixed assets, provided these are imported within five years from the approval date.
4. Exemptions from custom duties on fixed assets imported for any approved economic project. The exemption is granted if the fixed assets concerned are imported within a maximum period of three years following the approval date of approving the economic project.
5. The net profit of an approved project shall be exempt from tax as follows:

- a. For a project in Zone A, 100% tax exemption for the first consecutive five years and 60% exemption for the following consecutive two years (the zones are specified by the Jordanian government);
  - b. For a project in Zone B, 100% tax exemption for the first consecutive eight years and 60% exemption for the following two consecutive years;
  - c. For a project in Zone C, 100% tax exemption for 12 consecutive years.
6. Arab and foreign capital invested in any project, in conformity with the provisions of the law, whether separately or in conjunction with local capital, shall be accorded the same treatment as local capital, including exemption from duties and taxes. The government guarantees that Arab or foreign capital shall enjoy every exemption and facility granted by this law; and that such exemptions and facilities shall not be abolished, reduced or encroached upon by any other legislation.

#### 2.2.2.2 Free zones

Further incentives have been provided by free zones. The following benefits are envisaged as being likely to be derived (by companies) from the free zones:

- i. Companies located in free zones do not pay customs duties or VAT on goods brought into the zone until they are released on the domestic market;
- ii. Free zones provide companies with a degree of flexibility in adjusting to market conditions. Goods can be stored on the zone without payment of duty until the market prospects improve;
- iii. Free zones save companies paperwork from routine regulations;
- iv. Companies located on free zones can benefit from savings in insurance costs because free zones are secured areas monitored by customs authorities which provide a safe environment (El-Issa, 1988b, p.65-66).



### **2.2.2.3 Liberalisation of foreign exchange controls**

The Central Bank of Jordan allows inflow and outflow of funds for investment purposes, tourism, education, medical treatment, living expenses abroad, and trade purposes. Some examples of foreign exchange liberalisations are as follows:

- i. Arab nationals can buy shares and bonds issued by Jordanian companies in any currency. They can sell shares and bonds and transfer their value, profits or interest due in any currency and without prior consent of the Central Bank of Jordan;
- ii. Residents and non-residents may bring in or take out unlimited amount of foreign bank notes and coins;
- iii. Non-residents may keep foreign exchange accounts with local banks. Such accounts can be replenished from any source and can be drawn on without any restrictions.

To summarize, there are indications that foreign investment in Jordan has increased since the Peace Treaty between Jordan and Israel. For example, the Jordanian government established a multi-nationally financed petroleum company (valued at \$29 million). This establishment reflects the government's objectives of increasing the investment proportion from the private sector and encouraging foreign investment in Jordan (Al-Quds Al-Arabi, 1995, p. 9). The Jordanian government has also invited the World Bank to establish a regional office in Amman in the hope of further economic benefits, particularly from establishing joint projects between Israel and Arab countries. Encouragement of investment laws have been introduced to encourage further investment.

## **2.3 THE AMMAN FINANCIAL MARKET (AFM)**

### **2.3.1 Introduction**

The official name of the Jordan Stock Market is the Amman Financial Market (AFM). The AFM is a government agency operating as an independent legal entity with financial autonomy. The need to establish a stock exchange in Jordan was first recognized in the 1964 national development plan, and the recommendation its establishment was repeated in the development plans of 1973 and 1976. In 1976, a mission from the International Finance Corporation (IFC) visited Jordan to study the possibility of establishing an stock exchange. Studies prepared by the Central Bank, with the help of the mission's expertise, showed that the increasing number of corporate enterprises and the noticeable progress achieved by Jordanian economy justified the setting up of a domestic stock exchange (Al-Sabbagh, 1978).

The AFM was established by Special Temporary Law number 31 in 1976, and started its operations on January 1st 1978 as a public financial institution with legal and financial independence. It embodies a market for trading securities as well as a securities exchange commission. It is worth mentioning that, before the AFM was established, the buying and selling of stocks used to take place through a few real estate agents and brokers alongside their other activities. Furthermore, there were no stock price announcements, which resulted in high transaction costs as well as large price fluctuations.

Two main forms of the market exists. The first form is the primary market where direct relations between buyers and sellers are organized and only newly issued stocks are traded. The second form is the secondary market, where "old" stocks and bonds are traded. The secondary market contain two sub-sections, the organized market which

deals only with stocks of those companies officially participating in the market inside the AFM, and the unorganized market or "parallel market" (established in 1982) which includes all transactions outside the AFM. The AFM classifies the companies listed in the market (cross-sectionally) into four sectors; Financial (Banking), Insurance, Services and the Industrial Sector.

### **2.3.2 The Role and Objectives of the Amman Financial Market**

Provisional Law No.31 was passed to provide the general framework for the operation of the AFM in June 1976. Operations started from the beginning of 1978. The AFM objectives, as stated in Article 4 of its law, are as follows:

1. To promote savings by activating and encouraging investments in financial papers, and to direct such savings to finance the development of the national economy.
2. To organize and control issues of, and dealings in financial papers with a view to insure the soundness, ease and speed of such dealings, to preserve the financial interests of the country, and to protect the interests of small savers.
3. To collect and publish the necessary information and statistics to realise the stated objectives.

In the light of these general objectives the AFM can be seen to function as a place for organizing and facilitating the trading of securities rather like any other typical bourse. Furthermore, the AFM is self-regulating and assumes a role similar to that of the UKs' Securities Exchange Commission (SEC). In this sense it supervises disclosure of information of listed companies and regulates the trading procedures and activities of the brokerage houses.

The AFM contributes to the development of the capital market in Jordan through:

- i. Providing a medium through which established and new companies may raise capital.
- ii. Providing an appropriate environment for the provision of liquidity for both investors and savers. The existence of an efficient stock market enables savers to liquidate their investments easily and at a fair price.
- iii. The daily publication of the price quotations to ensure transparency of information to all participants in order to protect and assist them in making appropriate investment decisions.
- iv. Promoting the role of brokers by encouraging the establishment of brokerage houses which play a fundamental role in the trading of securities, as well as in their capacity as underwriters and financial advisors.
- v. Developing new financial instruments that will help finance firms and public corporations.
- vi. Providing the necessary studies and statistics to assist investors in making the appropriate investment decisions, and to create a sound investment climate.

The aim of AFM regulations are to a) ensure that the general public will be kept informed of the company's activities and progress and b) ensure that the shareholders interests will be adequately protected [for more details see Chapter 3 Section 3.3.2].

### **2.3.3 Structure and Development of the Amman Financial Market (AFM)**

#### **2.3.3.1 The listed companies**

The number of listed companies has doubled since the opening of the AFM in 1978. Then there were with 67 companies [with a paid in capital of \$ 475.2 million].

In 1988 the number increased to 120 companies [with a paid in capital of \$ 1,311.6 million]. This number then declined to 106 companies [with a paid in capital of \$ 843.8 million] in 1992 but is now increasing [114 companies in 1993 and 148 companies in 1994].

### **2.3.3.2 Trading volume and price levels**

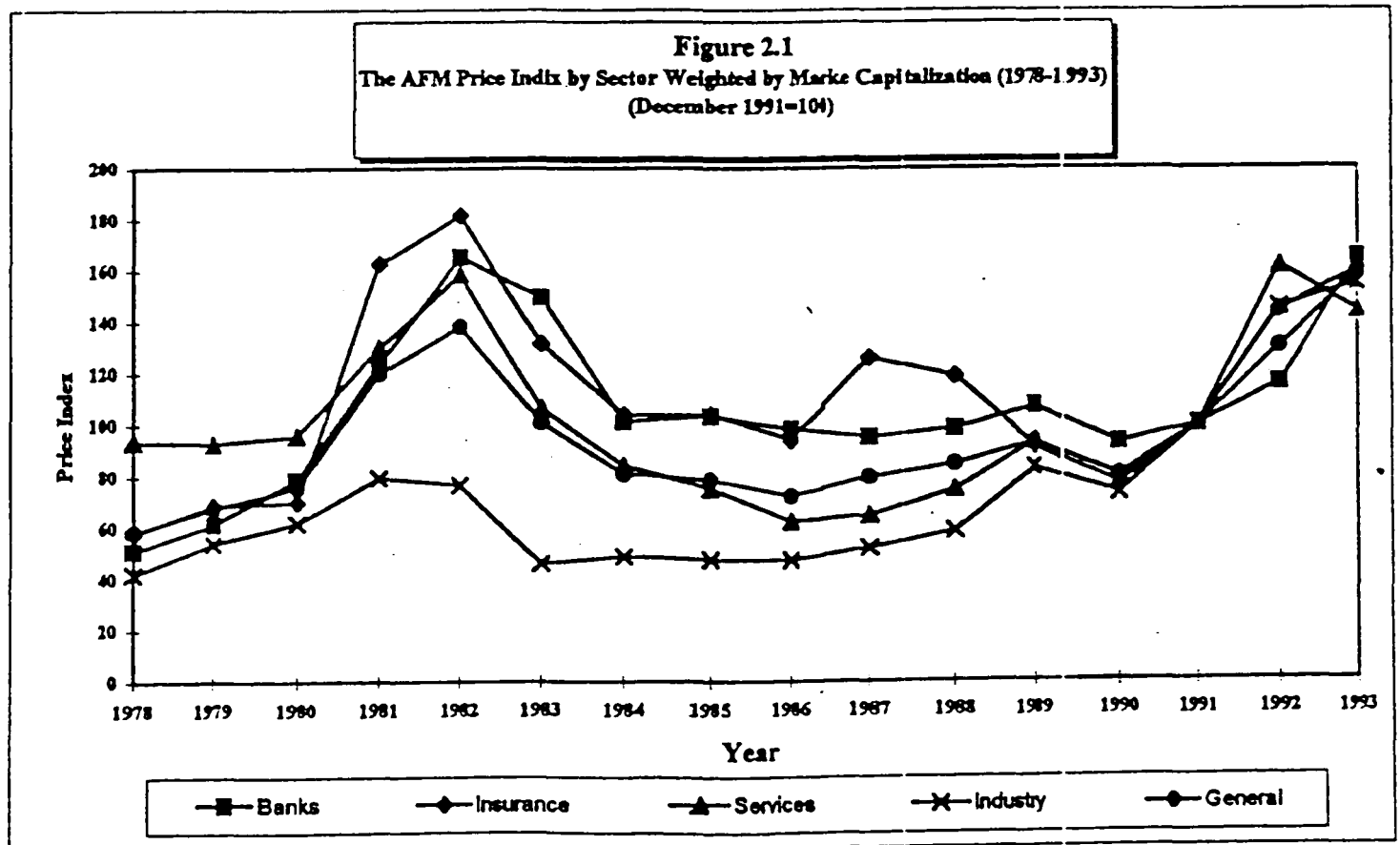
Table 2.2 shows trading volume by sector over the 1978-1993 period. The table shows that the AFM has experienced a steady growth in its activities. Trading volume increased from \$ 5.6 million in 1978 to \$ 365.2 million in 1989. Furthermore, trading volume during 1993 reached a new record of more than \$ 968.6 million. During the years (1979-1980) and (1982-1986) trading was mainly in the banking and financial sector. The industrial sector dominated trading during the years 1978, 1981, and (1987-1992). In 1993 the industrial sector continued to dominate trading volume accounting for about 54.2% of total trading. It was followed by the banks and financial sector with 29.2%, the services sector with 13.2%, and, finally, the insurance sector with 3.4%.

The AFM stock price index by sector and weighted by market capitalization (1978-1993) is shown in Figure 2.1. It can be seen from the figure that share prices rose from the construction of the index in 1979 until the end of 1982 when it reached 138.2 points. Prices started falling to bottom at 72.4 points in 1986. The next three years witnessed a steady increase in the price levels to register 93.3 points at the end of 1989. By the end of 1990 price levels dropped by 13.8%. However, since 1991 the market has experienced an increased demand for securities.

**Table 2.2: Trading Volume by Sector for the Organised Market During (1978-1993)**

Year	Sector				Total
	Banks and Financial Firms	Insurance	Services	Industry	
1978	1909388	211581	605792	2889130	5615891
1979	6837164	932825	1315201	6757969	15843159
1980	17339167	931044	5944764	17216101	41431076
1981	28903515	6619151	7828845	32065416	75417027
1982	49085694	8813465	14521245	39832216	112252620
1983	86941391	5135094	6638487	20892870	119607842
1984	33039263	2582110	2825153	14645808	53092334
1985	47092002	2574124	2811779	11846068	64323973
1986	39155659	4212281	3059533	18339886	64767359
1987	40281686	7404634	3316216	91556695	142559231
1988	40466799	309892	7028470	76373776	126967967
1989	85464051	7841808	31600734	240333786	365240379
1990	71177094	6422945	30783463	158019195	266402697
1991	75523392	4794580	35435609	187083248	302836729
1992	202808813	25309246	128792352	530041318	886951729
1993	282551879	32946207	127939618	525176093	968613797

Source: AFM, statistical Data, Various issues 1978-1993.



### **2.3.3.3 The shareholder base**

According to AFM statistics, in 1992 there were about half a million shareholders (approximately double the figure for 1978). About 61.4% of equity holdings are in the industrial sector, 17.2% in the banks and financial sector, 18.7% in the services sector, and 2.7% in the insurance sector.

### **2.3.3.4 Brokerage houses**

The Articles of Association of the market regulate all matters relating to brokers, their rights, duties and their disqualification. The articles of association assert that the functions of brokers include the following:

- i. To act as underwriters for new issues
- ii. To act as sellers of new issues
- iii. Dealing as agents (i.e., stockbroking)
- iv. Doing transactions for their own interests (i.e., stockjobbing).

Currently there are twenty eight brokerage houses in and around the AFM, with a combined paid in capital of more than JD (65.6) million. Eight of these are public companies with shareholders. Eighteen are private shareholding companies, and two are partnership companies. The AFM Committee of Directors is entitled by law to license brokers in the market and define their rights and duties. The committee can also withdraw the licenses of brokers if need be.

### **2.3.3.5 Primary market**

The performance of the primary market can be measured by the amount of capital raised. Table 2.3 summarizes the number of companies that issued shares to the public and the amount of capital raised over the 1978-1990 period.

**Table 2.3: Summary of Companies that Issued Shares to the Public and the Amount of Capital Raised During (1978-1990)**

Year	Newly Established Companies *	Established Companies *	Total *	Amount of Capital Raised *	Annual growth (%)
1978	3	8	11	11901117	-
1979	4	7	11	16887705	42
1980	13	10	23	47764260	183
1981	14	4	18	74547474	56
1982	12	12	24	91308682	22
1983	13	4	17	59910000	(34)
1984	3	1	4	6283630	(90)
1985	1	3	4	10675000	70
1986	2	3	5	11420000	7
1987	-	4	4	28159538	147
1988	1	1	2	7000000	(75)
1989	4	3	7	17595074	151
1990	1	2	3	10450000	(41)

\* AFM statistics 1991 No. 13 (1978-1990)

Table 2.3 shows that, although the long-term trend is towards increased activity, there is much variability between periods.

### 2.3.3.6 AFM activities

AFM has held several financial conferences aimed at promoting interest in stock market activities; some of these conferences were in collaboration with other Arab institutions. For example, recently (April, 1994) the AFM held a financial conference in Amman in collaboration with the Arab League and Arabic Union Banks (Al-Rai Daily Newspaper, 1994). The conference participants discussed important issues such as disclosure and its role in improving the quality of financial markets, ways of operating the markets, encouraging trust in markets, and Arabic laws and regulations that govern disclosure and how international disclosure requirements can be applied.



### 2.3.4 Previous Studies on the AFM

Previous empirical studies on the AFM (very few) include the following:

i. **Errunza and Losq (1985)**

Errunza and Losq (1985) investigated the behaviour of stock prices for a group of newly emerging, developing countries securities markets (which included the Jordanian market). Their results suggest that the probability distributions of Jordanian share prices are consistent with a lognormal distribution.

ii. **Al-Hmoud (1987)**

Al-Hmoud (1987) studied Amman Financial Market (AFM) efficiency. He concluded that neither semi-strong form tests nor weak-form tests support the notion of efficiency in the AFM.

iii. **EL-Issa (1988)**

EL-Issa (1988) investigated the usefulness of accounting information to investors in the AFM by examining the share price movements surrounding release of Jordanian companies' annual reports. The results of his study suggest that there appears to be anticipation beforehand and market reaction following the annual reports release. El-Issa concluded that:

*"Annual reports do appear to have information content".*

iv. **Other studies**

Major studies of the Jordanian stock market are in short supply. Other, less stringent studies are, however, conducted from time to time (eg., Shamia and Talafha,

1990). None of these studies are particularly concerned with whether IAS-based earnings numbers contain incremental information for investors over earnings numbers based on the Jordanian accounting rules. This study is, hence, the first of its kind for Jordan.

## **2.4 SUMMARY**

This chapter introduced a brief background about the Jordanian economy and the Jordanian Stock Exchange. It covered the characteristics of the Jordanian economy and the investment incentives in Jordan, it also, covered the Amman Financial Market (AFM), its structure, development, environment, and objectives.

As a small developing country with an open economy and a free capital market the Jordan economy is characterised by: a) a lack of natural resources, b) dependence on foreign aid and c) a need to attract foreign capital. Foreign (and domestic) investment in Jordan has increased since the signing of the Peace Treaty with Israel. Furthermore, Jordan has endeavoured to provide incentives and favourable financial regulations aimed at attracting foreign capital.

The Amman Financial Market has performed quite well since its inception. This is reflected not only in the volume of shares traded which exceeded previously expected levels but also in the release of information relating to the activities of the stock market in the following media: daily and weekly price sheets; monthly, quarterly, semi-annual and annual reports. Moreover, the AFM has regularly amended its rules and regulations. The AFM is currently working very hard to improve disclosure and provide investors with much needed information. Unfortunately, however, (see Chapter 6 Section 6.2.7) this does not extend to the keeping of computerised share price data.

# **CHAPTER THREE**

## **THE ACCOUNTING PROFESSION AND LEGAL FRAMEWORK FOR FINANCIAL INFORMATION DISCLOSURE IN JORDAN**

### **3.1 INTRODUCTION**

In order to protect the public and to ensure that all the shareholders enjoy equal access to information about company performance, financial disclosure requirements are imposed on public companies whose securities are traded on the Amman stock market. Hence, this chapter examines the accounting profession and the framework for financial information disclosure in Jordan. A comparison of the traditional Jordanian system with the international accounting standards (IAS) can then be undertaken at a later stage (Chapter 4).

This chapter is divided into two Sections. Section 3.2 deals with the accounting profession in Jordan and examines accounting education, legislation for the accounting profession and auditing practice. Section 3.3 deals with the nature of disclosure and disclosure laws in Jordan.

### **3.2 THE ACCOUNTING PROFESSION IN JORDAN**

#### **3.2.1 Accounting Education and the Accounting Profession**

Accounting profession and accounting education are closely related and cannot be disassociated from each other. Educators have a duty to prepare persons to become professional accountants. Helles (1992) argues that efforts are needed in Jordan to co-

ordinate activities by accounting academics, practitioners, and bodies responsible for accounting practice (including Public Accountants). The process could be implemented by forming task-committees representing the various groups to work towards establishing an agreed strategy for improving accounting standards and auditing practices.

Besides these internal influences the development of accounting profession in Jordan has been widely influenced by many factors such as accounting education trends, accountants coming from other countries, Jordanian students returning from abroad (mainly the USA and the UK), and the rapid change in the Jordanian social, economic, political and legal environment.

### **3.2.2 Legislation for the Accounting Profession in Jordan**

In the developing world educational and professional qualifications of accountants vary from country to country. Examination for admission is not a prerequisite in the majority of developing countries. Some countries (such as Taiwan, Nigeria, Pakistan and Jordan) require examinations but examinations are not required in many other developing countries. A minimum educational background normally a bachelor's degree in business studies (or its equivalent), and a minimum of three years of experience are common legal requirements that must be met before issuing a licence to an applicant.

Legislation is a critical factor influencing accounting practices in Jordan. Legislation relating to accounting and accountants takes a variety of forms, mainly related to matters that should be covered in arriving at an auditor's opinion. Admission to the profession is also a legal matter in Jordan. Auditing and Accounting Profession Law No.32, 1985, specifies that professional accountants in Jordan must be licensed.

Licences are issued by a governmental agency, the Audit Profession Council.

Article 4 of the Audit Profession Law No.32, 1985 states the required qualifications of the auditors to be as follows:

- A. Jordanian citizenship; and
- B. Good moral character; and
- C. Either
  - i. Any holder of a college degree who has adequate practical experience for seven years, or
  - ii. A bachelor's degree in accounting or its equivalent, with a minimum of three years practical accounting and auditing experience, or
  - iii. A master's degree in accounting or its equivalent, with a minimum of two years practical accounting and auditing experience, or
  - iv. A Ph.D degree in accounting, with a minimum of one years practical accounting and auditing experience or a minimum of two year's teaching experience at university level, or
  - v. Any holder of a professional certificate from accredited accounting body eg. AICPA, ICAEW.

### **3.2.3 Auditing Practice and Financial Reporting in Jordan**

In most developing countries, state audit is a government activity separate from the executive branch. Accounting in Jordan corresponds to this general pattern where auditing of all government programmes, activities and organisations is conducted by the Independent Audit Bureau, which is accountable to Parliament (Dabbas, 1986).

#### **3.2.3.1 Development of audit institutions in Jordan**

In Jordan, the creation and development of supreme audit institutions took place in 1931 and these were replaced in 1952 by the Audit Bureau. The Bureau is

administered by a president appointed by royal decree upon the recommendations of the Council of Ministers. To ensure the independence of the Audit Bureau, legislation provides immunity for the president of the Bureau. The president cannot be discharged, transferred, or disciplined without the consent of the Jordanian Parliament. These provisions were modified in 1959 by a law which provides that if parliament is not in session, the president of the Audit Bureau can be discharged by royal decree upon the recommendation of the Council of Ministers.

Government audits in the Arab states (including Jordan) are initiated to review the performance of individual governmental units responsible for particular functions, programmes, or activities. Most current audits are of the traditional type (financial compliance). The auditors determine whether expenditure for different programmes and activities are made for authorised purposes and in accordance with budget constraints, applicable laws, and regulations. Auditing procedures related to revenue are designed to determine whether all resources of public revenue have been realised and collected in compliance with existing laws and regulations.

Within the majority of Arab states, government auditing systems and techniques were conceived and installed during the pre-independence period, or before the advent of national development planning. Although some modifications have subsequently been made, the prevailing audit systems, procedures and standards are still inadequate to meet the required objectives of the auditing process (Dahmash, 1982).

Further evidence of poor accounting information is provided by a study prepared by the Inter-Arab Investment Guarantee Corporation (IAIGC) and the AFM (1985). The study suggested, again, that one of the problems that Jordan suffers from is the absence of an organised auditing profession that suits the legal and the economic development that has occurred in the country. The study asserts that the laws mention

generally accepted accounting principles (GAAP) but do not specify what they are and what they mean. Therefore there is a need for the creation of a body with the responsibility for developing the accounting profession in Jordan and defining the GAAP to make financial reports more understandable and to reduce the differences in methods of preparing financial reports. Helles (1992) pointed out that, so far, the Jordanian Audit Bureau has failed to make much progress because it has not been able to develop new ways and means of auditing the various governmental activities.

### **3.2.4 The Jordanian Association of Certified Public Accountants (JACPA)**

The increased importance of the accounting profession was recognised in Jordan when Article 18 of the 1985 Statute, No. 32 was passed founding the Jordanian Association of Certified Public Accountants (JACPA) with the objective of introducing accounting standards in Jordan. Article 4 of JACPA System, No. 42, of 1987, specifies the objectives of JACPA as that of improving accounting profession and academic affairs through:

1. Developing and improving the quality of members in society and supporting their autonomy;
2. Maintaining ethics, principles and the traditions of the profession;
3. Encouraging academic research in different activities of the profession;
4. Determining the generally accepted auditing standards and rules;
5. Co-operating with similar Arabic and international societies in academic journals;
6. Issuing books, magazines, professional periodicals and academic journals;
7. Holding seminars, professional conferences and training programmes;
8. Developing the profession and emphasising the role of auditing at a general level;
9. Providing members of the society with social, health and pension funds.

Since its inception in 1987, JACPA has been unable to establish, develop and

improve standards of accounting and auditing in Jordan. This failure is due to the general lack of an understanding and skills on how accounting standards should be set and the absence of any form of co-ordination between governmental agencies and other practices.

This association (JACPA) is one of the three main vehicles for promoting the growth of accounting profession in Jordan; the others are accounting firms and accounting departments at Jordanian universities. The implication is that accounting in Jordan has been unable to organise itself effectively in a way that could facilitate that process of improvement. It was hoped that the Jordanian Association of Certified Public Accountants (JACPA) would be instrumental in unifying the profession and directing its activities towards the desired level of uniformity in practices and the reliability of accounting regulations. The association, however, lacks not only the knowledge and resources but also, and most importantly, the authority to lead the profession (Helles, 1992).

### **3.2.5 Environmental Factors Influencing Accounting in Jordan**

Arpan et al. (1985) state that accounting, like other business practices, is to a large extent environmently bound; that is, shaped by and reflected in particular characteristics unique to each country's environment. The list of these characteristics is virtually infinite, ranging from personal traits and values to institutional arrangements, and can even extend to climatic and geographical factors.

Redebaugh (1975) developed one of the earliest and most complete expositions showing the various environmental factors that influence the development of accounting in a country. His environmental factors apply equally well to Jordan and include the nature of the enterprise, users of the enterprise, the government, the



accounting profession, academic influences, local environmental characteristics, international influences, and other external users such as creditors and financial markets.

Solas (1988) points out that accounting in Jordan is mainly influenced by the needs of the economy and the educated elite who are in practice in Jordan. According to Solas, the scope and role of accounting develop's in response to changes in the socio-economic and political environment in Jordan. In this respect a former Governor of the Jordan Central Bank stated that Jordan followed an economic system based on free enterprise and private initiative. Within this framework, the government of Jordan played a pioneering role by participating with the private sector in implementing large scale industrial projects and providing incentives and an appropriate entrepreneurial climate. To achieve this, the government of Jordan provided the basic necessary infrastructure and incentives to encourage private investment. This was implemented through the initiative of investment law in many sectors of the economy, and led to rapid economic growth in Jordan. This rapid economic growth made important but regrettably unfulfilled demands upon accounting in Jordan.

### **3.2.6 Status of Accounting Profession in Jordan**

From sections 3.2.1 to 3.2.5 it should be clear that accounting profession in Jordan is still in its infancy and is not sufficiently developed to be able to undertake the setting of national accounting standards. The government is also unlikely or unwilling to take responsibility for setting accounting standards. There is thus no Jordanian accounting plan. Jordanian laws (especially, tax laws) are therefore the most influential factors in shaping the accounting principles applied in the preparation and presentation of financial statements in Jordan. The same can be said about auditing, there being no statement of auditing standards as a guide for auditors along the lines of that issued by

ICAEW in United Kingdom, or the AICPA in the USA. Auditors are permitted to choose the methods and means they deem necessary to assure themselves of the regularity and correctness of the accounts ( El-Issa, 1988b).

Helles' (1992) conclusion is that there are no accounting principles, auditing standards or procedures, or uniform audit reports in Jordan. He states that:

- There is a great shortage of Jordanian accountants. There is no relation between the profession and accounting education;
- There are no services other than financial external audit. Research and publication activities are very weak.

These conclusions suggest that the status of the accounting profession in Jordan is indeed very weak. Helles favours an improved national accounting system rather than adoption of imported standards. Helles (1992, p.222) points out that:

*"Jordan must concentrate on evaluating and improving its own accounting system instead of rushing towards the adoption of [the] IAS, a tendency which has been brought about by foreign pressure due to [the] critical economic situation in the country."*

Others are more in favour of IAS, but point out that there are, nevertheless, difficulties to overcome. Abu-Nassar and Rutherford (1995, p. 132) state that:

*"The accounting profession in Jordan has only recently been formally established and has yet to issue local statements of accounting practice but has recommended adoption of International Accounting Standards effective January 1990, ... However, in the absence of any legal power or effective disciplinary mechanism, the adoption of its (IAS) standards is likely to come slowly."*

To summarise, there appears to be agreement on the need to improve accounting standards in Jordan but some disagreement on exactly how this improvement should be achieved.

### 3.3 FINANCIAL INFORMATION DISCLOSURE IN JORDAN

#### 3.3.1 Introduction

The Accounting Principles Board (APB) formulated the following definition for accounting:

*"Accounting is a service activity. Its function is to provide quantitative information, primarily financial in nature, about economic entities that is intended to be useful in making economic decisions..."(AAA, 1966 p.1)*

Therefore, the underlying purpose of accounting is to provide (disclosed) useful information about the economic entity to those who need such information. Various attempts have been made to define what is meant by financial disclosure.

Moonitz (1961) suggests that the concept of disclosure should be conceived of in the broadest possible terms such as: What should be disclosed?, to whom?, How should disclosure be made?. Kohler's (1970) A Dictionary for Accountants provides the following definition for disclosure

*"Disclosure is a clear showing of a fact or condition on a balance sheet or other financial statement, in side heads, in footnotes, or in the text of an audit report".*

The Canadian Institute of Chartered Accountants (1976) define disclosure as:

*"..... that aspect of financial reporting that is concerned with the proper amount of detailed information to be provided in the financial statements".*

The next section discusses the nature of disclosure and disclosure laws and regulations in Jordan.

### 3.3.2 Nature of Disclosure in Jordan

#### Corporate accounting disclosure

For the purpose this study, disclosure is defined as "the publication of any economic information, quantitative or otherwise, relating to a business enterprise which facilitates the making of investment decisions". The implication is that the financial reports are prepared primarily for investors and that the information will be used in making investment decisions. The amount of information to be disclosed is dependent not only on the expertness of the user, but also on an absolute standard (such as GAAP). Three concepts of disclosure are generally proposed:

- a. Adequacy: Adequate discloser demands that information to be presented in a form which fosters understandability.
- b. Fairness: Fair disclosure requires the presentation of material facts the average prudent investor would be expected to rely on.
- c. Fullness: This requires the presentation of all relevant information.

The main source of information about the performance of Jordanian companies is their financial statements which should be prepared and audited annually. The auditors are appointed by the general assembly of shareholders. However, these statements can be delayed (without breach of law) for up to three and a half months after the end of the year, when they may well be considered outdated. This delay could open the door for gradual information leaking which might directly affect the efficiency of the AFM. A delay of three and a half months would not be so bad if interim reports were prepared and published. However, interim reports are not prepared and published by companies and are not required by law (Al-Hmoud, 1987).

## **Market disclosure**

The importance of disclosure of information about companies' stock prices cannot be overemphasized. In order to encourage investors and to assure them that they are involved in a fair game, timely information needs to be publicly available. Regarding the publication of information about stock prices and trading volume, the Amman Financial Market (AFM) maintains and releases information relating to the activities of the stock market by preparing the following:

- ◆ Daily price sheets
- ◆ Weekly price sheets
- ◆ A monthly report
- ◆ A quarterly report
- ◆ A semi-annual report
- ◆ An annual report

The daily and weekly price sheets give a summary of the individual prices for the day or the week and are published in the local newspapers. The daily sheets are broadcasted on the local radio and TV stations. The other reports provide summary statistics for different activities of the market during the specified period.

The AFM also publishes a guide to public shareholding companies every two years. This guide is very important (especially for research purposes) since it contains a classification of the financial statements for all listed companies and provides some financial ratios for each company. It also provide some statistics about the shareholders, directors, employees, .... etc.

### **3.3.3 Disclosure Laws and Regulations in Jordan**

Existing disclosure regulations in Jordan are of several kinds. The relevant laws are the Companies Act 1989 (administered by the Ministry of Trade and Industry) and the Commerce Code of 1966. All companies with limited liability are required by the

Commerce Code to maintain the following books: a daily journal, a ledger, and a correspondence book. The Companies Act requires a company with limited liability to issue a prospectus upon the public offer for sale of securities, to lay before the shareholders annually a director's report, profit and loss account, balance sheet, and an auditor's report. Other laws affecting disclosure of financial information are the Amman Financial Market Law No.1 of 1990, the Income Tax law No.34 of 1982, the Banking Business Law No.32 of 1976 and the Insurance Law No.30 of 1984. Certain Professional organizations, governmental agencies, and other legislative Acts have also been influential in shaping the development of corporate disclosure in Jordan. The various laws and other factors affecting financial corporate disclosure in Jordan are now discussed.

#### **3.3.3.1 The Companies Act (1989)**

Corporate disclosure rules and regulations in Jordan are relatively unsophisticated and contain minimal disclosure requirements. The legal and regulatory framework for financial reporting is very limited in scope and is expressed in loose and general terms. The Jordanian Companies Act of 1989, contains general disclosure requirements. It requires that companies prepare annual reports, including a profit and loss account and a balance sheet with comparative figures, a statement of changes in financial position and explanatory notes. According to the Companies Act, books of accounts are to be kept audited, and a fair balance sheet is to be prepared, sent to shareholders and filed with the registrar of companies. The Act also requires a true and fair profit and loss account for the accounting year. However, there are no further requirements concerning the form and contents of financial statements beyond a requirement that companies should maintain proper accounting records in accordance with generally accepted accounting principles, which are not themselves defined by

law.

According to the Act, the following types of companies may be registered:

1. Public and private shareholding companies which have a separate legal entity from their owners.
2. General and limited partnerships (these are referred to as ordinary companies in the law).
3. Foreign enterprises. The following types of foreign companies can be registered in Jordan in accordance with the Companies Act:
  - Ordinary partnerships and limited liability partnerships
  - Private and public share holding companies
  - Foreign insurance companies
  - Regional companies registered according to registration of Foreign Companies Law No.46 of 1975.
4. Co-operatives. There are a number of co-operatives of a commercial and agricultural nature.

Article 213 of the Companies Act states that each company should keep proper books of accounts including journal, ledger correspondence files and other necessary subsidiary books. The books must be numbered and stamped, and all entries in the books are to be supported by proper documentation, such as invoices, receipts, and the like. However, as mentioned earlier, there are no legal requirements as to the form or content of financial statements for both public and private share-holding companies.

Article 168 of the Companies Act states that:

- i. The Board of Directors, shall within three months from the end of the financial year, prepare the balance sheet and the profit and loss account of the company, which must be audited by legal auditors. The Board shall also prepare a report containing adequate explanations of the main items of income expenditure.
- ii. These statements, together with the auditors' report shall be sent to every shareholder by registered post with the notice convening the ordinary general meeting at least fourteen days before the dates of the meeting. Notice of the

meeting may also be delivered by hand against signature for receipt.

- iii. The notice convening the meeting must include the agenda.
- iv. Copies of all the aforesaid statements shall be sent to the controller and to the company's auditors and the Amman Stock Exchange.

Article 117 states that:

*"A copy of the company's financial statements must be filed with the controller of companies annually. Moreover, every public shareholding company must publish its annual financial statements in one of the daily news-papers, together with a brief summary of the board of directors' annual report within two months of its general meeting."*

### 3.3.3.2 Amman Financial Market regulations

This section examines the extent to which measures taken by the AFM to make sure that the relevant information is publicly available so that investors are protected against insider trading.

In order for the capital market to play its role efficiently, El-Issa, (1984, p.46) argues that:

*".... information about the economic activities and transactions within the market must be available to the public without any costs."*

The AFM requires listed companies to publish (in local newspapers) financial data which would affect the price of their shares. The AFM has laid down definite criteria for the release of information by listed companies to the general public. To ensure that all who invest in securities enjoy equal access to such information, the Amman Financial Market's articles of association require the following from listed Jordanian public companies:

- i. On request, any information about their performance, to ensure safe transactions and to protect investors (Article 28).
- ii. To annually provide the AFM with the financial statements and a list of the



shareholders (Article 29).

- iii. In the case of stock offerings, a prospectus prepared on a special form containing all information and explanations deemed necessary to investors (Article 33).
- iv. Listed companies should make prompt disclosure to the market of any important information likely to influence its share price such as the stock scripts. The AFM has the right to disclose such information via any media eg., local newspapers (Article 34).
- v. The chairman and the member of the Board of Directors should provide the AFM with a list of the shares or bonds they own in the company within a month of appointment. They have to provide the AFM with any changes that have occurred to their shareholdings within ten days of the change (Article 36). To emphasise the prohibition of insider trading, Article 194 of the Companies Act, 1989, states that:

*"The chairman or any other member of the board may not deal with any securities of the company on the basis of important information which he may have acquired in his official capacity in the company, and he may not have an interest in any company, association, society or other group which indulges in activities designed to affect the stock market prices relating to any kind of securities issued by the company, nor to carry out such activities personally or through others. Any such dealings or transactions shall be void, but this shall not prevent the criminal prosecution of the person concerned in accordance with the provision of this law".*

In other words, insider trading in Jordan is just as illegal as in the United Kingdom or the United States.

- vi. Public shareholding companies are required to keep records of shareholders. Such records should contain the following:
  - Names of the shareholders
  - Number of their shares
  - Transaction of shares
  - Any details deemed to be necessary by the market (Article 39).

Other measures that have been adopted for the protection of investors include:

- a. The chairman has the right to ask any person to leave the trading floor (Section 7

of Articles of Association).

- b. The chairman has the right to stop, cancel, or adjust any deal that is, in his opinion, against the law.
- c. The prohibition of transactions on credit which could lead to fraud or default .
- d. The prohibition of founders from selling their stocks unless a period of three years has elapsed. This prohibition was instructed by the Minister of Commerce and Industry.
- e. The AFM has the right to ask the company which issued the bonds to appoint either an ordinary person or a body corporate to take all the precautions to safeguard the rights of bondholders (AFM's Articles of Association, Section 38.a).

### 3.3.3.2.1 Listing requirements

Amman Financial Market Law No.1 of 1990 contains some Articles relating to listing requirements. These are as follows:

Article 15 of the AFM Law No.1 of 1990 states that:

*"Financial papers are accepted for listing on the market upon a decision by a committee."*

Article 16 states that:

*"All bonds issued by the government and the public institutions with government guarantee, all treasury bills and all debt securities issued by the companies in accordance with the Companies Act, are accepted for listing on the market."*

Article 17 states that:

*"Every Jordanian public shareholding company with paid up capital of at least JD 100,000 can apply for the acceptance of its shares in the stock market. Other shareholding companies also have the right to apply for acceptance of their shares in the market, regardless of their capital volume if they had published their balance sheets for two preceding fiscal years. In all cases, the committee shall have the right to accept or reject the application in the light of the regulations and instructions issued concerning the organisation and the acceptance of financial reports."*

## **Listing Requirements for the Regular Market**

The AFM has to ensure that listed companies make available sufficient information on their history, current position, and future prospects to enable the general public to assess each security's value as an investment. To achieve this, the AFM has established certain standards, listed below, which are considered when evaluating potential listing applicants:

- i. The company's paid-in capital should be at least 50% of its share's par value.
- ii. One year should have passed after the inception date of the company.
- iii. The company must publish its annual report, audited balance sheet and its audited profit and loss account to reveal its recent financial position and result of its current financial year operations, regardless of its date of starting business.
- iv. The company is obliged to publish information stipulated in Article (3) above in two local daily newspapers, for two consecutive days.
- v. AFM Board of Directors (Committee) should approve listing of the company. It has the right to accept or refuse any application.
- vi. The following documents should be enclosed with the listing application:
  - ◆ A copy of the internal regulation and deed of association of the company.
  - ◆ A list of the names of shareholders and members of the Board of Directors.
  - ◆ Three copies of the company's most recent audited final accounts with a recent auditors report.
  - ◆ A specimen of the company's outstanding shareholding certificate. [AFM, The Thirteenth Annual Report (1990)].

## **Listing Requirements for the Parallel Market**

Listing requirements for the parallel market are similar to but less stringent than those for the regular market. In order for a company to be admitted to listing on the parallel market, the following requirements and types of documentation are required:

1. The Company's paid-in capital should be at least 50% of the share's par value of the company.
2. The company should have received an inception certificate from the Ministry of

## **Industry and Trade.**

3. The company should fill a special application form which should be enclosed with:

- A copy of the company's internal regulation and deed of association .
- A copy of the company's inception and registration certificates
- A list of shareholders names and members of the Board of Directors.
- A specimen of the company's outstanding shareholding certificate.
- Allotment sheet, allotment procedure, and the percentage of non-Jordanian shareholders. [AFM, The Thirteenth Annual Report (1990)].

### **3.3.3.3 Other laws affecting disclosure in Jordan**

To ensure that fair financial statements are prepared by accountants and presented to the shareholders and other users of such statements, there are other laws relating to disclosure in Jordan. For example, Income Tax Law No. 34 of 1982 has an effect on financial reporting in Jordan. The Companies Act does not provide any regulations for depreciation, so the regulations of the Income Tax Law are used instead. Jordanian Tax Law requires that all deductions claimed for tax purposes should correspond to sums appearing in the financial statements. Since 1985 depreciation rates for tax purposes have been specified by law and only the straight line method can be used. Other deductions must be calculated in accordance with generally accepted accounting principles but, as mentioned earlier, these are not defined. For taxation purposes, a corporate body is treated as an independent unit.

Insurance Law No.30 of 1984, requires an insurance company to issue its financial statements including the profit and loss and balance sheet and detailed profit and loss account for each type of insurance in a period not exceeding four months of the year end. These statements must be attached with a report about the company's insurance business (Article 37).

Another Law which affect disclosure in Jordan is the Banking Business Law

No.32, 1976, the Law (Article 18), requires authorised banks to publish their annual accounts in at least one daily newspaper. Article 15 of the same law requires all authorised banks to display their audited annual balance sheets for public view in their offices or branches over a period of at least three months.

### **Laws relating to the auditing profession**

Every company in Jordan is required by the Companies Act to appoint an auditor at the general assembly of the shareholders meeting.

In 1985, the Auditing Profession Council was established according to Law No. 32 of 1985. The council was given the authority for licencing professionals in accounting and auditing. Article 21 of the Audit Profession Law states that the auditor shall carry out his work in the audit of companies or individuals accounts in accordance with acceptable accounting and auditing principles. Article 22 of the same law states that the licensed auditor must not obtained an engagement by solicitation or means considered to be demeaning to the accounting profession. Moreover, article 24 states that an investigation may take place in the case of any auditor charged with violation of the provisions of this law or the acceptable principles of the profession. According to the law, the auditor shall not practice any work in conflict with the nature of the audit of accounts of the company, such as being a member of the board of directors or in the management of any advisory office. Furthermore, the auditor has the right to examine all the books of the company and to present his report which should include the following:

- i. All information and explanations which, to the best of his knowledge, are necessary for rendering an opinion.
- ii. A statement to confirm that the financial reports present a true and fair view of the

financial position and results of operation of the company under his examination. These reports must be prepared in accordance with the Companies Act and other related laws.

- iii. An assertion as to whether or not there has been any violation of the Companies Act or other laws which has had an effect on the company's financial statements.

Accordingly, it is obvious from the foregoing that the main purpose of these acts and laws is to ensure that fair financial statements are prepared by accountants and presented to the shareholders and other users of such statements.

### 3.4 SUMMARY

The chapter discussed the accounting profession in Jordan. It is clear that this follows the state of accounting in other developing countries with only weak accounting bodies. The accounting profession in Jordan in its current form cannot contribute effectively to the advancement of the national economy because it is weak. There are no accounting principles, auditing standards or procedures, or uniform audit reports. There is a shortage of Jordanian accountants. There are only weak links between the profession and accounting education. Accounting research and publication activities are very weak in Jordan. In summary, the status of the accounting profession in Jordan is indeed very weak.

There appears to be agreement on the need to improve accounting standards in Jordan but some disagreement on exactly how this should be achieved. Some influences are in favour of improving national accounting system rather than adoption of imported standards. Other influences are more in favour of IAS.

Existing disclosure regulations in Jordan are of several kinds. Important Acts are

the Companies Act 1989 and the Commerce Code of 1966. Other laws affecting disclosure of financial information are the Amman Financial Market Law No.1 of 1990, the Income Tax law No.34 of 1982, the Banking Business Law No.32 of 1976 and the Insurance Law No.30 of 1984.

The Jordanian Companies Act of 1989 contains general disclosure requirements. According to the Act, books of accounts are to be kept audited, and a fair financial reports are to be prepared, sent to shareholders and filed with the registrar of companies. However, there are no further requirements concerning the form and contents of reports beyond a requirement that companies should maintain proper accounting records in accordance with generally accepted accounting principles, which are not themselves defined by law.

In order to encourage investors and to assure them that they are involved in a fair game, the AFM maintains and releases information relating to the activities of the market by preparing daily and weekly price sheets, monthly reports, quarterly reports, semi-annual reports and annual reports. To ensure that all who invest in securities enjoy equal access to such information, the AFM disclosure requirements are more stringent than those of the Companies Act.

# CHAPTER FOUR

## THE FRAMEWORK FOR INTERNATIONAL ACCOUNTING STANDARDS (IAS)

### 4.1 INTRODUCTION

This chapter examines the functions of accounting standards, factors which affect adopted national accounting standards (mainly environmental factors) and the influence of International Accounting Standards Committee (IASC). The chapter also contains a review of the IASC, its objectives and its role in achieving harmonization.

The chapter is divided into four Sections. Section 4.2 is concerned with the role of accounting standards and covers the relationships between accounting and stock markets and between accounting and economic growth. Section 4.3 deals with the environmental factors influencing national accounting standards. Section 4.4 reviews the IASC. Section 4.5 presents a comparison of IASs with Jordanian accounting practices and identifies the main differences between the two accounting regimes.

### 4.2 THE FUNCTIONS OF ACCOUNTING STANDARDS

Littleton (cited in Miles, 1978, p.28) defines an accounting standard as:

*"... an agreed upon criterion of what is proper practice in a given situation; a basis for comparison and judgement; a point of departure when variation is justifiable by the circumstances and reported as such. Standards are not designed to confine practice within rigid limits but rather to serve as guideposts to truth, honest and fair dealing. They are not accidental, but international in origin ... they direct a high but attainable level of performance, without precluding clearly justifiable departure and variation in the procedures employed."*

According to Van des Tas (1992), standards are "any rules, applicable to more than one



company, concerning the disclosure and measurement policies to be used in financial reports, irrespective of which organisation sets the standards and of their enforceability".

Accounting standards dominate the accountant's work. They provide practical and handy rules for the conduct of his or her work and provide the following useful functions. They:

- i. Provide users of accounting information with information about the financial position, performance, and conduct of a firm. The aim is for this information to be clear, consistent, reliable, and comparable.
- ii. Provide auditors with guidelines and rules of action to enable them to audit firms reports and verifying the validity of these reports.
- iii. Provide the government with data bases on various variables that are deemed essential to the conduct of taxation, regulation of firms, planning and regulation of the economy, and enhancement of economic efficiency and other social goals.
- iv. Generate interest in principles and theories among all those interested in the accounting disciplines (The mere announcement of a new standard generates much controversy and debate both in practice and in academia).

### **Views on the role of accounting standards**

Bromwich and Hopwood (1983) state that the purposes of accounting standards are:

- i. to facilitate the process of specific corporate accountability and to be a vehicle in the regulation of the corporation; and
- ii. to respond to demands for specific accountability which requires a precise identification of the user and his legitimate needs for information.

Burggraaff (1981, p.37) states that:

*"In essence, accounting is nothing but the application of standards of procedure and method, in order to reflect the impact of transactions and conditions on the financial position of an enterprise. No accountant can perform his job unless he has standards at his disposal, either developed by himself or derived from other sources."*

#### 4.2.1 The Influence of Accounting on Stock Markets

There is general agreement that accounting information can play an important role in the development and efficiency of stock markets. In particular, accurate accounting information is a prerequisite and aid for successful development of stock markets in developing countries [Jaggi (1975); Van Agtmael (1984); Schwekart and Chandran (1988); Sudweeks (1989)]. In order to be persuaded to invest in equities, investors need accurate and solid accounting information, such as complete financial statements (Moustafa, 1985). Indeed, Perera (1985) states that financial reporting and capital market activity are so closely related that they have become interdependent. Jaggi (1975) points out that reliable financial statements and other accounting information are a requirement for well-developed stock markets in developing countries because investors need reliable, adequate and accurate financial statements in order to make investment decisions.

Samuels and Piper (1985) outline in detail why accounting is important to the development of stock markets. They state that:

*"At the first stage in the investment decision process, the credibility of financial reports is the basis of investors' confidence and so their decisions on what to do with their savings. At a later stage it is the financial reports that are indicators of the success or otherwise of the enterprises and the management ability."*

Furthermore, Lee (1987) points out that a well-developed accounting infrastructure is an important element in contributing to the development and operation of efficient stock markets. He cites four elements as making up the accounting information infrastructure:

1. The information producer and final user;
2. The information intermediaries;
3. The laws and regulations that govern the production, transmission, and usage of information; and
4. The legal entity that monitors and implements the laws and regulations.

Lee points out that these accounting infrastructure elements together, due to their effects on the efficiency of equity markets, can either help or hinder equity market development.

Van Agtmael (1984) examined the role of accounting in the development of stock markets and put forward a comprehensive equity market development model. This model includes an extensive list of economic, political, institutional and policy environmental factors. He indicates a clear need for good accounting and auditing standards, (as well as adequate and accurate disclosure and financial reporting requirements) for equity markets to develop properly. Sudweeks (1989) extends Van Agtmael work and presents a comprehensive framework for encouraging the development of securities market in developing countries. He stresses the importance of public and private accounting and auditing as a requirement for securities market development. He also suggests that it is important that timely, accurate, and necessary information is available both to the investing public and to government regulatory bodies.

The World Bank (1990) states that adequate accounting disclosure on world equity markets can and should be obtained as a function of stock exchanges' regulatory bodies so that investors can make informed investment decisions. Moreover, the International Monetary Fund (IMF) (1991) has a clear view that developing countries' stock markets are helped by increased availability of accounting information and financial statements.

Regarding accounting and stock markets, several conclusions have been reached by various researchers:

- i. Voluntary financial disclosure greatly increases as a firm positions itself to issue initial corporate equity or bond securities (Choi and Mueller, 1984);
- ii. The listing requirements of equity markets are a major factor for increased disclosure in financial statements in industrial countries (Perera, 1989a); and
- iii. Financial reporting and financial market activity are so closely related that they may be considered interdependent (Perera, 1989a).

The International Accounting Standards Committee (IASC) strongly believes that IASs are appropriate to facilitate capital market development. Thus, a key objective of the IASC is to insure that IASs meet the needs of capital markets (IASC, 1990). This objective necessitates close attention to the nature and quality of IASs, including their depth, breath, and allowances for alternative accounting treatments. Both Cairns (1989) and Wyatt (1989) see the globalization of stock markets as creating pressure for truly international standards of accounting and disclosure.

### **The influence of stock market on accounting practice**

Several researchers suggest that financial markets can play an important role in improving accounting in developing countries [eg., Jaggi (1975); Malhotra (1977) and Van Agtmael (1984)]. Farag (1991) goes on to say that the absence or non functioning of financial markets hinders the development of accounting in developing countries. Influences therefore flow in both directions.

### **Accounting information financial market efficiency**

Financial market efficiency depends on the production, disclosure and

dissemination of accounting information (Ndubizu, 1992). Also, as previously mentioned Lee (1987) believes that the existence of a sophisticated accounting infrastructure is a precondition for financial market efficiency. Lee also states that financial information disclosure minimizes uncertainty in the capital market. Another typical view is that of Moustafa (1985, p.197) who states that:

*" the role of accounting is to generate sufficient investor confidence to stimulate the flow of capital and to ensure continued efficient use of the accumulated capital."*

Further evidence for the view that accounting information is important is provided by Ndubizu (1992) who points out that the effect of providing accounting information is to reduce uncertainty, with two major benefits for capital markets:

1. prevention of market failure; and
2. building of investor confidence, which results in increased buying and selling of securities.

In summary, most authors concludes that accounting information is important for the efficient accumulation and distribution of capital in capital markets.

#### **4.2.2 Accounting and Economic Growth**

Many researchers believe that accounting information plays important role in the economic growth of developing countries (Enthoven, 1967, 1973, 1977, 1981; Scott, 1968; Bedford, 1977; Talaga and Ndubizu, 1986 and Ghartey, 1987).

Dominguez (1977) put forward the view that accounting is a key part of a country's infrastructure and accounting information is equivalent to an economic resource. He suggests that accounting contributes significantly to the gathering, organizing and measuring of the utilization of economic resources in three ways:

- i. by providing information to managers about business efficiency in order to make decisions;

- ii. by providing information to investors and creditors on an organization's profitability; and
- iii. by providing information needed by governments for economic planning.

Mirghani (1982) goes further to state, for developing countries, that development of an accounting infrastructure is particularly necessary for achieving economic growth. He makes this claim on the basis of his belief that one of the major obstacles to effective planning in developing countries is unavailability or unreliability of accounting information. Samuels and Piper (1985) are two more researchers who believe that adequate, accurate and reliable accounting information is important to economic growth in developing countries because it facilitates good decision making.

Montemayor and Ramirez (1987) suggest that accounting provides private enterprises and governments with valuable information to help them determine the best use of resources in order to promote economic growth. Another view is offered by Wallace (1990a) who points out that:

*"Accounting demands of a nation go beyond those required for making economic decisions connected with business enterprises' operations. They embrace those needed to make governments and managers of public enterprises account to... or (control) the people. And when properly structured they can enable a nation to decide on the efficient allocation of its scarce resources."*

International organizations such as the World Bank, the United Nations, the organization for Economic Cooperation and Development (OECD), and the Asian Development Bank are also of the view that a solid accounting system is important component to a country's economic development (Wesberry, 1984; Samuels and Piper, 1985 and IFAC, 1991). In summary, academic researchers, accounting institutions and the international organizations have an important role to play in the promotion and development of accounting systems and infrastructures which facilitate higher economic growth.

### 4.3 FACTORS INFLUENCING NATIONAL ACCOUNTING STANDARDS

The needs of users of the financial statements change over time in response to economic changes and developments. These changes lead to changes in objectives, practices and standards. This point is made clearly by Al-Hashim (1973, p.21) who states that:

*" If the purpose changes, economic events can be defined differently and alternative accounting methods and reports prescribed."*

#### 4.3.1 Environmental Factors

The influence of environmental factors on accounting is given considerable attention in international accounting literature [e.g. see Abel (1971); Arpan and Radebaugh (1985); Cooper and Lybrand (1991); Muller et al. (1991); Wallace and Gernon (1991); Nobes and Parker (1991); Choi and Muller (1992) and Al-Hashim and Arpan (1992)].

Abel (1971) strongly suggest that the environment is an important factor in determining the characteristics of any set of national accounting practices. Radebaugh (1975) developed one of the earliest and most complete diagrams showing the various environmental factors that influence the development of accounting in a country. His suggested environmental factors include the following:

1. The nature of the enterprise;
2. The users in the enterprise;
3. The government;
4. The accounting profession;
5. Academic influence;
6. Local environmental characteristics;
7. International influences; and
8. Other external users (such as creditors and financial markets).

Choi and Mueller (1984, 1992) used their own experience to present the following list of environmental factors that affect the development of accounting:

- a. The legal system;
- b. The political system;
- c. The social climate;
- d. The differences in size and complexity of business firms;
- e. The level of sophistication of business management and financial community;
- f. The nature of ownership ( private vs. public);
- g. The degree of legislative interference in business;
- h. The presence of specific accounting legislation;
- i. The speed of business innovation;
- j. The stage of economic development;
- k. The growth pattern of the economy;
- l. Status of professional education and organization.

Environmental factors do differ from country to country. Therefore, it would be reasonable to expect that accounting procedures, methods and practices will be differ between countries. In this respect Frank (1979, p.593) points out:

*"If environmental factors play an important role in the development of accounting concepts and practices, and if these environmental factors differ significantly between countries, then it would be expected that the accounting concepts and practices in use in different countries also differ."*

Burggaaff (1981, p.37) states that:

*"... even within one country, certain economic phenomena may be viewed and interpreted in different ways, resulting in different accounting treatments. An example is accounting for leases. Some hold the view that by leasing you do not acquire ownership, and therefore it would be improper to recognise the leases property as an asset. Others hold the view that although you did acquire all economic benefits and risks, so that for all practical purposes you are, economically speaking, in the same position as the owner."*

Gray et al. (1984) summarise the environmental factors which influence the shape of accounting systems in a country as follows:

*" The political system and the type of economy, the stage of economic development, the social climate, the legal system, the management and ownership structure of corporations, the accounting profession, the tax system, and the nature and the stage of development of the capital market are all important environmental factors which determine both the accounting systems used and the extent to which information is publicly disclosed."*

The main factors influencing the development of accounting in any particular country may be summarised as follows:



**i. Influence of politics**

One of the main influences on accounting standards is the political environment. Horngren (1972, p.61) points out that:

*"... Setting of accounting standards is as much as a product of political action as of flawless logic or empirical findings."*

Tinker (1980) states that:

*"... accounting results are only as good as their political and social precepts"*

Arpan et al. (1981) also point out that certain political factors can affect accounting standards. For instance, in socialist countries, it is often politically expedient and desirable to require certain information from companies about their social impact.

**ii. Influence of national culture**

Another major influence is the culture factor. Culture has been considered an important environmental factor influencing the accounting standard of a country by Mueller (1967), Violet (1983), Nobes (1983b, 1984), Belkaoui (1985) and Hofstede (1987). It has been suggested in the literature that because each nation's unique accounting regulations mirror its culture and economic, political, and legal systems, there will be a worldwide diversity in accounting rules and regulations [Evans and Taylor (1982), Taylor et al. (1986)].

**iii. Influence of regulations**

Legal and tax regulations are factors which influence the determination of accounting standards of a country. Different countries have different national legal systems. Therefore, accounting standards and practices will differ between countries. This can be seen clearly from a comparison of the UK and USA where the legal systems rely upon differing levels of statute law and hence their standard-setting

arrangements also differ. In this regard Seidler (1981) states that:

*"World-wide tax collections constitute the greatest source of demand for accounting services. ...Tax collecting governments initially become involved in the bookkeeping and accounting procedures followed by individuals and companies, to provide some assurance of collecting taxes."*

Accordingly, differences in accounting systems are expected as a result of differences in tax systems and collection methods of different countries.

#### **iv. Influence of language**

Language plays a central role in the development of accounting standards, in terms of cognition and perception. Many studies have investigated the impact of language on accounting systems and its role in the development of accounting standards [eg, Flamholtz and Cook (1978), Balkaoui (1978, 1980)]. Sapir [cited in Belkaoui (1985)] views accounting as both an instrument of communicating thought, and a means of recording events and as such accounting can be viewed as the language of business.

#### **v. Influence of economic climate**

Other factor that affect the establishment of accounting standards is the economic climate. Economic development constitutes economic growth and is accompanied by social changes. The stage of economic development in a country and the basic economic orientation influence accounting development and practices. For example, at extremely low levels of economic development there is little economic activity and correspondingly little accounting.

#### **vi. Demographic influences**

In this regard Belkai (1983) points out that the larger the population, the higher the number of people who will be interested in the accounting profession, and the greater the need for a well-developed accounting profession and the need for full and

fair disclosure.

## **vii. Educational influences**

Educational factors have significant effect on accounting standards and accounting practices. These educational factors encompass:

1. the degree of literacy;
2. high-school qualifications;
3. the basic orientation of the educational system (religious, vocational, liberal arts, scientific, professional); and
4. the educational match; eg. A profession made up entirely of university graduates may be perceived by society as more educated than one that admits non-graduates.

### **Summary**

Many factors have been described as leading to the development of different accounting structures in different countries. Many writers suggest that the accounting system shapes and is shaped by the environment. A possible interpretation is that each environment has its own ideal accounting system. This is in direct contrast with the concept of a single accounting system (IASs) for all environments. These views are examined further in Section 4.4.3.3.1.

## **4.4 THE INTERNATIONAL ACCOUNTING STANDARDS COMMITTEE (IASC)**

### **4.4.1 Background**

The IASC was founded on June 1973 through the combined efforts of national leading accounting bodies of nine countries: Australia, Canada, France, Germany, Ireland, Japan, the Netherlands, the United Kingdom, and the United States of America.

Its origins, however, can be traced to 1966 when the Accountants International Study Group was established by the national accounting bodies of the United States, the United Kingdom, and Canada. The objective of this body was to harmonize accounting in those three countries. Member bodies are required to support the work of IASC by publishing in their respective countries every standard approved for issue by the Board of IASC (Perera, 1985).

The IASC is a private organization charged with promulgating international accounting rules and regulations. The main objectives of the IASC are to formulate, publish and advocate IASs (IASC, 1990). Recognition of the IASC's work comes from groups such as:

- national bodies representing financial institutions, financial executives, trade unions, employers, financial analysts and stock exchanges;
- the United Nations (UN) and the Organisation of Economic Co-operation and Development (OECD). (Both organisations invited the IASC to participate at an early stage, and the IASC has been involved in the discussions ever since).

As from December 1994, the Committee of the IASC represents 110 member bodies representing over 75 countries. These Member Bodies represent over one million accountants in industry and commerce, public practice, academic institutions and governments. The IASC is the sole independent body charged by its member professional accountancy organisations with the responsibility and authority to issue international accounting standards. The business of the IASC is conducted by a 17-member Board of persons assisted by a full-time Secretary-General. Jordan is a board-member country. The Constitution of the IASC provides for up to four international organisations that are not professional accountancy bodies, but which have an interest in financial reporting, to be presented on its Board. The International Co-ordination Committee of Financial Analysts Associations is the first non-accounting organisation

represented on the Board with effect from January 1, 1986.

In 1st January 1989 the Board issued Exposure Draft No.32 on the 'Comparability of Financial Statements', which dealt with twenty nine accounting issues where the choice of alternative accounting treatments may have a material effect on the definition, recognition, measurement and display of income, expenses, assets, liabilities and equity in the financial statements of an enterprise. Exposure Draft 32 describes how the decisions will be implemented and further efforts of the Board aimed at the improvement and harmonisation of accounting standards and other requirements relating to the presentation of financial statements.

At the commencement of this research, the Board of the International Standards Committee (IASC) had issued 31 International Accounting Standards (IASs). These standards deal with the substantial majority of topics that affect the financial reports of business enterprises. Furthermore, the Board issued a framework for the preparation and presentation of financial statements for the following purposes:

- i. Assisting the Board in promoting the harmonisation of regulations, accounting standards and procedures relating to the presentation of financial reports. This could be achieved by providing a basis for reducing the number of alternative accounting treatments permitted by IASs; and
- ii. Assisting the Board in developing future IASs and reviewing existing IASs.

#### **4.4.2 Role and Objectives of IASC**

The role of IASC is to contribute to the development and adoption of accounting principles that are relevant, balanced and comparable internationally and to encourage their observance in the presentation of financial statements (IASC, 1985). The objectives of IASC, as laid down in its constitution, are:

1. To formulate and publish in the public interest accounting standards to be observed in the presentation of financial statements and to promote their worldwide acceptance and observance, and
2. To work generally for the improvement and harmonization of regulations, accounting standards and procedures relating to the presentation of financial statements.

The statement of objectives and procedures published in January 1985 further says that,

*"In countries, where accounting standards have not previously been laid down, International Accounting Standards are adopted as the country's own standards. When this occurs, local accounting practices will be enhanced, and the financial statements prepared in that country should be internationally acceptable."*

Members of the IASC have agreed to support these objectives by undertaking to publish in their respective countries every IAS approved for issue by the Board. Their aims are to:

- ◆ ensure that standard-setting bodies and governments that make pronouncements on nature and contents of financial statements published in their countries conform with IAS in all material respects;
- ◆ ensure that published financial reports conform with IAS in all material respects, and disclose the fact of such conformity;
- ◆ ensure through auditors that the financial reports conform with IAS;
- ◆ foster acceptance and observance of IAS internationally.

The IASC seeks to work with those who have the power to enforce accounting requirements on both domestic and foreign firms. Furthermore, it seeks to develop relationships with national regulators and now works closely with the International Organization of Securities Commissions (IOSCO) whose main interest is the facilitation of multinational securities offerings (Wallace, 1990b).

#### 4.4.3 Demand for International Accounting Standards

The question "Is there a need for International Accounting Standards?" has been answered by Burggaaff (1981), then chairman of IASC, as follows:

*"yes, indeed. That need is there in the first place with the users. The impact of many companies on capital markets, on commodity markets, on labour, on prosperity, goes across national borders. That means that users in a certain country may have a stake in companies domiciled in other countries, and may have an interest in the financial statements of those companies. Those statements should be readily understandable to foreigners, without requiring them to study in depth the accounting policies prevailing in the country of domicile, whether stated in the notes or not. That understandability is in the interest of business as well.... Companies that are operating in several countries, or that have their shares quoted on foreign stock-exchanges, have to comply with the accounting standards in the countries in which they operate."*

Hepworth (1977) suggests that the demand for IASs appeared because many countries (like Jordan) do not have their own programmes to produce accounting standards and because of the wide diversity in national accounting practices. Turner (1983) suggests that the benefits of developing IAS is to improve the quality of accounting in poorer countries. Therefore, countries (like Jordan) which do not have the resources to produce their own accounting standards, can adopt and follow the international accounting standards to the extent that they are appropriate to their domestic environment.

A strong motivation for developing IAS is that non comparability is thought to discourage international investment which acts as an obstacle to the optimal worldwide allocation of resources. Reducing the degree of diversity, where possible, would appear to be the logical solution to this problem. The presumption is that comparable reporting practices will result from comparable financial reporting standards. Improved comparability is likely to permit better financial statement analysis, with the result that investors and lenders lower their required rate of return and thus the firm's cost of capital.

With the existence of common financial statements investors in firms using IASs will be able to place the same reliance on certified financial statements whatever the country of origin. It has been suggested in the literature that generating IASs will assist investors in multinational corporations and help the multinationals to take advantage of foreign securities markets because financial reports will be more comparable. In this context, Mckinneley (1970, p.222) states that:

*"There is an ever-growing need for better and more effective accounting and auditing functions, due to the growing internationalisation of business, and in order to meet the needs of the many different types of investors and institutional requirements (such as the World Bank and regional banks)."*

Abu-Ghazaleh, in his speech at the Annual Conference of the American Accounting Association (New York) in August (1986), pointed out that:

*"With the growth in international trade and the development of international capital markets there is a need internationally to raise the level of accounting practice and at the same time to obtain greater harmonisation in the preparation of financial statements."*

Moreover, Brunovs and Kirsch (1991, p.135) state that:

*"Economic and financial markets interpenetrate and national economies are increasingly interdependent. This results in a growing need for comparability of accounting procedures internationally."*

#### **4.4.3.1 Adoption and uses of IASs**

Financial statements are prepared and presented for external users by many enterprises around the world. Although such financial statements may appear similar from country to country, there are differences which have probably been caused by a variety of social, economic and legal circumstances and by different countries having in mind the needs of different users of financial statements when setting national requirements. These factors were discussed in section 4.3. The IASC is committed to narrowing these differences by seeking to harmonise regulations, accounting standards and procedures relating to the preparation and presentation of financial statements.



Rutherford (1987) specifies a wide variety of ways in which the IAS are used:

1. As a source of standards for indigenous enterprises in Third World countries;
2. As a means by which sophisticated enterprises in one country can communicate with sophisticated investors in other countries;
3. As a uniform body of standards to be used by companies quoted on several national stock exchanges.
4. As a vehicle for harmonisation within the developed Anglo-American oriented world;
5. As a means of regulating the activities of multinationals within developing countries.

The IASC (1988, p.3) state that:

*"International Accounting Standards are used by national standard-setting bodies in a variety of ways, all of which greatly enhance the prospects for the international harmonisation of accounting requirements. In some countries, International Accounting Standards are used as, or as the basis for, national standards. Where, however, national requirements already exist, they are compared with International Accounting Standards with a view to eliminating any material differences."*

The International Organisation of Securities Commissions (IOSCO) is looking to provide mutually acceptable IASs which are acceptable for multinational securities offerings and other international offerings. Already, a number of stock exchanges require or allow foreign issuers to present financial reports in accordance with IAS. As a result a growing number of companies disclose the fact that their financial reports conform with IAS.

### **Examples of adoption and uses of IAS**

The London Stock Exchange announced, in October 1974, that, henceforth, it will require compliance with international standards and that any significant departure from or noncompliance with such standards should be disclosed and explained. In France, the Ordre des Experts Comptables et des Comptables Agrées has adopted all the IASs

and has established disciplinary action that will be taken if an auditor does not comply with them.

In 1977, the Institute of Chartered Accountants of Nigeria (ICAN) issued a statement requiring its member to follow IASs when preparing and presenting financial statements (Wallace, 1987). Briston and El-Askker (1984) reported the adoption of IASs by Egypt after it had tried and adopted both the British and uniform (i.e., Soviet) accounting systems. The World Accounting Report (September, 1986) reported that Pakistan has issued a Government Ordinance reporting compliance with IASs. The 1988 Survey of the Use and Application of IASs shows that the financial reports of a substantial majority of major business companies around the world conform with the standards. The Toronto Stock Exchange, the London Stock Exchange, the Italian CONSOB, the World Bank, the Organisation for Economic Co-operation and development (OECD), the United Nations, and the International Federation of Stock Exchanges are major institutions genuinely interested in the use of international accounting standards.

In Jordan, in 1989, the Jordanian Association of Certified Public Accountants (JACPA) issued local statements recommending Jordanian corporations to follow IASs when preparing and presenting their financial statements. In this respect Abu-Nassar and Rutherford (1995, p. 132) write that:

*"The accounting profession in Jordan has only recently been formally established and has yet to issue local statements of accounting practice but has recommended adoption of International Accounting Standards effective January 1990, ... However, in the absence of any legal power or effective disciplinary mechanism, the adoption of its (IAS) standards is likely to come slowly."*

The Jordanian firms which did adopt IASs in 1990 are used, later in this thesis, as the experimental group for analysis investigation.

#### 4.4.3.2 Users of IASs

The demand for international accounting standards arises from different users including:

**(a) Investors.** Investors need information to help them determine whether they should buy, hold or sell. Therefore, they want to have confidence in financial statements for making that decision. If the financial statements are those of a foreign company, they want to know what standards have been followed in preparing the statements. If they have no confidence in the standards adopted they may decide not to invest in that company or perhaps even in any company based in that country.

**(b) International lenders, suppliers and other trade creditors.** Lenders, suppliers and other trade creditors are interested in information that enables them to determine whether their loans (and interest attaching to them) will be paid when due. International financial reporting standards are useful to international lending institutions who provide such loans to organisations and agencies in developing countries. Some institutions [such as the International Financial Corporation (IFC)] depend on comprehensive disclosure and usually ask their borrowers from developing countries to provide them with financial statements prepared according to a full and comprehensive disclosure based on IASC guidelines.

**(c) Governments and their agencies in developing countries.** Governments and their agencies are interested in the allocation of resources and, therefore, the activities of enterprises. They too require information in order to regulate the activities of enterprises, determine taxation policies and as the basis for national income and similar statistics (IASC, 1991). In developing countries, governments and their agencies can force limited companies to follow the IASs in preparing and presenting their financial statements. In this respect Miller (1974, p.22) points out that:

*"... the use of international standards of reporting and accounting may well be required before long as a condition of doing business in a developing country.*

*The incentive for the host nation will be that of gaining access to truly comparable information between companies and between nations."*

(d) **Accountants in developing countries.** As mentioned previously, some developing countries do not have enough resources and there are no programmes to build their own accounting standards, or the accounting profession is not well-developed enough to undertake the setting of national accounting standards. Therefore, adopting and following IASs may seem to be the best practical solution. In this context Benson, (cited in Mason, 1978) states that:

*"... a number of relatively small nations are crying out for International Standards, because firstly they want them and have not the research facilities to make themselves, and secondly they want the power and authority which the International Accounting Standards Committee agreement gives them to impose those standards in their countries."*

(e) **Security analysts and advisors.** Security and financial analyst need clear information to help them to provide the right investment advice. Accordingly, in order to understand financial statements about the business activities of foreign companies they benefit from information based on internationally accepted accounting standards.

(f) **Stock Exchanges.** As mentioned previously, the International Organisation of Securities Commissions (IOSCO) is looking to provide mutually acceptable IASs which are suitable for multinational and other international securities offerings. Already, a number of stock exchanges require or allow foreign issuers to present financial reports in accordance with IASs. Moreover, a stock exchange on which foreign companies are listed has to decide whether it is necessary to have their financial statements prepared according to local accounting standards or according to their own countries' accounting standards.

#### 4.4.3.3 Views on harmonisation under IASs

In the international accounting literature there are different views about

harmonization and IASs. Rivera (1989) explains how one side advocates the international harmonization of accounting standards. The other side views harmonization as a "futile exercise" and stresses that local cultural, social, political and economic environmental factors should be considered so that an accounting system can be tailored to meet the needs of the individual country. The third view is a middle-of-the-road position, which supports international accounting standards as long as they are modified for local environmental conditions. This section explores these views and the literature on harmonization and the adoption of IASs, with an emphasis on their impact in developing countries.

#### **4.4.3.3.1 Arguments supporting harmonization and IASs**

Supporters of harmonization and the use of IASs present several arguments in support of their position. These arguments are based on two assumptions. The first assumption is that accounting is "the same" regardless of the environment. Therefore, if a sale is a sale, then it should be recorded more or less in the same manner regardless of whether it occurs in the UK, USA or Uruguay (Tetley, 1991). The second assumption is that accounting is the "language of business" (Chetkovich, 1977). Samuels and Piper (1985) [supporters of harmonization] stress that, to serve the needs of the international business community, this accounting "language" must also be international.

Aitken and Wise (1984) claimed the following benefits of harmonization via adoption of IASs:

- i. Financial statements prepared in different countries will be comparable, thereby promoting better investment and lending decisions.
- ii. Consolidation of foreign subsidiaries will be facilitated.
- iii. The need to prepare multiple sets of financial statements for companies seeking registration in foreign stock exchanges will be removed.

- iv. Management decisions in multinationals will be improved.
- v. Confusion with phrases such as "generally accepted accounting principle" and "auditing standards", which may be foreign to some statement users, will be eliminated.
- vi. Developing countries will benefit from more sophisticated and extended disclosure requirements.

Other IASs supporters believe that harmonization facilitates the further development of world capital markets and world trade which will, in turn, lead to greater economic development (Collins, 1989; Fleming, 1991; Wyatt, 1991). Damont (1992) points out that these arguments relating to capital markets are based on the belief that IASs are the appropriate method of harmonization because they are capital market oriented in their requirements.

Other researchers claim different advantages of harmonization from using IASs. For example, Releen (1976) summarised the benefits as follows:

1. Improved decision making by investors looking beyond their own national boundaries.
2. More reliable information for comparing of the results of companies in different countries.
3. A greater understanding of the operations of multinational companies.

Other advantages of harmonization by adopting IASs have been proposed by Wyatt (1991) who states that both time and money would be saved for both corporations and regulators by adoption of IASs. Adoption of IASs would eliminate the need for preparing and reconciling financial statements and understanding different countries' accounting practices. Also, Aitken and Wise (1984) suggest that adoption of IASs would eliminate the need to prepare multiple sets of financial statements for each country and for each stock exchange where firms are listed.

Moreover, besides saving money, harmonization and adoption of IASs would lead to the better understanding of financial reports. Cairns (1992) suggests that the main benefits stemming from this increased understanding are that costs of capital would be lowered and that efficiency of capital markets would be improved.

Thorp (1990) summarises the benefits of harmonization as being to:

- i. reduce administrative and systems costs by removal of unnecessary duplications of data and published information.
- ii. smooth business communication processes and lessen ambiguity in the interpretation of financial data.
- iii. facilitate better information for centralised agencies.

### **Support for IASs from developing countries**

Many developing countries have few or no real accounting standards so the adoption of international accounting standards can be viewed as a way of improving the level of accounting in developing countries (Samuels and Piper, 1985; Belkaoui, 1988; and Kawakita, 1991). Wyatt (1991) believes that IASs can improve accounting which, in turn, helps a developing country's economic development. Wyatt concludes that IASs are good accounting standards for the presentation of reliable financial information which can then be used towards allocating and managing resources in developing economies.

The literature presents several additional rationales for the adoption of the IASs in developing countries. These include:

1. reducing the setup and production costs of accounting standards;
2. joining the international harmonization drive;
3. facilitating the growth of foreign investment;
4. fostering the growth of the profession through emulation of well-established

- professional standards; and
5. legitimating its role in the international community (Belkaoui, 1988; Wyatt, 1991).

In summary, there is widespread support for the view that adoption of international accounting standards by developing countries is beneficial and should lead to greater financial market development, lower costs of capital and improved economic development.

#### **4.4.3.3.2 Arguments against harmonization and IASs**

Obviously, there are some dissenters. These are in a minority but should nevertheless be included here. The main dissenting views are put forward by Mueller (1968), Radebaugh (1975), Samuels and Oliga (1982), Choi and Mueller (1984), Samuels and Piper (1985), Perera (1989b), Choi (1989) and Hove (1990).

Samuels and Piper (1985) state that IASs ignore cultural differences, different objectives, nationalism, and with the result that adopted standards end up being the lowest acceptable level of reporting.

Harmonization opponents also mention the lack of cost/benefit empirical studies to support harmonization (Choi, 1989). Goeltz (1991) questions the existence of the "significant benefits" of harmonization, and says that they are "just assumed" by harmonization supporters.

#### **Opponents of using IASs in developing countries**

The main point which opponents of harmonization and the use of IASs in developing countries make is that local cultural, social, political and economic



environmental factors should be considered so that each country's accounting system can meet that particular country's needs [Samuels and Oliga (1982), Hove (1990), Perera (1989b)]. These opponents believe that IASs do not meet the needs of the environmental factors that exist in developing countries. They conclude that the environments in developing countries are so different from those in developed countries that IASs are by definition inappropriate in developing countries.

Perera (1989b) suggests that developing countries have strikingly different cultural values than Anglo-American countries. He adds that accounting transferred from Anglo-American countries may not work because they are "culturally irrelevant or dysfunctional" in developing countries. Perera concludes that the strong Anglo-American cultural influence on the IASs makes them irrelevant in developing countries.

Another argument against harmonization is the difference in decision methods, Hove (1986) and Perera (1989a) believe that accounting information produced on the basis of a developed country's accounting system is not relevant and useful for the modes of decision making and decision methods employed in developing countries.

In summary, there are arguments against harmonization and IASs. However, as with many of the articles in favour of IASs much of the literature against IAS adoption is primarily descriptive, often using a case study approach. None of the papers noted are cross-national empirical studies. In several studies the conclusions are just assumptions upon which the work is based, or as Samuels and Piper (1985) note, just the authors' "opinions".

#### **4.4.3.3 IASs and modification for environmental factors**

There are those, of course, who support the middle position i.e., the adoption of

international accounting standards (IAS) but only to the extent they can be adopted to meet the local cultural, political, economic and other environmental conditions of individual countries [Scott (1968), Talaga and Ndubizu (1986) and Belkaoui (1988)].

#### **4.5 JORDANIAN ACCOUNTING RULES AND IAS**

A comparison of IASs with Jordanian accounting practices and the main differences between the two accounting regimes are presented in this section.

##### **4.5.1 Comparison of Jordan Accounting Practices with IAS**

Table 4.1 summarizes and compares IASs and Jordanian accounting practices. Appendix A presents the comparisons in more detail. It can be seen from Table 4.1 that, generally, Jordanian accounting practices do not conform with IASs.

It worth mentioning here that, a study by EL-Issa (1988b) examined the usefulness of corporate financial disclosure to investors in the Jordanian stock market. The results of his study indicated that financial disclosure in Jordan was viewed as unsatisfactory and that investors desired disclosure of additional items of information such as related parties transactions, interim reports, true and timely disclosures, and information about management. El-Issa concluded that the legal framework of disclosure in Jordan contains minimal information compared with IASs.

**Table 4.1: Major Differences Between International Accounting Standards (IAS) and Jordanian Accounting Practices**

	<b>International Accounting Standards (IAS)</b>	<b>Major differences</b>
<b>IAS 1</b>	Disclosure of accounting policies	<u>Jordanian Companies Act</u> did not provide detailed disclosure guidelines. <u>IAS 1</u> , on the other hand, provides detailed disclosure guidelines, eg., it contains reserve accounting disclosures not included in article 168 of <u>Jordanian Companies Act No.1 1989</u> .
<b>IAS 2</b>	Valuation and Presentation of Inventories in the Context of the Historical Cost System	<u>In Jordan</u> , the law contains no provisions regarding the valuation of inventories. However current practice in Jordan for inventories to be valued at historical cost or market whichever ever is lower. <u>IAS 2</u> provides detailed accounting treatments and disclosure guidelines. <u>IAS 2</u> uses net realizable value as the market price valuation for inventories.
<b>IAS 3</b>	Consolidated Financial Statements	No major differences
<b>IAS 4</b>	Depreciation Accounting	<u>IAS 4</u> provides provisions relating to tangibles and intangibles assets and it provides detailed disclosure guidelines. <u>In Jordan</u> , neither Companies Law nor the Income Tax Law contain provisions relating to depreciation of intangibles. There are no detailed disclosure guidelines.
<b>IAS 5</b>	Information to be Disclosed in Financial Statements	<u>IAS 5</u> requires specific disclosures in the income statement and balance sheet and supplementary information concerning the basis for preparing these reports. <u>In Jordan</u> , only broad disclosures are used and no supplementary information is provided.
<b>IAS 6</b>	Accounting treatment of changing prices	Before the introduction of <u>IAS 6</u> , changes in prices were not accounted for in Jordan.
<b>IAS 7</b>	Statement of Changes in Financial Position	Before introducing <u>IAS 7</u> , there were no legal requirements for the preparation and presentation of statements of changes in financial position in Jordan.
<b>IAS 8</b>	Unusual and Prior Period Items and Changes in Accounting Policies	Before introducing <u>IAS 8</u> , there were no legal requirements for providing information regarding changes in accounting policies in Jordan.
<b>IAS 9</b>	Accounting for Research and Development Activities	<u>IAS 9</u> provides detailed explanation and requirements about accounting treatment for research and development activities and it provides detailed disclosure guidelines. <u>In Jordan</u> , no such detailed explanation and requirements about accounting treatment for research and development activities are disclosed.
<b>IAS 10</b>	Contingencies and Events Occurring After the Balance Sheet Date	Before introducing <u>IAS 10</u> , there were no legal requirements or any accounting treatments for contingencies and events occurring after the balance sheet date in Jordan.
<b>IAS 11</b>	Accounting for Construction Contracts	No major differences

**Table 4.1 (Continued)**

	<b>International Accounting Standards (IAS)</b>	<b>Major differences</b>
<b>IAS 12</b>	Accounting for Taxes on Income	<u>IAS 12</u> provides detailed accounting treatments for taxes on income. <u>In Jordan</u> , legislative requirements for taxation are vague and subjective. Jordanian firms used to provide provisions for taxation without mentioning the method used for the determination of this provision.
<b>IAS 13</b>	Presentation of Current Assets and Current Liabilities	<u>In Jordan</u> , accounting treatment and requirements related to presentation of current assets and current liabilities in the balance sheet statement is fairly similar to IAS 13 requirements. However, <u>IAS 13</u> adds more new items to be disclosed and it contains more detail descriptions of the differences between current and noncurrent items.
<b>IAS 14</b>	Reporting Financial Information by Segment	<u>In Jordan</u> , it is mandated and legally required for banks and insurance companies to prepare and present segmental financial information. Reporting of financial information by segment is not legally required, however, for the industrial and service companies. <u>IAS 14</u> , on the other hand, required for all economic sectors to prepare and present segmental financial information.
<b>IAS 15</b>	Information Reflecting the Effects of Changing Prices	<u>IAS 15</u> provides detailed explanation and requirements for accounting treatment of changing prices. It also provides detailed disclosure guidelines. <u>In Jordan</u> , before introducing IAS 15, there were no such detailed accounting treatments or legal requirements for changing prices.
<b>IAS 16</b>	Accounting for Property, Plant and Equipment	<u>IAS 16</u> allows measurement of property, plant and equipment with values higher than the historical cost. <u>In Jordan</u> , companies used to present the value of property, plant and equipments according to the historical cost without paying any attention to changes in its value.
<b>IAS 17</b>	Accounting for Leases	<u>IAS 17</u> provides detailed explanation about accounting treatment for leases. It also provides detailed disclosure guidelines. <u>In Jordan</u> , before introducing IAS 17, there were no accounting treatments or legal requirements for leases at all. It was judgments.
<b>IAS 18</b>	Revenue Recognition	No major differences
<b>IAS 19</b>	Accounting for Retirement Benefits in the Financial Statements of Employers	<u>In Jordan</u> , before introducing IAS 19, there were no accounting treatments or legal requirements related to retirement benefits in the financial statements of employers. However, <u>IAS 19</u> is not particularly applicable to the situation of Jordan since it is not the practice of employers to cater for their employees after leaving their employment.
<b>IAS 20</b>	Accounting for Government Grants and Disclosure of Government Assistance	No major differences
<b>IAS 21</b>	Accounting for the Effects of Changes in Foreign Exchange Rates	<u>In Jordan</u> , before introducing IAS 21, there were no accounting treatments or legal requirements related to the effects of changes in foreign exchange rates

**Table 4.1 (Continued)**

	<b>International Accounting Standards (IAS)</b>	<b>Major differences</b>
<b>IAS 22</b>	Accounting for Business Combinations	No major differences
<b>IAS 23</b>	Capitalisation of Borrowing Costs	No major differences
<b>IAS 24</b>	Related Party Disclosures	<u>In Jordan</u> , before introducing IAS 24, there were no legal requirements for related party disclosures.
<b>IAS 25</b>	Accounting for Investments	No major differences
<b>IAS 26</b>	Accounting and Reporting by Retirement Benefit Plans	<u>In Jordan</u> , before introducing IAS 26, there were no legal requirements for accounting and reporting by retirement benefit plans. However, <u>IAS 26</u> is not applicable to the situation of Jordan since it is not the practice of employers to cater for their employees after leaving their employment.
<b>IAS 27</b>	Consolidated Financial Statements and Accounting for Investments in Subsidiaries	No major differences
<b>IAS 28</b>	Accounting for Investments in Associates	No major differences
<b>IAS 29</b>	Financial Reporting in Hyperinflationary Economies	<u>In Jordan</u> , before introducing IAS 29, there were no legal requirements related to financial reporting in hyperinflationary economies.

Note: IAS 30 and IAS 31 are not included because their effective dates are after 1 January 1991 and 1 January 1992 respectively [after the study period of this research (1989, 1990)]

### **Commentary to Table 4.1**

Since a major aim of this study is to compare share price performance under the two accounting regimes it would seem appropriate to highlight, from the table, those aspects of financial reporting which could cause major differences in investor perception. These are as follows:

- ◆ **Disclosure of reserves.** This does not occur under the old rules but does under IASs. A possible implication is that shares would be viewed as more valuable if such reserves are disclosed compared with if they are not.
- ◆ **Valuation and presentation of inventories.** Contrary to Jordanian accounting practices, IAS 2 allows the use of the FIFO and LIFO methods for costing inventory. IAS 2 is thus likely to cause inventories to be valued higher than

under Jordanian accounting practices.

- ◆ **Provisions relating to depreciation of tangibles assets.** Contrary to Jordanian accounting practices, IAS 4 allows accelerated methods of depreciation. A possible implication is that shares would be viewed as more valuable under IASs where accelerated depreciation methods may be used.
- ◆ **Provisions relating to depreciation of intangibles assets.** This does not occur under Jordanian accounting practices but does under IASs. Differences between IAS and non IAS reactions are difficult to predict for this aspect.
- ◆ **Supplementary disclosure.** This does not occur under Jordanian accounting practices but does under IASs. Share price reactions would vary between IAS adopters and non-adopters according to the nature of the supplementary information.
- ◆ **Changes in prices.** Before the introduction of IAS 6, changes in prices were not accounted for in Jordan.
- ◆ **Changes in financial position.** Before the introduction of IAS 7, there were no legal requirements for the preparation and presentation of statements of changes in financial position in Jordan.
- ◆ **Change in accounting policies.** Before the introduction of IAS 8, there were no legal requirements for providing information regarding changes in accounting policies in Jordan. A possible implication is that more reliable information would be generated under IASs.
- ◆ **Contingencies and events occurring after the balance sheet date.** In Jordan, before introducing IAS 10, there were no legal requirements for contingencies and events occurring after the balance sheet date.
- ◆ **Accounting for taxes on income.** Contrary to IASs, Jordanian legislative requirements for taxation are vague and subjective. IASs are clear on disclosure of corporate tax details.

- ◆ **Reporting financial information by segment.** In Jordan segmental reporting is legally required for banks and insurance companies but not legally required for services and industrial companies. IASs, in other hand, require firms in all economic sectors to prepare and present segmental financial information.
- ◆ **Accounting for property, plant and equipment.** Contrary to Jordanian accounting practices, IAS 16 allows valuation of property, plant and equipment with values higher than historical cost. This might lead to shares being viewed as more valuable under IASs.
- ◆ **Accounting for leases.** In Jordan, before introducing IAS 17, there were no prescribed accounting treatments or legal requirements for leases. It was left for accountants' personal opinions and judgments.
- ◆ **Accounting for the effects of changes in foreign exchange rates.** This is required under IASs but not under Jordanian accounting rules.
- ◆ **Accounting for hyperinflationary.** IASs provides guidelines for reporting in hyperinflationary economies. Jordanian rules do not.

Aspects of the two systems which are not particularly different include the following:

- Consolidated financial statements.
- Accounting for construction contracts.
- Revenue recognition.
- Government grants.
- Accounting for business combinations.
- Capitalisation of borrowing costs.
- Accounting for investments
- Accounting for investments in associates.

Based on the comparison of IASs and Jordanian accounting practices it appears that Jordanian investors are likely to find more information content in the annual

earnings announcements based on IASs than those based on traditional Jordanian accounting practices. Therefore, one could reasonably expect to observe larger price reactions around firms' annual earnings announcements based on IASs than around annual earnings announcements based on Jordanian accounting practices.

#### **4.6 SUMMARY**

Many studies have been undertaken to describe the relationship between accounting information and stock markets. Many authors suggest that accurate accounting information is a prerequisite to and an aid for successful development of stock markets, particularly for developing countries. Accounting standards can also influence economic growth. The general view from academic researchers, accounting institutions and international organizations is that accounting standards have an important role to play in the promotion and development of accounting systems and infrastructures which facilitate higher economic growth.

Many studies have been undertaken to identify the environmental factors that influence the accounting systems, accounting treatments, practices and accounting standards of a country. Attempts have been made to identify the factors leading to the development of different accounting structures in different countries. It has also been noted that accounting systems both shape and are shaped by the environment. One view is that each country should have its own ideal accounting system. This is in direct contrast with the idea of one set of accounting standards (IASs) for all environments. Hence, in the international accounting literature there are different views about harmonization and IASs. One view advocates the international harmonization of accounting standards. Another view is against such harmonization. A third view supports international accounting standards so long as they are modified for local environmental conditions. Although opinions differ, the strongest view is that adoption



of IASs by developing countries is beneficial and should be correlated with greater financial market development, lower costs of capital and higher economic development. Empirical studies on IASs adoption are, however, scarce. Many previous studies are primarily descriptive. In several studies the conclusions are just assumptions upon which their work is based or, as Samuels and Piper (1985) note, just "opinions". This study offers an opportunity to fill the gap caused by the lack of empirical research into the matter.

In preparation for the empirical work undertaken in this research this chapter compared Jordanian accounting practices with IASs. The two systems were described and differences highlighted. Where possible, indications of how the change to IASs might influence investors reactions were included. The next chapter begins the search for a methodology by which differences associated with changes in accounting methods may be analysed.

# CHAPTER FIVE

## CAPITAL MARKET REACTION TO ACCOUNTING NUMBERS AND INFORMATION ANNOUNCEMENTS

### 5.1 INTRODUCTION

This chapter examines methodology available in previous studies for testing market reaction under different accounting regimes. These studies are included not only to discover which methodology are available but also to examine how results of such studies may be interpreted for the particular purpose of examining the aspect of the change to IAS by Jordanian firms.

The relationship between public disclosed accounting information and stock market reactions has been one of the primary streams of accounting research since Ball and Brown (1968) and Beaver (1968). This research effort, known as "market-based accounting research" (MBAR), obtained its impetus from major developments in finance theory during the late 1950s and early 1960s. This line of research takes its importance because accounting policy-making bodies such as the FASB, SEC and IASC consider the magnitude of stock market reactions to the accounting disclosure as evidence of disclosure usefulness to investors. Furthermore, these regulatory bodies usually decide issues such as the timing, frequency and components of financial reports. For making these decisions information about stock market reaction to the release of financial reports is useful.

Under the efficient market hypothesis (EMH), stock prices fully reflect publicly available information and any new items of information are immediately incorporated in the prices. Thus the release of new information which causes investors to change their

perceptions of economic value should cause an immediate reaction in stock prices.

The EMH has sometimes been incorrectly interpreted as implying that by the time financial information is released it is completely impounded in stock prices and hence irrelevant and of no social value. This misinterpretation of the findings from some early empirical studies suggested very weak and temporally unstable associations between accounting earnings and stock returns and led to considerable misgivings about the relevance and the usefulness of accounting information to investors (Lev and Ohlson, 1982). These misgivings led to an extensive literature known as the 'information content' studies, investigating whether accounting data releases merely reflect factors already impounded in stock prices or whether they convey information to the capital market [eg., Ball and Brown (1968) investigate whether accounting earnings merely reflect factors already incorporated in stock prices or earnings releases convey information to the capital market].

The aim of this chapter is to review the empirical studies on capital market reaction to the release of the accounting information. The rest of the chapter is organized as follows; Section 7.2 discusses the definition of 'information content' and the methodology that has been used in information content studies. Section 7.3 surveys relevant empirical evidence on the capital market reaction to accounting data releases.

## **5.2 MEASURING THE INFORMATION CONTENT OF ACCOUNTING NUMBERS**

Most studies of the information content of accounting data (eg., accounting reports) are of the 'announcement type', examining whether the announcement of some event results in a change in the characteristics of the stock-return distribution (i.e., mean or variance) [Lev and Ohlson, 1982]. These studies assume that the capital market is

efficient, i.e., there are many sources of information about the firm other than accounting reports and that stock prices fully reflect all publicly available information. Thus, the usefulness of accounting reports to investors is represented by the information contained in the report additional to the information already impounded in the market prices.

The EMH is based on the assumption of a competitive securities market. That is, security prices are free to move in such a way that they reach equilibrium when the supply and demand for each security is equal. Whenever new information becomes available, it alters the expectation of investors so that relative prices of the securities change until a new equilibrium is reached. The market's response to new information, such as a change in accounting procedures (eg., adoption new accounting standards), may create some form of disequilibrium in relation to the behaviour that would have occurred if the change had not taken place. Given an equilibrium capital market, it is possible to estimate the effect of new information. The assumption underlying such studies is that a new disclosure is deemed to have information content if the distribution of stock market (security returns and / or the trading volume activity) is affected.

### **5.2.1 Definition of Information Content**

Information content definitions are influenced by the nature of information theory. Information theory is concerned with the quantification, coding and transmission of information. Some of the basic ideas were formulated by Nyquist (1924) and by Hartley (1928), but the subject received considerable attention during and shortly after the Second World War, largely due to Shannon who is regarded as the founder of the modern theory (Shannon and Weaver, 1949). According to Shannon and Weaver, information is often thought of as that subset of data that is useful in problem solving or decision making. More specifically, information is considered to be data that has been selected and

organised and is relevant to some decision making. Communication of information requires at least three interacting systems:

- i. information source;
- ii. information channel; and
- iii. information receiver.

Since accounting figures represent a set of data (message) sent by preparers (sender) to user (receiver). Therefore, accounting systems are an applications of information theory. The impact of useful information in decision making typically can be seen from two perspectives; (a) probability revision, and (b) predictive ability. The probability revision perspective views information in terms of its impact on revision of expectations of uncertain outcomes. The predictive ability perspective views information in terms of its impact on the prediction of specific future events (Beaver et al., 1968). In order to measure the information contained in a set of data (message), it is necessary to determine knowledge of the receiver at two different points of time; before given signs are received and after receiving the message. If the message does not change the receiver's knowledge, it means that it does not convey any new information to him (Gorelik, 1975).

The information hypothesis states that a message (an accounting report) is said to convey information if it causes a change in the receiver's probability distribution (beliefs or expectations) of the concerned random variable (stock performance). The change in beliefs must be sufficiently large to cause a change in the decision maker's behaviour to the extent that it triggers an action (Benston, 1967).

The information content hypothesis can be stated in terms of the stock performance (price, return and/or trading volume) distribution conditional upon some information signal (Beaver, 1981b). The most general statement of the hypothesis maintains that, for a signal from an information system to possess 'information content', the marginal distribution of the rate of return should differ from the distribution conditional on at least one signal

(Beaver 1980).

### **Factors affecting information content**

Foster (1986, pp. 376-377) states that there are three factors that can affect the information content of a release:

1. The capital market's expectation as to the content and timing of the release:  
Typically, there will be uncertainty as to either the content or the timing of corporate releases. Foster points out that, as a rule, the greater the extent of uncertainty, the greater the potential for only one release to cause a revision in security prices. An important factor affecting the capital market's expectations is the availability of competing information sources.
2. The implications of the release for the future distribution of security returns:  
According to Foster, generally, the larger the extent of relative revision in expected cash flows, the larger the security price revaluation implications of the release.
3. The credibility of the information source: In general the more credible the source of an information release, the greater the revaluation implication of that release. One ground for questioning the accuracy of a release is if the source has a track record of prior incorrect or misleading releases.

### **5.2.2 Event Studies**

An event study has been defined by Strong (1992) as follows:

*"An event study is the name given to an empirical investigation of the relationship between security prices and economic events."*

The original event study was that of Fama, Fisher, Jensen and Roll (1969). The particular

focus of their study was to investigate the relationship between stock split announcements and stock price behaviour. Since then, event studies have become the major methodology for testing stock market reaction to a wide range of announcements in finance, accounting and macroeconomics research.

The general methodology used in these studies is to choose an economic event and measure its impact on stock performance. The basic structure of a standard form of event study can be expressed as follows (Corrado, 1989; Henderson, 1990; Strong, 1992):

1. Select an economic event (eg., announcement of accounting annual reports) to investigate its effects on the firms' stock performance (price and/or trading volume).
2. Identify the event dates (announcement dates) of the economic event for a sample of firms subject to the event under investigation. This requires grouping observations into a common event time.
3. Control confounding events. That is, adjust for any other events that may occur in the same period as the event under examination.
4. Specify a model to measure the benchmark expected normal stock performance.
5. Define the measurement interval, the estimation period (EP) interval to estimate the parameters of the defined model (from step No.4), and the test period (TP) interval.
6. Use the estimated model parameters to compute the normal (expected) stock performance for each firm's stock during the test period (TP).
7. Calculate the abnormal performance [i.e., the abnormal return ( $u_{it}$ )] for each firm and for each period around the announcement date within the test period (TP) by taking the difference between the actual stock performance [actual return ( $R_{it}$ )] and the expected one [expected return  $E(R_{it})$  (from step No. 6)] that is:

$$u_{it} = R_{it} - E(R_{it}) \quad (5.1)$$

where:

- $u_{it}$  = the abnormal stock performance (price and/or trading volume) during the test period  $t$ .
- $R_{it}$  = the actual stock performance during the test period.
- $E(R_{it})$  = the expected (normal) stock performance.

8. Aggregate the abnormal returns across firms and across time and statistically test the aggregate returns to determine whether the abnormal stock performance measures (price and/or trading volume) are significant and, if so, over what period.

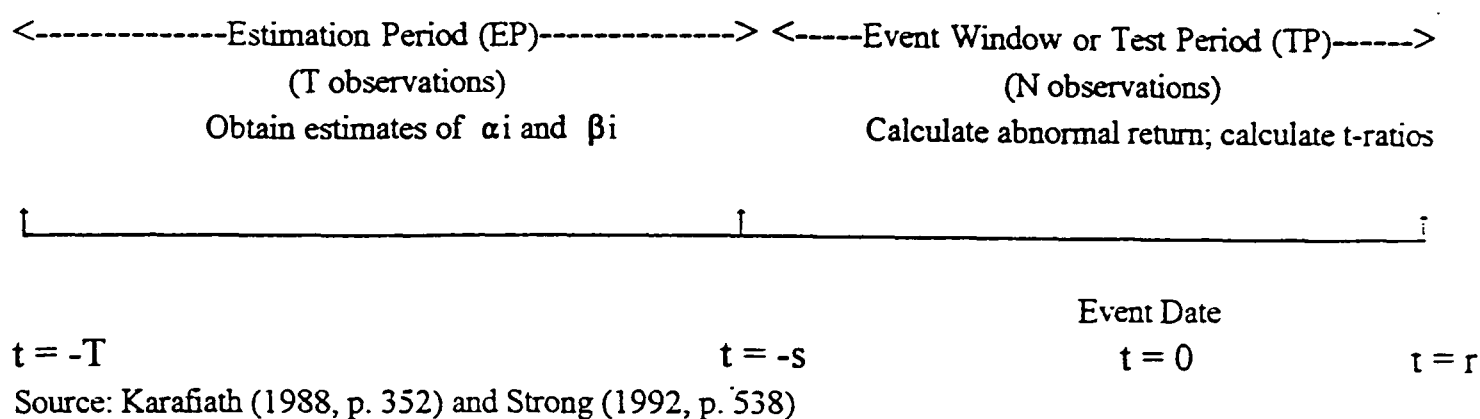
The traditional standard event study methodology is widely recognised as being a two-step procedure (as illustrated schematically in Figure 5.1) as follows:

- i. Estimates of the intercepts ( $\alpha_i$ ) and slope ( $\beta_i$ ) are obtained with an OLS regression using the  $T$  observations only in the estimation period, and estimates of the normal stock performance (i.e., estimated return) are obtained by using the  $T$  observations in the estimation period.
- ii. The abnormal stock performance (i.e., abnormal return) is calculated as the difference between the actual stock performance (i.e., actual return) and the estimated stock performance (i.e., estimated return) for each observation in the test period.



Figure 5.1

The Traditional Event Study



As shown in Figure 5.1 the estimation period (EP) spans from  $t = -T$  to  $t = -s$  [in some studies the estimation period spans either side of the test period] while the test period (TP) covers  $t = -s, \dots, 0, \dots, r$ , where  $t = 0$  is the event date (announcement date).

The event study methodology has generally proceeded by measuring the impact of an economic event on a number of firms' stock ( $i = 1, \dots, N$ ) by calculating the mean abnormal stock performance [i.e., mean abnormal return (MAR)] for each individual event date ( $t$ ) as follows:

$$MAR_t = \frac{1}{N} \sum_{i=1}^N u_{it} \quad (5.2)$$

where:  $N$  is the number of firms in the study sample.  
 $u_{it}$  is the abnormal stock performance during the test period.

Brown and Warner (1980, 1985) point out the event study methodology has been widely used to investigate the information content of firm-specific accounting news. Despite the obstacles with measuring the normal performance, calendar time clustering of some events, and the choice of an appropriate statistical test, event-study tests are well-

specified and reasonably powerful. Furthermore, Lev and Ohlson (1982) state that a careful methodological design accounting for overall market effects, randomization of the sample events over time, exact identification of the announcement dates, and an appropriate choice of statistical significance tests allows the researcher to infer from the observed change in the stock performance (return and/or trading volume), the 'information content' of the data released close to the announcement date.

### **Classification of Event Studies**

Henderson (1990) classifies event studies according to three basic types which are not mutually exclusive: market efficiency, information value, and metric explanation.

#### **i. Market efficiency studies**

Market efficiency studies measure how quickly and correctly the market reacts to a particular type of new information.

#### **ii. Information usefulness studies**

Information usefulness studies assess the degree to which company returns react to the release of particular pieces of news.

#### **iii. Metric explanation studies**

Metric explanation studies explain the metrics (abnormal returns) by splitting the sample into different subsamples and examining whether the unusual element of returns differs among the subsamples.

### 5.2.3 Measures of Capital Market Behaviour

Measures of capital market behaviour at the time firm-oriented releases are publicly announced can be grouped into two main categories:

1. Security price performance measures: to examine whether announcements are associated with change in the distribution of security returns.
2. Trading volume measures: to examine whether announcements are associated with increased trading volume activity.

#### 5.2.3.1 Security price performance measures

The impact of particular types of firm-specific events (eg., earnings reports, dividend announcements) on the prices of the affected firms' securities has been the subject of a number of studies. A major concern in these event studies has been how to assess the extent to which security returns were different from those which have been appropriate, given the model determining equilibrium expected returns (Brown and Warner, 1980). Most event studies use the expected (normal) stock return as a benchmark to measure the abnormal security price performance around the event under investigation. An abnormal return ( $AR_{it}$ ) is the difference between the actual return on any firm  $i$  ( $r_{it}$ ), and a benchmark representing the expected return on the same firm  $E(r_{it})$ . The most commonly used approach to deriving a normal (estimated) return is to use a theoretical asset pricing model (i.e., CAPM or APM). Although there are a number of alternative specifications of the benchmark expected return [i.e., mean adjusted returns, market adjusted returns (for more details see Brown and Warner (1980) and Strong (1992))] the market model (MM) benchmark has probably been the most popular benchmark employed in event studies. The MM was proposed by Markowitz (1959) and refined by Sharpe (1963). It gives a statistical description of the relation between the rate of return on asset  $i$  at time  $t$  ( $r_{it}$ ), and the rate of return on a market portfolio of assets ( $r_{m,t}$ ). The MM measures the movement

of stock price returns as a function of the movements in the market index. It makes no explicit assumption about how equilibrium security prices are established. Instead, it assume that returns are generated according to the following mechanism:

$$r_{i,t} = \alpha_i + \beta_i r_{m,t} + \epsilon_{i,t} \quad (5.3)$$

where:

- $r_{i,t}$  = the return for security  $i$  at time  $t$ .
- $r_{m,t}$  = the return on the market at time  $t$ .
- $\alpha_i$  = the intercept estimated by separate first-pass regressions,  $E(r_{i,t}) - \beta E(r_{m,t})$ .
- $\beta_i$  = the market sensitivity of security  $i$ ,  $\text{cov}(r_{i,t}, r_{m,t})/\text{var}(r_{m,t})$ .
- $\epsilon_{i,t}$  = a mean zero, independent disturbance term at time  $t$ .

The rate of return on the market portfolio ( $r_{m,t}$ ) is presumed to capture variables that affect the rates of return of all assets, and the disturbance term  $\epsilon_{i,t}$  is presumed to capture variables that only affect the rate of return on asset  $i$  ( $r_{i,t}$ ), the disturbance term in the market model ( $\epsilon_{i,t}$ ) is called an abnormal rate of return. To calculate the abnormal rate of return ( $\epsilon_{i,t}$ ) using the market model, typically  $\alpha_i$  and  $\beta_i$  are estimated from time series data on  $r_i$  and  $r_m$ , using the following simple regression;

$$r_{i,T} = a_i + b_i r_{m,T} + e_{i,T} \quad (5.4)$$

where:  $T$  is the estimation period.

The constant  $a_i$  is an estimate of the market model's  $\alpha_i$ , the coefficient  $b_i$  on  $r_{m,T}$ , is an estimate of ( $\beta_i$ ), and  $e_{i,T}$  is an estimate of  $\epsilon_{i,t}$ . These estimated coefficients with the realized rate of returns on the market portfolio for period  $t$  ( $r_{m,t}$ ) provide the expected (normal) rate of return on stock  $i$  for period  $t$  conditional on the market rate of return in period  $t$ ,  $E(r_{i,t}|r_{m,t})$ :

$$E(r_{i,t}|r_{m,t}) = a_i + b_i r_{m,t} \quad (5.5)$$

where:  $t$  is the test (event) period.

The estimated abnormal rate of returns for security  $i$  during any event date  $t$  ( $e_{i,t}$ ) can then be computed as the difference between the actual rate of return ( $r_{i,t}$ ) and the expected rate of return for the period  $t$  conditional on the market rate of return on the same period  $E(r_{i,t}|r_{m,t})$ :

$$e_{i,t} = r_{i,t} - E(r_{i,t} | r_{m,t}) \quad (5.6)$$

Substituting equation (5.5) into equation (5.6) gives:

$$e_{i,t} = r_{i,t} - (a_i + b_i r_{m,t}) \quad (5.7)$$

where:  $e_{i,t}$  is the abnormal rate of return for security  $i$  at time  $t$ .

To investigate the average impact of an accounting data release on stock prices, usually the abnormal rate of return is averaged across all affected firms ( $i = 1 \dots N$ ) and across the test period. Thus, for any individual event date  $t$ , the average abnormal rate of return is;

$$AR_t = \frac{1}{N} \sum_{i=1}^N e_{i,t} \quad (5.8)$$

where:

- $AR_t$  = the average abnormal rate of return at any event date  $t$ .
- $e_{i,t}$  = the market model's residuals (Eq. 5.7) for firm  $i$ 's stock at the event date  $t$ .
- $N$  = the number of firms in the study sample.

For any information set (i.e., accounting numbers) to possess information content, the average of the abnormal rate of return  $AR_t$  must be non-zero.

In addition to the average abnormal rate of return, many accounting information content studies have used the Cumulative Abnormal Returns (CAR) measure, to provide insight into the information content of news releases by firms. Information content in this context means that the news release leads to a revision in the distribution of stock returns

(Foster, 1986). A commonly used approach for cumulating abnormal returns is the arithmetic form:

$$CAR = \frac{1}{n} \sum_{t=1}^n AR_t \quad (5.9)$$

where:  $t$  is the test period from  $t = 1$  to  $t = n$ .

The cumulative impact of the residuals can be used to show whether there has been an expectation of the economic event prior to its announcement date. It also shows the time it takes for prices to adjust to their market model relationship after the event period (Firth 1977). The CAR approach is often used to fully capture the effect of an event when there is uncertainty over the exact date of the event. In this respect Strong (1992, pp. 539-540) states that:

*"Almost all event studies call for abnormal returns to be cumulated over a number of periods. This may be in order to fully capture the effect of an event on share prices, or to accommodate uncertainty over exact date of the event.... A further reason for computing abnormal returns over a longer interval arises in some event studies from the need to specify an expectations benchmark for the accounting disclosure."*

Examining the significance of the CAR value at any point of time  $t$  is equivalent to examining the significance of the mean average residual over the cumulation period. That is, investigating whether the values of the average residuals (average abnormal returns) starting from the date of cumulation up to the event date are systematically different from zero (Brown and Warner, 1980).

### 5.2.3.2 Trading volume measures

Beaver (1968) introduced the trading volume as a measure of the degree of consensus among investors with respect to a given information disclosure. The trading volume measure refers to the idea that, if the information signal (eg., stock splits, earnings reports)

has information content, the number of shares traded in the market is likely to be higher when the report is released than at other times. Beaver (1968) argues that the trading volume response reflects the lack of consensus among investors (heterogeneous in beliefs) with respect to a given information disclosure. Since investors may differ in the way they interpret the report, some time may elapse before a consensus is reached. During this time period increased volume would be observed. If there are homogeneous risk preferences among investors, there would be a price response but no volume reaction. In contrast, if the risk preferences differ there still could be a volume reaction, even after the equilibrium price had been reached.

However, Verrechia (1981) questions such interpretation of trading volume and demonstrates that information can influence trading even in the presence of consensus among investors with respect to the information. Also, Watts and Zimmerman (1986) point out that, although Beaver (1968) interprets an increase in the trading volume as evidence of information content, there is a problem with this interpretation. Conceptually, information could be conveyed to the market and prices could change by large amounts without a single transaction (i.e., after the close of trading on a given day, a firm could announce a major, unanticipated loss. When trading on the stock opens again, the bid and ask prices will be substantially below the last transaction price). On the other hand, there could be substantial trading (i.e., due to solely to portfolio rearrangement) without any information release. They add that, the problem is the lack of an economic theory of trading volume.

Beaver (1968) points out that, an important distinction between price and volume tests is that the former reflects changes in the expectations of the market as a whole while the latter reflects changes in the expectations of individual investors. A piece of information may be neutral in the sense of not changing the expectations of the market as a whole but it may greatly alter the expectations of individuals. In such situations, there

would be no price reaction but there would be shifts in portfolio positions reflected in the trading volume.

Trading-based studies usually use volume of shares for measuring trading activity around the announcement of the accounting data [(Beaver (1968); Morse (1981); Bamber

$$V_{it} = \frac{\text{No. of shares of firm } i \text{ traded at time } t}{\text{No. of shares of firm } i \text{ outstanding at time } t} \quad (5.10)$$

(1986, 87)]. The volume of shares is measured as:

where:  $V_{it}$  is the percentage of the traded number of shares of firm  $i$  at time  $t$ , relative to its outstanding number of shares.

Recent studies by Cready (1988) and Cready and Mynatt (1991) also use the number of transactions ( $TR_{it}$ ) as a measure of the trading volume. The reasons for using the number of transactions are:

- i. Transaction size can proxy for investor type, with very small transactions being identified as small individual investor trading, while relatively larger transactions are identified as large investor trading, and large transactions are identified as institutional trading.
- ii. Cready and Ramanan (1991) show that the statistical tests employing the number of transactions appear ( $TR_{it}$ ) to be considerably more powerful than tests employing volume of shares ( $V_{it}$ ).

After identifying the trading reaction measure, the information content of an accounting report can then be examined by investigating the behaviour of the trading activity measure ( $V_{it}$  or  $TR_{it}$ ) during the announcement period (test period) relative to the mean value of the same trading activity measure in the non-announcement period (estimation period):



$$TVA_{it} = \frac{\text{The trading volume measure during the test period}}{\text{Mean of the trading volume measure during the non-test period}} \quad (5.11)$$

Studies that employ the trading volume response as a measure of the information content of accounting data releases often use the market model approach in estimating the 'abnormal' trading volume activity during the test period. The regression equation takes the form of:

$$TVA_{it} = a_i + b_i TVA_{mt} + e_{it} \quad (5.12)$$

where:

- $TVA_{it}$  = the trading volume measure (volume of shares  $V_{it}$  or number of transactions  $Tr_{it}$ ) occurring for firm  $i$ 's stock on date  $t$ .
- $TVA_{mt}$  = the value for the trading volume measure ( $V$  or  $TR$ ) for all the stock market firms on date  $t$ .
- $a_i$  and  $b_i$  = the estimated intercept and slope terms obtained from the trading volume observations during the estimation period, and
- $e_{it}$  = the error term.

The residuals or the error term ( $e_{it}$ ) in equation (5.12) is estimated using the same estimation procedure as in the case of the price response analyses. If value of ( $e_{it}$ ) during the test period is non-zero the implication is that the accounting data has information content.

### 5.3 REVIEW OF INFORMATION CONTENT STUDIES

This section reviews the accumulated empirical evidence on the information content of accounting data releases. The set of studies reviewed in this section covers studies investigating the information content of the earnings announcements as well as nonearnings announcements, it also reviews information transfer studies including studies

investigating the market reaction to voluntary changes in accounting in accounting procedures. However, it does not include studies investigating the market reaction to mandatory changes [for a review of this area see Lev and Ohlson (1982)]. This section also reviews the accumulated empirical evidence on the information content of earnings releases based on different accounting standards and the information content of IAS-based earnings figures.

### **5.3.1 The Information Content of Earnings Releases**

There are two approaches to measuring the stock price reaction to earnings announcements. The first approach uses the *mean abnormal rate of return* [Ball and Brown (1968) methodology] and the second uses the *variance of abnormal return* [Beaver (1968) methodology].

#### **5.3.1.1 Early mean abnormal rate of return studies**

##### **Ball and Brown (1968)**

The well-known seminal study of Ball and Brown (1968) was the first to investigate the information content of annual earnings releases. The aim of their study was to test whether annual earnings reflect factors affecting stock prices. They examined the relation between the sign and the magnitude of unexpected earnings changes and mean abnormal stock returns. Ball and Brown hypothesized that, if the released earnings contained new information not already reflected in prices, then good news (actual earnings greater than 'expected' earnings) could cause a firm's stock price to increase, whereas bad news (actual earnings less than expectations) would have the opposite effect.

Ball and Brown examined the security return behaviour of firms in the 12-month

period up to and including the month in which annual earnings were announced. They selected their sample of annual earnings announcements from the NYSE listed firms over the 1946-1965 period. The application of some selection criteria yielded a final sample of 261 NYSE firms' annual earnings announcements for nine fiscal years from 1957 to 1965. The criteria applied were the following:

- a. The firm's fiscal year must end on December 31.
- b. The firm's earnings data must be available on the Standard and Poor's Compustat tapes for each of the year 1946-65.
- c. The firm's stock rate of return data must be available on the Centre for research into Security Prices (CRSP) tapes for 100 months.
- d. The earnings releases must be available in the Wall Street Journal (WSJ).

Ball and Brown divided their sample into two portfolios of firms:

1. firms whose earnings increased comparing with the prior year (the sign of unexpected earnings is positive) and;
2. firms whose earnings decreased comparing with the prior year (the sign of unexpected earnings is negative).

If the sign of the unexpected earnings is positive this implies unexpectedly 'good news' and the negative sign implies unexpectedly 'bad news'.

Ball and Brown (1968) then estimated the abnormal rate of return for the month of the earnings announcement using the market model approach. They used monthly return data to estimate the abnormal rate of return for each month in the year, where the month of earnings announcement is defined as month zero. Thus the abnormal rate of return for firm  $i$  in the earnings announcement month is  $e_{i,0}$ , and the abnormal rate of return in the month before the announcement is  $e_{i,-1}$ , and so on. They cumulated the abnormal returns over a period of 16 months (month -11 to month +6) for all firm/years in which earnings changes are of a particular sign. For each month Ball and Brown averaged the abnormal return using a measure which they called the Abnormal Performance Index (API). The API at the announcement date (month zero) is measured as follows:

$$API_0 = \frac{1}{Q} \sum_{q=1}^Q \prod_{t=-11}^0 (1 + \hat{e}_{qt}) \quad (5.13)$$

where:  $Q$  is the number of observations (firm/years) with unexpected earnings of the same sign.

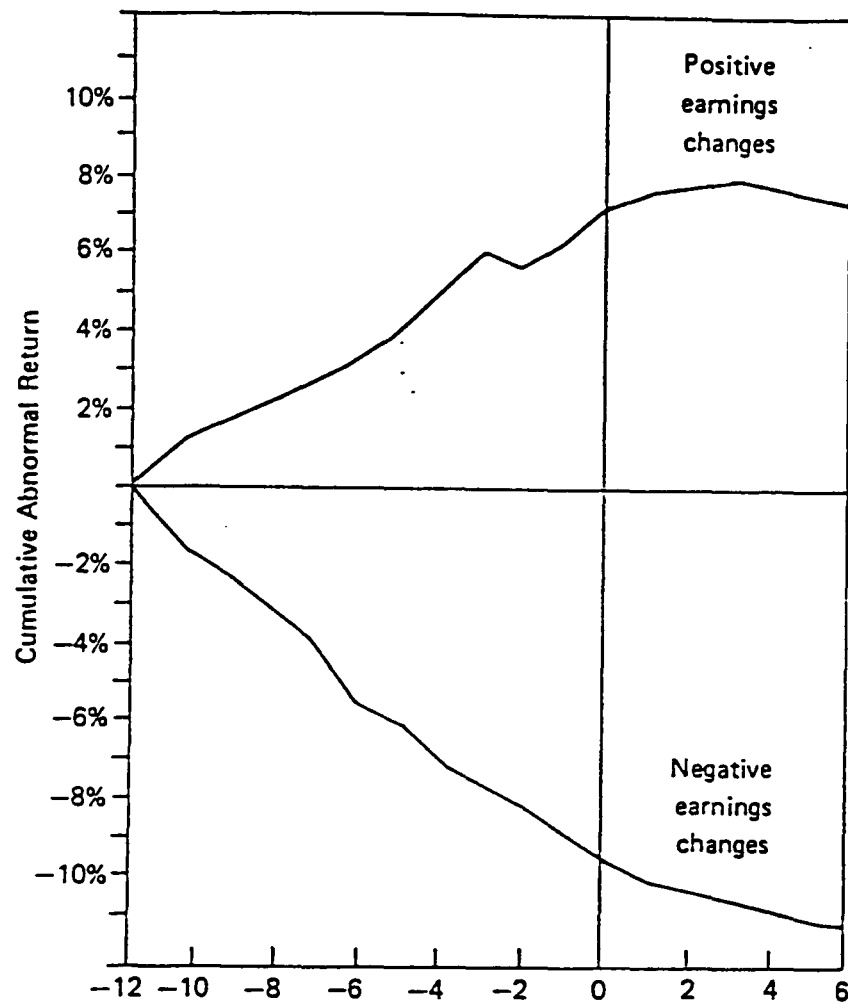
If the annual earnings are not related to stock prices the value of the API is expected to be one. However, if the earnings release contains information the expected value of the API at the earnings announcement month will differ from one. Ball and Brown tested the relation between annual earnings and stock prices by relating the sign of the unexpected earnings to the API values. They predicted that, if annual earnings are related to stock prices, the expected value of the API should be more than one ( $API > 1$ ) for the subsample of positive unexpected earnings changes and less than one ( $API < 1$ ) for the subsample with negative unexpected earnings changes. Ball and Brown (1968) results summarized graphically in Figure 5.2.

Ball and Brown's results show that:

- i. The behaviour of the abnormal rate of return (represented by API) is as predicted, i.e. the API for the positive unexpected earnings changes subsample is greater than one, while for the negative unexpected earnings changes subsample the API value is less than one.
- ii. The API values for the positive and negative unexpected earnings subsamples move in the same direction as the sign of the earnings change, not only in the month of the earnings announcement but also in every month prior to the earnings announcement month. This result indicates that stock market investors are successful in forecasting firms' earnings.

**Figure 5.2**

**Abnormal performance indices by month relative to earnings announcement dates**



Source: Ball and Brown (1968). Figure 1. P.169.

- iii. As shown in Figure 5.2 most of the price adjustment to annual earnings changes took place before the month of the earnings announcement, Ball and Brown pointed out that 85 to 90 percent of the stock price change associated with the unexpected earnings occurs before the month of the announcement. That means, only 10 to 15 percent of the total price change took place in the month of the earnings announcement (month zero). This implies that the market had anticipated the annual earnings from other sources and adjusted stock prices before the earnings announcement date.

Ball and Brown's (1968) results were based on their earnings expectation model. The emphasis on unexpected earnings has been criticised as a limitation of the methodology because the need to assume a specific earnings expectation model. Another limitation of the methodology is that Ball and Brown did not test the relation between the magnitude of the unexpected earnings and the abnormal returns. i.e., they did not report a significance test for the relation between the sign of annual earnings changes and mean abnormal rate of returns. However, later studies confirm that the mean abnormal rates of return associated with earnings announcements are significantly different from zero [eg. McEnally (1971); Watts, 1978 and Beaver et. al. (1979)]. Therefore, it is safe to conclude that annual earnings changes and stock price changes are related. Given the efficient markets hypothesis, this finding implies that reported accounting earnings reflect factors affecting stock prices and are potentially useful.

#### **5.3.1.2 Further mean abnormal rate of return studies (abnormal returns and unexpected earnings studies)**

The seminal work of Ball and Brown (1968) has led to an extensive literature investigating the information content of earnings and other corporate announcements and opened up an important research area in the accounting and finance literatures. Subsequent empirical studies have extended the work of Ball and Brown by;

1. applying a significance test on the relation between the sign of unexpected annual earnings and the mean abnormal rate of returns [(eg., McEnally (1971); Watts, 1978; and Beaver, Clarke and Wright (1979)],
2. incorporating the effect of the magnitude (size) of unexpected returns on the mean abnormal rate of returns [eg., Beaver, Clarke and Wright (1979)], and
3. developing improved models for the estimation of the unexpected element of earnings [eg., Foster (1977)].

Ball and Brown's study methodology has been replicated for annual earnings announcements by firms traded in US markets other than NYSE [eg., Foster (1975) for Over The Counter (OTC) insurance firms]. It also has been replicated for annual earnings announcements for firms traded in other countries [eg., Brown (1970) on the Australian stock market; Deakin et al. (1974) on the Tokyo Stock Exchange; Forsgardh and Herten (1975) on Sweden; Korhonen (1975) in Finland; Firth (1976) on the London stock market; Ooghe et. al. (1981) on Belgian shares; and Knight (1983) on South Africa]. Moreover, Ball and Brown's methodology has been used in numerous related context, such as segment-based earnings (Collins, 1975) and quarterly earnings announcements [eg., Brown and Kennelly (1972) and Foster (1977)].

### **Brown (1970)**

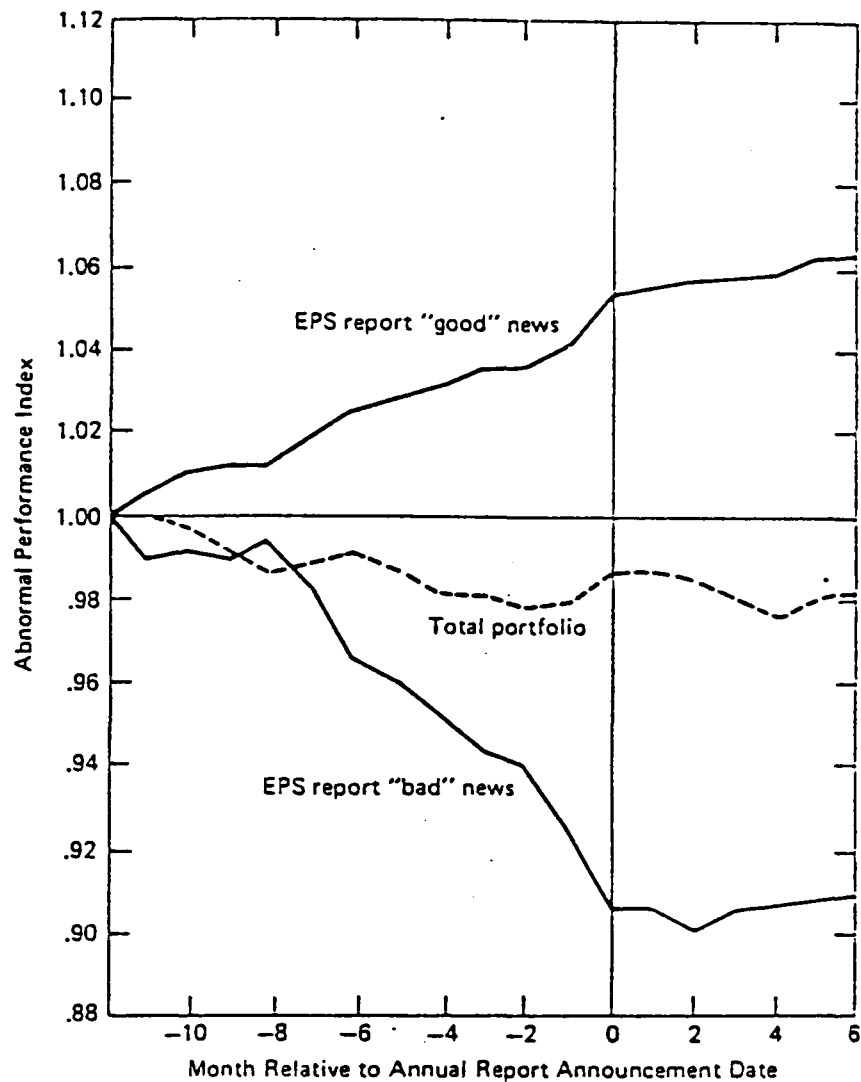
Brown (1970) replicated Ball and Brown (1968)'s methodology for a sample of 118 Australian firms over the 1959-1968 period. He found similar results to those of Ball and Brown, and the movement of the API index for the Australian firms was found to be similar to those of the NYSE firms reported in Ball and Brown (1968). So was the level of abnormal returns for positive and negative unexpected earnings. Brown's (1970) results are summarized in Figure 5.3. From the figure it can be seen there is more price adjustment in the announcement month for the Australian exchanges than for those reported in Ball and Brown (1968) on the NYSE. Brown found that 20 to 25 percent of the total price adjustment occurred in month zero. This suggests that the information content for the annual earnings announcements of the Australian firms is greater than that of the NYSE firms. This result could be due to the fact that:

- a. The Australian firms issue semiannual reports instead of quarterly reports (which suggests that annual accounting reports are more important sources of information in Australia).
- b. The Australian firms are, on average, much smaller than the NYSE firms so there

may be fewer alternative sources of information about them. In turn, this suggests that accounting reports are relatively more important as a source of information for smaller than for larger firms.

**Figure 5.3**

**Annual earnings and rates of returns on stocks for Australian firms**



Source: Brown (1970). Figure 1.

**Foster (1975)**

Foster (1975) provided evidence similar to that of Ball and Brown (1968) for earnings releases of US firms listed on over the counter market (OTC). Foster reported results for 63 US insurance companies listed in the (OTC) market. The results show that, in the 12 months up to and including the earnings announcement month, firms that had



unexpected increases/decreases in annual earnings had a 5.0% increase/ 5.2% decrease in mean abnormal security returns.

### **Beaver, Clarke, and Wright (1979)**

Beaver, Clarke, and Wright (1979) investigated the relation between the sign and magnitude of unexpected annual earnings changes and the sign and magnitude of abnormal returns (the larger unexpected earnings the larger the abnormal rate of return). Using observation of announcement earnings for 276 firms over the 1965-1974 period, they formed 25 portfolios based on the sign and magnitude of the annual unexpected earnings observations. They then calculated the mean annual abnormal rate of return for each portfolio for the 12 month period ending three months after the earnings announcement month. They identified significant contemporaneous correlations between the magnitude and sign of unexpected annual earnings changes and the magnitude and sign of abnormal returns in the period preceding the annual earnings release.

### **Emanuel (1984)**

Emanuel (1984), using a sample of 1,196 earnings announcements by New Zealand firms over the period 1967-1979, reported similar results to Beaver, Clarke, and Wright (1979). The magnitude of unexpected earnings change was computed and six portfolios formed, based on ranks of observations from the most negative to the most positive unexpected earnings. The results show that the CAR values in the 50 weeks up to and including the earnings release week were positively correlated with the magnitude and sign of unexpected earnings.

#### **5.3.1.3 Early variance of abnormal return studies**

The studies discussed so far examined the relation between earnings announcement and the mean of the abnormal return distribution. However, the *mean abnormal rate of*

*return* is not the only measure of stock price reaction to earnings announcement. An alternative methodology uses the *variance of abnormal return* as a measure of the information content of earnings announcements. The variance test have been used to avoid errors in measuring unexpected earnings used to partition earnings announcements in mean abnormal rate of return tests. This methodology does not use any expectation model for the effect of the announcement on the stock return. Instead it focuses on the variance of abnormal returns. Specifically, the abnormal return variance during the announcement period is compared with the average return variance in the pre- and post (non)announcement periods to determine whether they are drawn from the same distribution. Since this methodology (the variance tests methodology) obviate the need to specify an expectation model, it has been used frequently in event studies.

### **Beaver (1968)**

Beaver (1968) was the first to use the variance of the abnormal returns as a measure of the information content of corporate earnings announcements. Beaver did not use any earnings expectation model. Instead he tested the information content of annual earnings by comparing the variance of abnormal returns during the annual earnings announcement week with the average return variance during the non-announcement periods. The idea is that information changes investors' estimates of the probability distributions of the firm's future cash flows and hence the firm's stock price. Therefore, if an earnings announcement conveys information to the stock market it causes a price change, accordingly. Beaver expects more and larger price changes on days of earnings announcements than on other days. Since, in an efficient market the expected abnormal rate of return on an earnings announcement day is expected to be zero, the information content of these announcements can be tested by observing the abnormal returns variance increases at the time of earnings announcements.

Beaver's (1968) sample consisted of annual earnings announcements of 143 NYSE

listed firms in the period 1961-1965. The sample was restricted to non December 31 fiscal year firms (to avoid the clustering of earnings announcement in a few weeks). The sample was also restricted to firms that had no other announcements (eg., dividends or stock splits) during the earnings announcements period (to reduce the potential impact of nonearning variables). Beaver applied another restriction on firms in the sample. They should have less than 20 news announcement per year in the Wall Street Journal (to compare earnings announcement weeks to weeks in which there are few other announcements). It is worth mentioning that not all 143 firms met all the criteria in each year so the final sample consists of 506 earnings announcements.

To compare the abnormal return variance during the earnings announcement period with the average return variance during the non-announcement periods, Beaver (1968) estimated the parameters of the market model  $\alpha_i$  and  $\beta_i$  for each of the 506 earnings announcements over 17 weeks around the earnings announcement week (week -8 to week +8, where week zero is the earnings announcement week). The abnormal returns (residuals),  $e_{it}$ , were computed for each week  $t$  of the announcement period and for each of the 506 earnings announcements  $i$  as follows:

$$e_{it} = R_{it} - (\alpha_i + \beta_i R_{mt}) \quad (5.14)$$

The abnormal returns were then squared and divided by the variance of the abnormal returns for the same firm during the non-announcement period. This forms the ratio  $U_{it}$ :

$$U_{it} = e_{it}^2 / s_{iT}^2 \quad (5.15)$$

where:

$e_{it}^2$  = the square of the abnormal returns from the market model for firm  $i$ 's during the announcement week  $t$ .

$s_{iT}^2$  = the variance of abnormal returns during the non-announcement period  $T$ .

The logic behind the U ratio is that if earnings announcement possess information content, then  $e^2_{it}$  should be greater during the announcement week than during the non-announcement period. When earnings announcements convey information to the market, the price change during the announcement period will be larger than normal, causing the expected value of Beaver's U to be greater than one. In other words, if there is no information content in the earnings news, the abnormal return variance in the announcement week will not differ from the average return variance during the non-announcement periods, so the ratio  $U_{i,0}$  for the announcement week would have an expected value of one. The transformation of the market model residual to form the ratio U makes it possible to detect the market's reaction to the announcement even when the average residual is zero. Since the purpose is to infer the information content of the earnings announcements and not the direction of the price change associated with the earnings information, the variance of the abnormal return is called a non-directional measure of information content.

To test whether the abnormal return variance increased in report weeks, Beaver (1968) calculated the ratio  $U_{it}$  for report weeks for all 506 earnings announcements and estimated an average variance ratio  $U_t$  for each week in the announcement period as follows:

$$\bar{U}_t = \frac{1}{506} \sum_{i=1}^{506} U_{it} \quad (5.16)$$

where:  $t = -8, \dots, \text{to week } +8$ .

Figure 5.4 portrays the variation in  $U_t$  for the 17-week period surrounding and including the earnings announcement week. Beaver reported that the magnitude of the price change in week zero is much larger than its average change during the non-announcement period. As Figure 5.4 shows, the average abnormal return variance in the

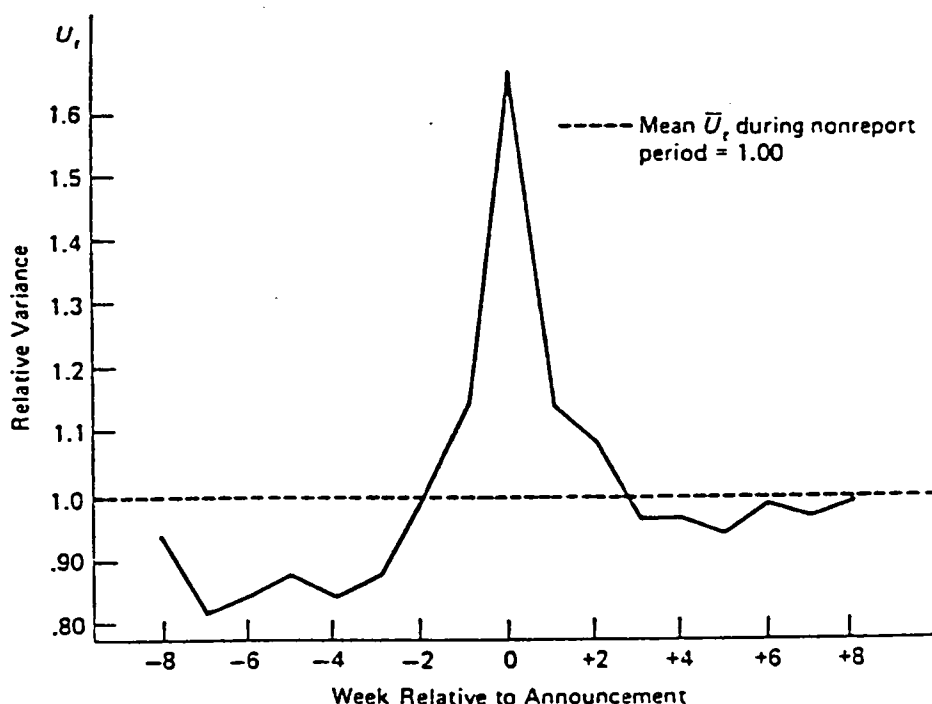
earnings announcement week is 1.67, which means the variance during the announcement week is 67 percent larger than normal (even though the variance in weeks -1, +1, and +2 are above average) but the increased in variance is most pronounced at week zero. Beaver (1968) states that:

*"In summary, the behaviour of the price changes uniformly supports the contention that earnings reports possess information content."*

Beaver (1968) introduced another element to the study of security-market reaction to earnings announcements by analysing trading. The findings were consistent with the information content hypothesis. The trading volume activity during the same 17-week period surrounding the annual earnings announcement was measured using both the ratios of the trading volume activity (Eq. 5.11) and the abnormal trading volume (Eq. 5.12). Figure 5.5 shows the behaviour of trading volume activity around the annual earnings announcements.

**Figure 5.4**

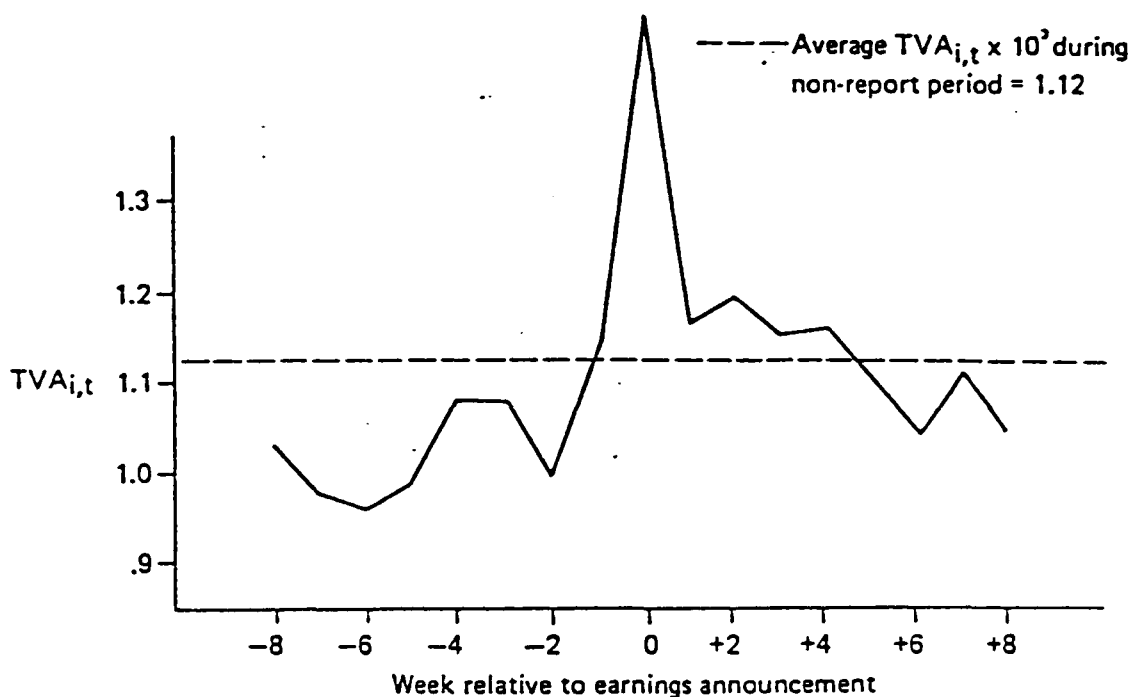
**Share Price Residual Analysis**



Source: Beaver (1968). Figure 6. p. 91.

Figure 5.5

Volume Analysis



Source: Beaver (1968). Figure 1. p. 89.

Beaver (1968) found abnormal trading volume during the earnings announcement week. The mean trading volume in the earnings announcement week (week zero) was 33 percent larger than the mean of the trading volume ratio in the non-report period. Moreover, the average trading volume during the announcement week is the largest value during the 17 weeks of the study. This suggests that investors do shift their portfolio positions at the time of the earnings announcement. Beaver argued that the below-average trading volume prior to the earnings announcement week (weeks -8 to -1) may suggest that investors postponed their trading activities until the release of the annual earnings numbers. Beaver (1968) concluded that:

*"Observing a price reaction as well as a volume reaction indicates that not only are expectations of individual investors altered by the earnings report but also the expectations of the market as a whole, as reflected in the changes in equilibrium prices."*

#### 5.3.1.4 Further variance of abnormal return studies

The variance measure of information content [Beaver's (1968) methodology] has been employed in other contexts. For example, May (1971) applies it to the quarterly earnings announcements of American Stock Exchange (ASE) firms over the 1964-1968 period and Hagerman (1973) applies it to earnings announcements of bank stocks on the OTC market. Also, McNichols and Manegold (1983) apply it to investigate whether the return variance at the time of annual earnings announcements decreased after ASE firms began reporting quarterly. The methodology have also been applied to more finely partitioned return data. For example, Morse (1981) using daily data, obtained results similar to Beaver's results. Patell and Wolfson (1984), using intraday data to examine the intraday (hours) behaviour of security returns in the period around earnings announcements, found a very strong reaction at the time of earnings announcement.

##### May (1971)

May (1971) used the variance measure to investigate the information content of quarterly earnings announcements of 105 firms listed on the American Stock Exchange (ASE) over the period from 1964 to 1968. May used weekly return data to estimate the market model residuals during the announcement week. Since May (1971)'s emphasis was on investigating the effect of interim (quarterly) reports announcements on the stock prices and not on the direction of the price change, he measured the information content of the quarterly reports by comparing the absolute value of the abnormal stock returns during the announcement week with its average value during the non-announcement period. The transformation of the residuals into their absolute values takes the following form:

$$AVAR_t = \frac{|AR_{it}|}{|AAR_{iT}|} \quad (5.17)$$

where:

- $AVAR_t$  = the average absolute value of abnormal return during the event date  $t$ .  
 $|Ar_{it}|$  = the absolute value of abnormal rate of return for firm  $i$  during the event date  $t$ .  
 $|AAR_{iT}|$  = the average absolute value of abnormal returns for firm  $i$  during the non-announcement period  $T$ .

The  $AVAR_t$  is a non-directional measure of the average relationship between the price change in the announcement period and the average price change that the firm experiences throughout the non-announcement period. If the interim reports do not convey information to the market the expected value of  $AVAR_t$  is one. If the quarterly reports convey information to the market the price change during the announcement period should be greater than the non-announcement period, therefore, the mean of the absolute value of abnormal returns should be greater than one. May's (1971) results show that the magnitude of the price response during the quarterly reports announcement dates was, in general, greater than the average price response during the non-announcements period. May (1971) concluded that quarterly reports convey useful information to the market and that investors do use this information in forming their investment decisions.

### **Kiger (1972)**

Kiger (1972) using Beaver's (1968) methodology, also found that quarterly earnings contain information, and leads to investment decisions and a change in the stock price behaviour during the announcement period.

### **Grant (1980)**

Grant observes that there are fewer news items reported in the *Wall Street Journal* for OTC firms than for NYSE firms. Therefore, he hypothesized that OTC firms' annual earnings announcements have more information content. To test this hypothesis, Grant (1980) investigated the information content of 747 annual earnings announcements by 211 OTC companies and 336 annual earnings announcements by 101 NYSE companies over the 1960-1964 period. To measure the information content of the annual earnings



announcement Grant (1980) used the variance of abnormal returns [Beaver's U ratio (Eq. 5.15)]. Grant's results show that the U ratio in week of the earnings announcement was 2.596 and 1.054 in the eight weeks preceding and the eight weeks subsequent to the announcement week. By using a control group of 101 NYSE companies, Grant concluded that the variance of abnormal return for the OTC sample firms in week zero (announcement week) was significantly greater than that observed for the NYSE sample firms.

It has been hypothesized that there are more news stories on large firms than on small firms and so more analysts study large firms than small firms. This suggests less alternative sources of information for smaller firms and that the information content of earnings announcements by those firms is larger. Since OTC firms are typically much smaller than NYSE firms, therefore, this hypothesis was tested by Grant (1980). Who was able to reject the hypothesis that there is no difference in the announcement week U ratio of the NYSE and OTC firms at .001 probability level.

### **Morse (1981)**

Morse (1981) used daily data to investigate the behaviour of trading volume activity and security return variability around quarterly earnings announcements for a sample of 25 NYSE / ASE stocks and 25 OTC stocks in the 1973 - 1976 period. The results were similar to those of Beaver (1968) (i.e., that is there is above-average trading and price behaviour around the release of the quarterly earnings numbers). The findings show that the most significant price changes and excess trading volumes occurred the day before media disclosure of the earnings numbers. Moreover, there seemed to be significant price responses and trading volume activity in several days following the announcement.

## Maingot (1984)

Maingot (1984) examined the variance of abnormal return (VAR) of 100 firms listed in London Stock Exchange (LSE) during their annual earnings announcement week over the period from 1976 to 1978. Maingot's sample included only firms that had one dividend announcement in the week of the annual earnings announcement. In this regard he pointed out that:

*"UK earnings and dividends are announced at the same time. Therefore, one can only examine the joint impact of both earnings and dividends"*

Maingot found the mean VAR in the announcement week to be 4.033 compared to a mean of 0.533 for the eight weeks preceding and the eight weeks subsequent to the annual earnings announcement week. Maingot (1984, p.56) concluded that :

*"the annual earnings numbers released by the UK companies do possess information. However, while the maximum response did take place at week 0, there did appear to be some anticipatory reaction in the week preceding (week -1) the announcement week"*

## The accumulated evidence

Research on the information content of accounting earnings announcements has been replicated across different stock markets, different samples, time periods, and statistical methodologies. Table 5.1 summarizes various relevant characteristics and the key findings of a sample of the information content of accounting earnings studies, based on a survey of the three major accounting research journals [*The Accounting Review (AR)*, *Journal of Accounting Research (JAR)*, and *Journal of Accounting and Economics (JAE)*] for the period 1984-1994. The results (of the above mentioned studies and the studies surveyed in table 5.1) suggest that earnings announcements are associated with changes in the distribution of stock performance (price and/or trading volume). This, in turn, is consistent with the contention that accounting earnings provide timely and relevant information to the stock market.

**Table 5.1: Sample of Research (1984-1994) on the Information Content of Earnings Figures.**

Author	Variable(s), Study Sample	Information Content Measure	Results/ Conclusions
Penman (1984)	3552 quarterly earnings announcements made by 297 NYSE and ASE firms over the 1977-1980 period	AARs	Quarterly earnings announcements are associated with abnormal rates of returns.
Chambers and Penman (1984)	2756 earnings announcements released by 100 NYSE firms over the 1970-1976 period.	VARs and AVARs	There is evidence of increased return variability around the earnings announcements date. The findings show that the average absolute value of abnormal returns around announcement dates is higher than its average value during the non-announcement periods.
Kross and Schroeder (1984)	691 annual earnings and 2756 interim earnings announcements made by 100 NYSE listed firms over the period from 1970 to 1976.	AARS	<ol style="list-style-type: none"> <li>1. Accounting reports (annual and interim) have information content.</li> <li>2. There is a significant average abnormal stock returns around earnings announcements dates.</li> </ol>
Atiase (1985)	200 second quarters earnings announcement made by NYSE, ASE and OTC firms over the 1971-1972 period.	AARs and VARs.	The average stock price response (AARs and VARs) in the second quarter earnings announcement date is significantly greater than the average price response during the non announcement period.
Bamber (1986)	1200 annual earnings announcements made by 397 NYSE 16 ASE and 32 OTC firms over the 1977-1979 period.	TVA.	There is above normal trading volume activity around earnings announcements.

**Table 5.1 (Continued)**

Author	Variable(s), Study Sample	Information Content Measure	Results/ Conclusions
Defeo (1986)	3823 annual earnings announcements made by 400 NYSE and AMEX listed firms over the 1978-1980 period.	AARs and VARs.	The price response measures (AARs and VARs) around the earnings announcements are significantly higher than their average value during the non-announcement period.
Bamber (1987)	900 quarterly earnings announcements made by 172 NYSE firms and 23 ASE firms over the 1977-1981 period.	TVA.	There is above normal trading volume activity around quarterly earnings announcements. Although the bulk of the trading volume reaction occurs on days -1 and 0, abnormally high trading persists up to five days after the announcement.
Clinch and Sinclair (1987)	328 half-yearly earnings announcements by 47 firms in 10 industries on the Melbourne Stock Exchange over the 1977-1981 period.	AARs.	There is highly significant evidence from the daily abnormal returns data that interim earnings convey information to the market.
Cready (1988)	727 annual earnings and 2327 interim earnings announcements made by NYSE listed firms during the period from 1/1/81 to 31/08/82.	TVA	<ol style="list-style-type: none"> <li>1. There is above normal trading volume activity around earnings announcement dates.</li> <li>2. After controlling for the market-wide factors there is abnormal trading volume activity around announcement dates.</li> </ol>
Shores (1990)	2156 annual and interim observations for firms traded on OTC market of the NASDAQ over the 1983-1984 period.	AARs and VARs	Annual earnings announcements convey information to the market.

**Table 5.1 (Continued)**

Author	Variable(s), Study Sample	Information Content Measure	Results/ Conclusions
Ziebart (1990).	90 annual earnings announcements randomly selected from firms traded on NYSE.	TVA.	There is above normal trading volume activity around the annual earnings announcements dates.
Ball and Kothari (1991)	51178 quarterly earnings announcements made by firms listed in NYSE and ASE from the first quarter of 1980 to the first quarter of 1988.	AARs and CARs.	<ol style="list-style-type: none"> <li>1. The average return at the earnings announcement date is larger than any other day in the event period.</li> <li>2. After controlling for risk increases at earnings announcements, firms earn reliably positive abnormal returns on the earnings announcement dates.</li> <li>3. The CARs are positive and large during the event period.</li> </ol>
Atiase and Bamber (1994)	5282 annual earnings announcements made by 834 NYSE listed firms over the 1980-1989 period .	AARs and TVA.	<ol style="list-style-type: none"> <li>1. There is above normal trading activity around annual earnings announcements.</li> <li>2. The trading volume is a function of the magnitude of the associated price reaction.</li> </ol>

Notes: NYSE is New York Stock Exchange, ASE is American Stock Exchange, SRV is security return variability, TVA is trading volume activity, AAR is average abnormal rate of return, CAR is the cumulative abnormal rate of return, VAR is the variance of abnormal return, and AVAR is the average absolute value of abnormal return.

### 5.3.2 The Effect of Information Release on Stock Performance of Non-announcing Firms (Information Transfer)

The preceding previous studies have examined the relationship between a firm's earnings announcements and the returns on its own securities. Such research has led academics to examine the association between an individual firm's announcement of earnings and the stock performance of other firms (information transfer). In this section the possibility that information released by one firm also provides information about other firms is examined.

Foster (1986) points out that, information transfers between firms arise when the information releases of firm  $j$  ( $K, \dots, z$ ) are used to make inferences about the share price of firm  $i$ . Accounting announcements could cause such information transfer for several reasons:

- i. Firm  $j$ 's release could convey information about the movements in key variables are affecting the profitability of other firms in the same industry; For example, changes in new housing starts are important for explaining changes in the profitability of homebuilders.
- ii. Firm  $j$ 's release could convey information about competitive shifts within the industry; For example, a report by a major firm that it had significantly increased its sales and earnings (in an industry with minimal overall growth) could convey positive information for that firm but negative information for other firms in the same industry.

There is a considerable evidence across different stock exchanges that earnings announcements of one firm are related not only to the stock performance of that firm but also to the stock performance of other firms in the same industry.

### **Firth (1976)**

The first study to provide empirical evidence of the impact of earnings announcement on share prices of other firms in the UK was presented by Firth (1976). Using the market model to generate abnormal returns, the cross-sectional average of the residuals for the stocks in each non-announcing firm was computed for the days surrounding the earnings announcements. The results show that the earnings announcements of one firm had a significant impact on the stock price of similar type firms. After extracting the market wide factors, the stock price response of the non-announcing firms was on average 54 percent of the price response of the announcing firms'

stock price response. The main conclusion drawn from the study was that investors use the information contained in accounting reports to re-evaluate not only the share prices of the firm whose results are being announced, but also those of closely competing firms.

### Foster (1981)

Foster (1981) examined the association between earnings announcement by firm  $j$  and the stock price of firm  $i$  when both firms are in the same industry. For each interim and annual earnings announcement of 75 NYSE and ASE listed firms over the 1963-78 period, Foster measured the stock return variability (SRV). The SRVs were calculated for each of the announcing and non-announcing firms in the same industry group for the day preceding and the day of the earnings announcements in the *Wall Street Journal*. Foster (1981)'s findings show that those earnings announcements that were associated with the largest increase in security return variability for the announcing firm also were associated the largest increase in the security return variability for the other firms in its industry. Further analysis revealed that earnings announcements that are associated with positive/negative price changes for the announcing firms were also associated with positive/negative price changes for other nonannouncing firms in the same industry.

### Clinch and Sinclair (1987)

Clinch and Sinclair (1987) applying Foster's (1981) methodology, reported similar results for a sample of 328 earnings announcements by 47 Australian firms in ten industries in the 1977-1981 period. They estimated the daily mean abnormal rates of return for each of the announcing and non-announcing firms during the earnings announcements period. Their results confirm those of Foster (1981) and provide further evidence for the existence of intra-industry information transfer associated with earnings announcements.

### **Han and Wild (1990)**

Han and Wild (1990) examined the association between unexpected quarterly earnings information and the contemporaneous stock price behaviour of announcing and nonannouncing firms in the same industry. They found a positive sign and magnitude relation between the contemporaneous unexpected stock returns of the announcing and non-announcing firms at earnings release dates as well as between the sign and magnitude of the unexpected earnings of announcing firms and stock returns of non-announcing firms.

### **Freeman and Tse (1992)**

Freeman and Tse (1992) examined the potential for security market participants to revise their earnings prediction in the light of other firms' earnings announcements. Specifically, they examined the relationship between the announcements of early and late announcers in a particular industry. They concluded that the security prices of late announcers react significantly to the information provided by early announcers in the same industry.

In summary, the results of the information transfer studies indicate that the stock market views earnings releases as being informative not only for the announcing firms but also for other firms in the same industry.

### **5.3.3 The Information Content of Other (Non-Earnings) Releases**

Prior sections focused on the information content of corporate earnings releases. However, earnings are not the only accounting numbers available to investors in stock markets. This section reviews the information content of other corporate announcements; specifically dividends announcements and stock split announcements.



## **Dividend announcements**

Change in dividend policy is one mechanism that management can use to signal its belief about the future profitability of the firm. Many studies have examined the behaviour of security prices around the time of dividend releases [eg. Griffin (1976); Brown et al. (1977); Brickley (1983); Dielman and Oppenheimer (1984)]. The results of these studies show that increased dividends are associated with significant positive abnormal returns. Firms that decrease or omit dividend payments are associated with significant negative abnormal returns. Foster (1986) points out that these results are consistent with the stock market using dividend announcements as a signal from management about the future earnings prospects of the firm.

## **Stock splits announcements**

Two types of earnings information could be conveyed by stock splits. First, splits could provide favourable information about improved future earnings performance (Lakonishok and Lev, 1987). Second, stock splits could convey information about pre-split earnings history. A number of studies have examined the information content of stock splits announcements [eg. Foster and Vickery (1978); Lakonishok and Lev (1987) and Asquith et al. (1989)]. The results of these studies show that stock splits announcements are associated with positive abnormal returns. Lakonishok and Lev (1987) find that splitting firms have large earnings increases prior to the split. Asquith et al. (1989) investigated the information content of stock split announcements for a sample of firms that do not pay cash dividends concurrently with the split announcements. Their findings show that market reaction to stock split announcements is related to the earnings information conveyed in the announcements. In particular, the results show that there is a significant earnings increase in the four years before the stock split announcement and that the stock price reaction to firms' split announcements is related to their earnings

increase in the two years prior to the splits.

In summary, the above studies and others in the same area have shown that there is a marginal information contribution from disclosure of various types of data other than earnings data. The empirical findings suggest that announcements such as dividends announcements and stock splits announcements convey information to the capital market through signals about the firm future earnings prospects.

#### 5.3.4 Accounting Changes

In this section the focus of our attention changes from how "items" of information may influence share prices to how the medium (accounting regimes) for their disclosure may influence the process. A central question is can the accounting regime influence investors' reaction to information. To answer this question it is necessary to review previous literature on what happens when accounting systems change.

Change in accounting principles are associated with four types of situations and each requires a different accounting treatment. AICPA (1971, para. 7-13) identified four types of accounting changes, as presented below.

1. *Changes in accounting principle. This results from adoption of a generally accepted accounting principle different from the one used previously for reporting purposes. The term accounting principle includes not only accounting principles and practices but also the methods of applying them.*
2. *Change in accounting estimate. Changes in estimates used in accounting are necessary consequences of periodic presentation of periodic presentation of financial statements. Preparing financial statements requires estimating the effects of future events. Accounting estimates change as new events occur, as more experience is acquired, or as additional information is obtained.*
3. *Change in reporting entity. This involves the situation in which a different group of companies comprise the reporting entity and is limited mainly to presenting consolidated or combined financial statements in place of statements of individual companies.*

4. *Correction of an error in previously issued financial statements.* *Errors result from mathematical mistakes, mistakes in the application of an accounting principle, or misuse of facts at the time the financial statements were prepared. A change from an accounting principle that is not generally accepted to one that is generally accepted is considered to be a correction of an error.*

When an accounting change is made, primary consideration should be given to the effect upon the measurement of net earnings. The independent auditor's report on the financial statements of the year in which an accounting change is implemented must be qualified because of a lack of consistency in applying general accepted accounting principles. One of the basic postulates contained in Accounting Research Study No. 1 is postulate C-3

*"Consistency. The procedures used in accounting for a given entity should be appropriate for the measurement of its position and its activities and should be followed consistently from period to period." (Moonitz, 1961, p. 50.)*

The committee on auditing Procedure of the AICPA includes consistency in the application of generally accepted accounting principles among its four standards of reporting. This reporting standard reads:

*"The report shall state whether such principles have been consistently observed in the current period in relation to the proceeding period." AICPA(1973)*

### Accounting changes: A Review

Early positive accounting researchers used the relationship between stock price changes and changes in accounting procedures to discriminate between the efficient market hypothesis (EMH) and its competing hypothesis (the mechanistic hypothesis). In combination with the CAPM and assumptions of zero transactions, contracting, and information costs and no taxes, the EMH predicts that no stock price changes are associated with certain voluntary changes in accounting methods. This is called the "no-effects hypothesis". In contrast the mechanistic hypothesis (which holds that the capital market is systematically misled by accounting change) predicts that security price changes are associated with accounting changes (Watts and Zimmerman, 1986).

Under the mechanistic hypothesis, firms are able to increase their stock price by reporting increases in earnings per share (EPS) irrespective of whether that increase arises from an accounting change or from a factor such as increased operating efficiency. A subset of studies has investigated the behaviour of stock performance in the period around accounting change announcements [or announcement of earnings in which a new set of accounting methods is applied] (Foster, 1986).

This section presents a review of the original studies investigating the market reaction to voluntary accounting changes, but it does not include studies investigating the market reaction to mandatory changes [for a review of the empirical evidence on this area see Lev and Ohlson (1982)]

#### 5.3.4.1 Voluntary changes in accounting techniques

##### Kaplan and Roll (1972)

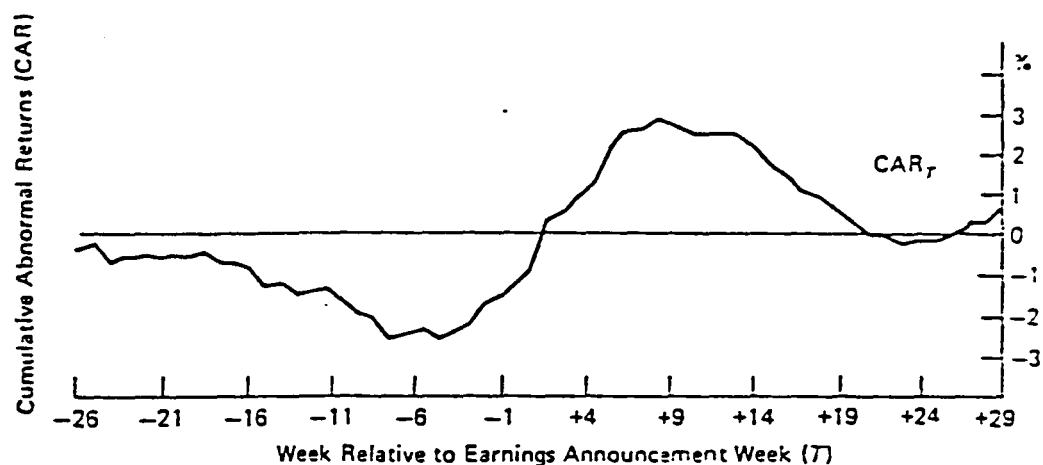
Kaplan and Roll (1972) examined the effect of switching from accelerated to straight-line depreciation and from deferral to flow-through accounting for the investment tax credit. Both changes improve reported earnings but have no direct tax consequences. Kaplan and Roll used the residual (abnormal rates of return) analysis method to investigate the stock price changes at the time of accounting changes. Their results are summarized in Figures 5.6, 5.7 and 5.8. They found that the returns of the depreciation-switching firms were worse than the market average during the 30 weeks following the earnings announcements. For firms switching to the flow-through method from the deferral method enjoyed a temporary increase in price at the earnings announcement date but fared worse than those of firms that did not switch during the 30 weeks after the announcement. Kaplan and Roll (1972) concluded that:

*"In the present sample, firms that manipulated earnings (by changing accounting methods) seem to have been performing poorly. If this is generally true, one*

would predict that earnings manipulation, once discovered, is likely to have a depressing effect on market price because it conveys an unfavorable management view of a firm's economic conditions."

Figure 5.6

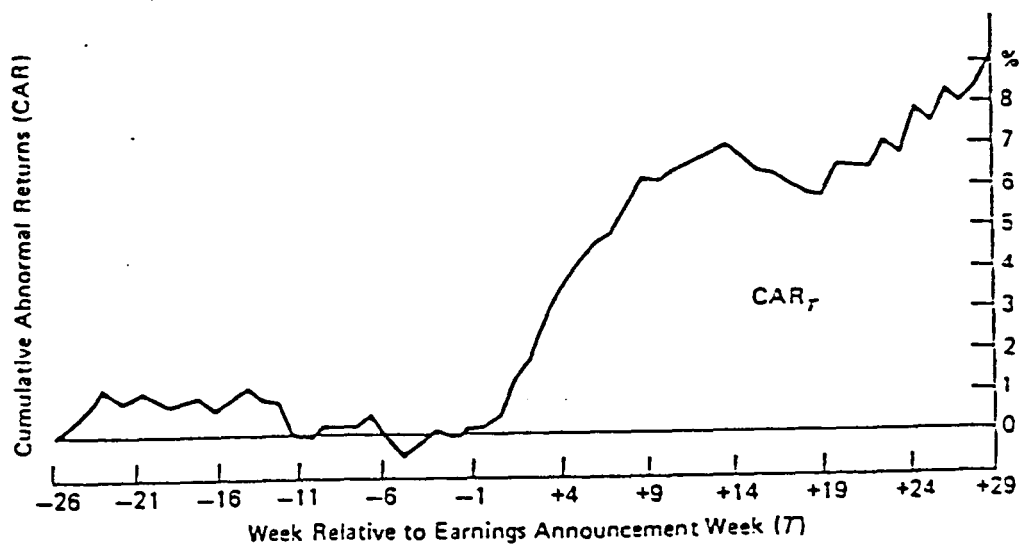
Cumulative abnormal rates of return associated with investment tax credit changes



Source: Kaplan and Roll (1972, p. 237)

Figure 5.7

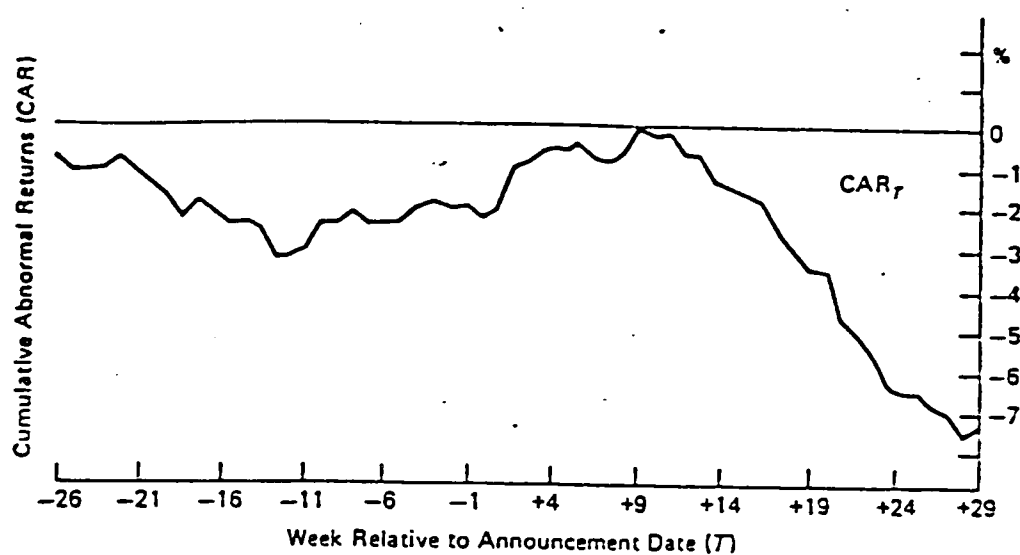
Cumulative abnormal rates of return for the control group



Source: Kaplan and Roll (1972, p. 237)

**Figure 5.8**

**Cumulative abnormal rates of return associated with depreciation switchback**



Source: Kaplan and Roll (1972, p. 239)

### **Ball (1972)**

Ball (1972) examined the capital market reaction to 267 changes made by 197 firms over the 1946-1958 period. These changes included 85 inventory changes, 75 depreciation changes and 52 subsidiary accounting changes. Ball assumed that the net effect of these changes was no real increase in the value of the firm. Ball also used residual analysis to investigate the market reaction to earnings changes associated with changes in accounting methods. Ball concluded that:

*"The aim of this study was to examine the commonly-held belief that the stock market is misled by changes in accounting techniques. This belief assumes that the market cannot distinguish real from accounting effects on reported income. The evidence presented indicates that there is little truth in that assumption."*

### **Archibald (1972)**

Archibald (1972) examined the stock market reaction for 69 firms that changed their depreciation accounting method from accelerated to straight-line. Archibald concluded that, on average, the firms that changed accounting methods demonstrated below normal performance in the two year period preceding the accounting method change. However,

the apparent earnings improvement brought by the accounting change (about 10 percent) had no substantial effect on the stock performance.

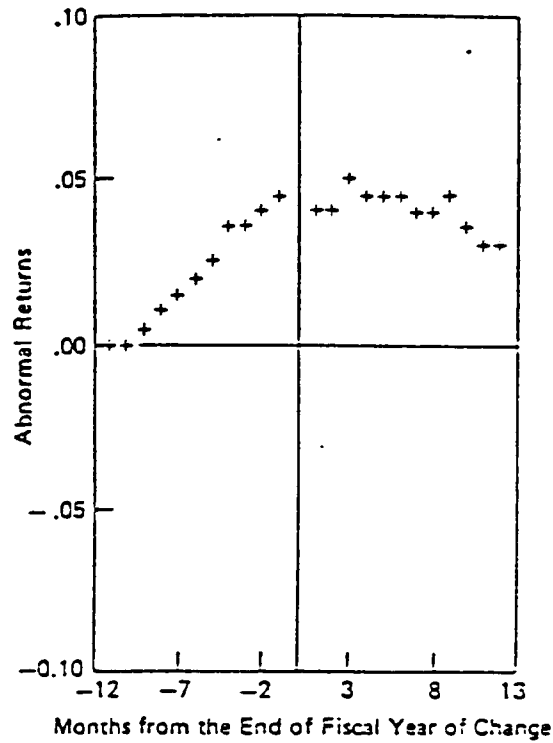
### Sunder (1975)

Sunder (1975) examined the market reaction for 155 firms that adopted or abandoned the last in, first out (LIFO) inventory costing method. Sunder's sample consisted of 118 firms switching from first in, first out (FIFO) to LIFO and 21 firms abandoning LIFO in the 1946-1966 period. The research model used by Sunder is closely related to, but not identical with the CAPM. To estimate the market model (MM), he used a regression technique that allowed  $\beta$  to change over time. Using this technique, Sunder obtained estimates of  $\beta$  for each of the 24 months surrounding the time of the change ( $t = -11, \dots, +12$ ). He used those  $\beta$  estimates to calculate a cross-sectional average estimated  $\beta$  by month relative to the announcement month ( $b_t$ ). Abnormal returns for each month were the residuals from the estimation of the MM. The average abnormal return for each month relative to month 0 was the cross-sectional average ( $e_t$ ). Cumulative abnormal rates of return ( $CAR_t$ ) were calculated simply as sum of the  $e_t$ 's from month -11 to month  $t$ .

Sunder's results summarized in Figure 5.9. The CAR is 4.7 percent over the 12 months up to and including the last month of the fiscal year of the change. That means firms which switched from FIFO to LIFO method experienced a positive change in their share prices up to the accounting change.

**Figure 5.9**

**Cumulative abnormal rates of return around the date of a change to LIFO**



Source: Sunder (1975), Figure 1, p. 313.

**Abdel-khalik and Mckeown (1978)**

Abdel-khalik and Mckeown (1978), using an experimental sample and a control sample, evaluated the joint effect of two factors on the behaviour of stock returns. The factors were the change of inventory costing to the LIFO method and the sign of the expected growth in earnings per share (EPS) before the announcement of the change was made. Abdel-khalik and Mckeown examined the behaviour of security rates of return surrounding the announcement of the change to the LIFO method to determine if the behaviour were affected by the expected performance of the firm. The objective was to evaluate the relative importance of the joint signal (i.e., the accounting change to the LIFO and the direction of the expected firm performance) on the behaviour of security returns. This study compared analysts' forecasts of EPS made prior to the announcement of the switch to the LIFO method with the actual (i.e., reported) EPS. Their results suggest that investor reaction was associated with the earnings performance of the switching firms



rather than with the accounting-method switch.

### **Brown (1980)**

Brown (1980) examined the stock market reaction to changes to the LIFO inventory costing method that took place in 1974 and 1975 (73 of the 86 firms studied changed methods in 1974). Brown divided his sample into two groups; a change firm (i.e., firm changing to LIFO) and a non-change firm (control group). The basic emphasis of Brown's study was to measure the impact of the change by analysing the cumulative abnormal returns (CARs) from the market model of firms changing to the LIFO method compared to the CARs on the non-change firms and the capital market reaction to the estimated present value of the income tax savings. Brown concluded that there was no significant difference between the CARs of the control group and the change group.

### **Ricks (1982)**

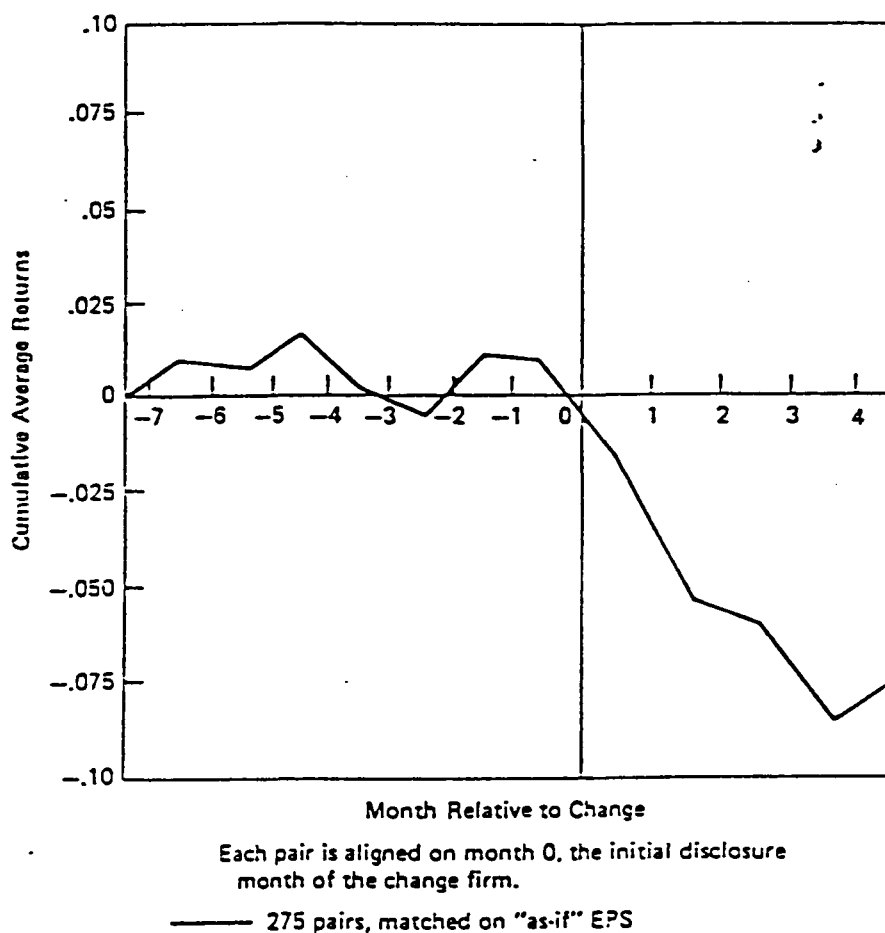
In 1974 there was a relatively high level of inflation in USA, and over 400 firms listed on NYSE and ASE switched from FIFO to LIFO inventory costing method. Ricks (1982) examined the stock price reactions to LIFO adoption and non-adoption firms. As in Brown's study, Ricks used two group, nonchange firms (control group) and change firms. Ricks attempted to control for the earnings and other unspecified selection biases by matching his changes and no-change firms. The matching of the firms was based on the percentage change in earnings per share from the prior year (1973). This matching was based on the reported EPS amount and the "as if" EPS amount. ( the "as if" amounts were based on the previous inventory method). The matching procedure yielded 275 matched pairs of change and no-change firms. Ricks defines month zero as either (a) the month of announcement of the LIFO change if the change was announced or (b) the month of the preliminary annual earnings announcement if the change was not announced. Ricks calculated the differences in the CARs to month zero for two groups (control and change group). Figure 5.10 graphs the differences in CARs for the 275 pairs matched on as if EPS

amount. The primary conclusion by Ricks was that the CARs of the change group were significantly less than the CARs for the control group near the announcement date of the change. The negative stock market reaction was also significantly associated with the size of the lower net earnings resulting from the accounting change. As Figure 5.10 shows, the difference in cumulative returns fluctuates around zero prior to month -1 and then falls by approximately 8 percent over the next three months. This difference in stock price behaviour is significant and consistent with the mechanistic hypothesis. The market appears to be misled by the drop in earnings caused by the LIFO change.

**Figure 5.10**

**Cumulative average monthly return differences**

(average raw return for the change firms minus the average raw return for the no-change firms)



Source: Ricks (1982), Figure 1, p. 375.

### **Biddle and Lindahl (1982)**

Biddle and Lindahl (1982) investigated the disclosures of the income tax savings realized by switching to LIFO inventory method. This study employed within-group comparisons based on cumulative monthly unsystematic (excess) returns and related investor reactions to the income and cash-flow effects of the LIFO adoptions. The results are consistent with a positive association between cumulative excess stock returns and the magnitudes of the tax savings associated and the accounting change. Biddle and Lindahl concluded that the evidence is consistent with the EMH.

### **Brown (1982)**

Brown (1982) examined five changes in accounting principles and the ability of security analysts to project earnings number for the affected companies. The five changes were:

- i. SFAS 8 (Foreign Currency Translation);
- ii. SFAS 13 (Lease capitalization);
- iii. SFAS 34 (Interest capitalization);
- iv. Last in, first out (LIFO) inventory costing method;
- v. Actuarial changes for pensions.

The main emphasis of Brown's study centred around whether or not accounting changes significantly affected analysts' ability to predict reported net earnings. Brown found no significant effects with SFAS 8 nor with SFAS 34. However, significantly improved predictions were found with SFAS 13. His results also indicated impairment of predictive accuracy for changes to the LIFO inventory costing method and in actuarial changes for pensions. Brown concluded that financial report users could benefit from additional disclosure when firms change accounting principles.

#### **5.3.4.1.1 The information content of the management earnings forecasts**

A subset of firms voluntarily release management forecasts of earnings. There is

considerable evidence that the stock market views these forecasts as conveying information relevant to security price revaluation (Foster, 1986). This section reviews some of the empirical studies which investigate the market reaction to this kind of voluntary accounting release.

### Pattel (1976)

Pattel (1976) examined a sample of 336 forecasts of annual earnings per share released by the management of 258 firms over the 1963-1968 period. A firm is considered to have publicly disclosed earnings forecasts when a company official is quoted in the *Wall Street Journal* as predicting either a point-estimate of annual earnings per share or an estimate of the minimum or maximum expected earnings per share. Pattel estimated the variance of the abnormal returns for 17-week around the earnings forecasts announcement (week -8 to week +8, where week zero is the announcement week). The results demonstrated a significant market reaction to the management earnings forecasts announcements. In particular, the price response during the announcement week was the largest positive number during the test period. Pattel extended his analysis by investigating the relation between the type of news contained in the management earnings forecasts and the sign and magnitude of the stock price response. For the 336 of the firms in the sample, an earnings expectations number was estimated. A comparison of these estimates of investors expectations with the numbers predicted by the firm officials allowed grouping of the forecasts by the sign and magnitude of the difference between the two. The comparison yielded a measure of the management earnings forecasts deviation (FD) and was used as a proxy for the nature of the news. Pattel calculated the (FD) as follows:

$$FD = \frac{\text{Management forecast} - \text{An estimate of the market expectation of earnings}}{\text{An estimate of the market expectation of earnings}}$$

(5.17)

If the management forecast of earnings exceed the market expectation (FD is positive) the management forecast announcement convey good news to the market, and if (FD) is negative then the management forecasts convey bad news. The FD measure for each management forecast was ranked from most negative to most positive. The results showed that the price response is related to the sign and magnitude of the FD measure. Suggesting that good news is accompanied by positive abnormal returns and bad news accompanied by negative abnormal returns. Similar results were reported in Penman (1980).

### Waymire (1984)

Waymire examined the information content of a sample of 479 management annual earnings forecasts over the 1969-1973 period . The analysis centered on the stock return behaviour and cumulative abnormal returns in the three-days trading around the *Wall Street Journal* announcement date of the management earnings forecast. The results found a significant abnormal stock return around the earnings forecast day. The results also suggested that there is a significant relation between the sign and magnitude of the forecasts deviation and the sign and magnitude of the abnormal returns. The management earnings forecast deviation (FD) was calculated as:

$$FD = \frac{\textit{Management forecast} - \textit{Consensus analysts forecast}}{\textit{Consensus analysts forecast}} \quad (5.18)$$

Waymire (1984, pp.1-2) concluded that a:

*"significant positive association exists between magnitude of forecast deviation and magnitude of abnormal returns in the period immediately around forecast disclosure date"*

### Hagerman et al. (1984)

Hagerman et al. (1984) examined the information content of quarterly earnings forecasts. They found a significant abnormal stock return around the release of quarterly

earnings forecasts, and that the abnormal stock return is a function of the magnitude of the forecast deviation.

### Han and Wild (1991)

Han and Wild (1991) examined the information content of voluntary releases of management revenue forecasts. The results show that management revenues forecasts convey incremental information to the market beyond that contained in the earnings forecasts.

In summary, it is difficult to draw any reliable conclusions from the many stock market studies testing links between security returns and cash flow consequences of accounting changes. One reason is the difficulty of predicting the timing of the stock market reaction to any cash flow consequences associated with the change. A second reason for these studies having inconsistent or insignificant results is the problems in measuring key variables (Foster, 1986). Furthermore, Watts and Zimmerman (1986) state that:

*"it is not possible to predict the stock price effect of voluntary changes in accounting procedures resulting from changes in the set of accepted procedures and very difficult to design powerful tests for the stock price effects of voluntary changes among accepted procedures."*

### **5.3.5 The Information Content of Earnings Releases Based on Different Accounting Standards (International Accounting Diversity)**

Each country has its own accounting standards (Generally Accepted Accounting Principles, GAAP), which results in considerable differences across countries in the determination of firm's earnings (net profit or net loss). Furthermore, listing on a foreign stock exchange usually forces firms to prepare their annual reports according to the foreign country GAAP. For example, Japanese firms listed on NYSE, where required by the Securities and Exchange Commission (SEC) to prepare financial statements according to

US-GAAP. This raises the question of whether different accounting standards (international accounting diversity) possess different information content.

Recently, many leading US practitioners, policy-makers and government officials have expressed concern that international accounting diversity is an obstacle for US investors who attempt to interpret and rely upon foreign financial statements. They argue that accounting information of foreign firms which is understood and relied upon by investors in the home (foreign) market can often be misleading or misunderstood by US investors, resulting in home market investors having an informational advantage over US investors.

To date, evidence on whether international accounting diversity is an obstacle to investors is mixed. Choi and Levich (1990) interviewed a sample of 52 institutional investors, corporate issuers, investment underwriters, market regulators, and rating agencies in Germany, Japan, Switzerland, the United Kingdom, and the United States. Overall, half of those interviewed stated that their capital market decisions are affected by accounting diversity. A major implication of Choi and Levich's study is that accounting differences are important and affect the capital market decisions of a significant number of market participants surveyed, regardless of nationality, size, experience, scope of international activity, and organizational structure. Based on the results of their survey, Choi and Levich (1990) conclude that international accounting diversity poses a problem for international investors. In addition, they argue that additional research in international accounting needs to be conducted in order to

*"determine quantitatively the impact of international accounting diversity on the prices of securities and on the volume and location of trading in these securities."*

Research specifically aimed at examining the information content of earnings figures prepared under different GAAP regimes in relation with firms' stock returns is relatively new. Empirical research in this area is of interest for several reasons:

- i. It may be possible to interpret the information content of earnings measured under different accounting standards for investors;
- ii. empirical research can give an indication of the success of standard-setters in different countries in meeting information needs of stock markets; and finally
- iii. empirical results can provide further impetus towards international accounting harmonization (Auer, 1995).

This section reviews most of the empirical studies which investigate the information content of earnings announcements based on different accounting standards.

### **Meek (1983b)**

Meek examined the US stock market reaction to non-US GAAP earnings figures by examining the price reaction of US stocks to the annual earnings announcements of 26 multinational foreign firms over the 1968-1979 period. Meek's sample consisted of three firms from Israel, five firms from Japan, three firms from the Netherlands, five firms from the Philippines and ten firms from the UK. Meek discovered that there was an increase in the absolute value of the unexpected price return for the foreign firms' US listed shares, indicating that, in general, US investors find information content in the annual earnings announcements of these countries. Meek also, tested the response of US investors to foreign earnings announcements against the response of US investors to a matched sample of US earnings announcements. The results of Meek's test indicate that there was no significant difference in the intensity of US investors' response to the US and foreign earnings announcements. As a result, he concludes that international accounting diversity does not appear to diminish the usefulness of foreign annual earnings announcement to US investors.

### **Meek (1991)**

Meek (1991) investigated the relation between four variables (firm size, timeliness,



the magnitude of earnings changes, and the presence or absence of a concurrent dividend announcement) and market reaction, by examining the US securities market reactions to annual earnings announcement by a control group of US firms and by a study group of non-US multinational corporations. These non-US corporations were from 5 countries (UK, Japan, Israel, Netherlands and Philippines). Meek's (1991) results showed that, for the control group of US firms, the only significant explanatory variable is firm size. For non-US firms, the results indicate that firm size and timeliness are significant explanatory variables.

### **Barth and Clinch (1993)**

Barth and Clinch (1993) investigated whether the differences in earnings and shareholders equity produced by different GAAP regimes are associated with firms' stock returns. Specifically, for a sample of firms domiciled in the UK, Australia and Canada which trade shares on US securities markets, they compared financial results reported under their home country (domestic) GAAP with results reported using US-GAAP to determine whether the difference explain variation in stock returns.

Barth and Clinch's objective was to explore whether domestic or US-GAAP provides better measures of firm performance as reflected in stock returns. Their results showed that, for all three countries' firms, domestic GAAP earnings provides explanatory power incremental to US-GAAP earnings in explaining stock returns. However, domestic GAAP's relation to stock returns (after controlling for US-GAAP earnings) for UK and Australia firms is negative. In contrast, Canadian GAAP earnings have a positive relation with stock returns. On the other hand, US-GAAP earnings provides explanatory power incremental to domestic GAAP earnings for UK and Australia, but for Canadian firms US-GAAP earnings adds no significant incremental explanatory power.

### Pope and Rees (1993)

Pope and Rees (1993) investigated the information content of earnings figures prepared under UK-GAAP and US-GAAP by examining the cross-sectional association between stock returns and earnings for a sample of UK domiciled stocks listed in both the UK and US stock exchange. They found that UK-GAAP earnings changes have greater information content than US-GAAP earnings changes, but US-GAAP earnings levels have more explanatory power than those of the UK.

### Amir et al. (1993)

Companies registered outside US and listed on a primary US exchange sometimes provide their US shareholders with financial reports prepared based on their domestic (non-US) GAAP. The Securities and Exchange Commission (SEC) requires such firms to reconcile their reported earnings and owners' equity to US-GAAP as part of a Form 20-F filing. Amir et al. (1993) found these reconciliations as a set of precise measures of the differences created by different accounting standards. Based on Form 20-F they examined whether the differences in US and non-US GAAP (as summarized in the aggregate reconciliations of earnings and owners' equity) are value-relevant.

They used a sample containing varying numbers of firms and observations within 20 countries. Approximately 40 percent of the sample consisted of companies registered in the UK. Australia, Netherlands and Sweden have the next largest numbers of companies. Amir et al. (1993) results suggest that:

*"the aggregate reconciliations of both shareholders' equity and earnings are value-relevant, consistent with US-GAAP measures being more value-relevant than the aggregate measures for the mix of non-US-GAAP systems."*

In analysing some of the systematic components which cause the differences between US-GAAP and non US-GAAP earnings and owners' equity they found that investors view both capitalized goodwill and asset revaluations as value-relevant. Also, taxation adjustments

are viewed as value-relevant. Amir et al add that these results should not be taken as bearing directly on the usefulness of the 20-F reconciliations as imposed by the SEC. Careful investors may be able to reconstruct the value-relevant data from the reports presented in the home country. Furthermore, removal of the asset revaluations appears to make the US-GAAP reports less relevant. Finally, they state that:

*"Thus, while overall US-GAAP measures appear to be relatively more value-relevant our results do not indicate that the 20-F reconciliations themselves are required."*

#### Harris et al. (1994)

Using a sample of German companies during the period 1982-1991, Harris et al. (1994) examined the association between accounting measures and security returns to reply on the viewpoint that earnings under German-GAAP are less valuation-relevant than under US-GAAP. They provide evidence that, over an 18 months window, the correlation between stock returns and annual earnings in Germany are generally similar to those in the US. Their results also suggest that the coefficient applied to earnings in Germany is larger than that in the US. Aggregating annual earnings over time should eliminate the effects of differences across countries in the timing of income recognition. However, Harris et al. (1994) by using a longer window up to seven years, found that the degree of correlation between returns and announcement earnings is not significantly different between Germany and US.

#### **5.3.6 The Information Content of IAS-based Earnings Figures**

The US-GAAP are still the dominating benchmark in stock market research due to the importance and the listing requirements of the NYSE. However, the SEC has recently accepted the cash flow statement based on IAS 7 as equivalent to US-GAAP. If SEC is going forward in easing the listing requirements at the NYSE and accepting also full

accounts based on international accounting standards (IAS) as equivalent to the US-GAAP (Auer, 1995). This would raise the question of whether IAS-based (instead of US-GAAP) earnings figures convey more information than earnings based on home (domestic) accounting standards of the country under investigation. In other words, whether IAS-GAAP is more informative than the GAAP of the country investigated.

The need for international accounting research has grown in importance due to the increased globalization of economic, social and political relationships. Gray (1989) identified a number of relevant research topics in this area. For example, the question of whether voluntary disclosures of significant factors attributable to foreign listings affect the cost of capital of multinational corporations. Also Gray (1989) recognizes the importance of IAS for developing countries and points out that, in an attempt to develop their capital markets, they need knowledge of the extent of necessary regulation and investor protection. To that end, Gray (1989) suggests inquiries into the relevance of International Accounting Standards (IAS) in a stock market context. Therefore, a new area for more market-based accounting research (MBAR) has been opened.

Market-based accounting research (MBAR) on the information content of earnings figures based on the IAS and its association with stock returns is relatively scarce. This section reviews those empirical studies which investigating the information content of IAS-based earnings figures.

#### Niskanen et al. (1994)

Using a sample of 37 manufacturing and commercial firms listed in the Helsinki Stock Exchange over the 19-year period 1971-1989, Niskanen et al. (1994) examined whether IAS-based earnings figures convey significant incremental information over earnings figures based on the Finnish accounting rules. Specifically, they tested the null hypothesis (after controlling for the effect of the Finnish earnings) that, there is no

significant information content in the IAS earnings. Alternatively, because of the earnings management potential allowed by the Finnish accounting standards and because of the dependence of taxable income on reported Finnish earnings, they hypothesized that IAS earnings are a more full meaning measure of the firm's performance (earnings and owners equity) and consequently contain significant incremental information over reported Finnish earnings.

The incremental information content were tested by using the standard method where (market-adjusted) stock returns are regressed on unexpected earnings. The results of Niskanen et al. (1994) give support to the notion that IAS-based earnings figures convey incremental information for the Finnish stock market over earnings figures based on the Finnish accounting rules. This was shown by the significant earnings response coefficient obtained for the IAS earnings variable after controlling for the effect of Finnish earnings.

#### Auer (1995)

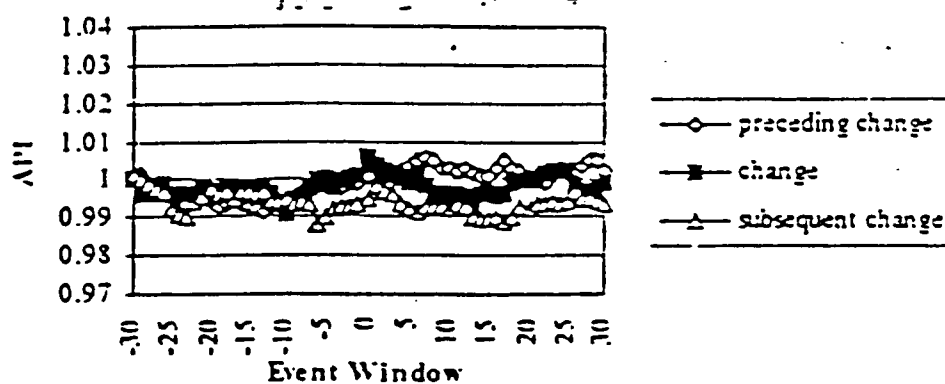
Auer (1995) investigated the information content of earning releases for investors measured under different accounting standards. Specifically, he examined the information content of 247 earnings announcements by Swiss quoted non-financial firms which have changed their accounting standard from "a lower-quality" supposed Swiss-Standard to either IAS (20 firms) or EC-Directives (15-firms) since the beginning of 1988.

Contrary to the empirical studies presented in section (5.3.6) of this thesis Auer used IAS as the benchmark for GAAP instead of US-GAAP. Also, in contrary to these studies, it is not a restatement to a different accounting standard that is being examined, but a change in the home (domestic) standard which is expected to result in an improvement of information content for investors. To measure the information content of earnings announcements, Auer used the event study methodology. He used the standard market

model to calculate the daily unexpected abnormal returns and calculated the cumulative abnormal return (CAR) to measure the unexpected security revisions associated with firms' earnings announcements. Auer examined the CARs for up to a maximum of 5 event-windows preceding the announcement date and 5 event-windows subsequent to the announcement date. A shorter period was examined for firms which changed accounting standard at the end of the study period (1985-1994) or for firms for which no information was available for a specific year. Furthermore, he examined the information content using the Abnormal-Performance-Index (API). Figures 5.11, 5.12 and 5.13 summarize Auer's (1995) results. As can be seen in the Figures, the API-curves preceding and subsequent to change in the accounting standard are very close, indicating no substantial differences in the information content of IAS-based earnings figures and EC-Directives-based earnings figures. Auer (1995) states that:

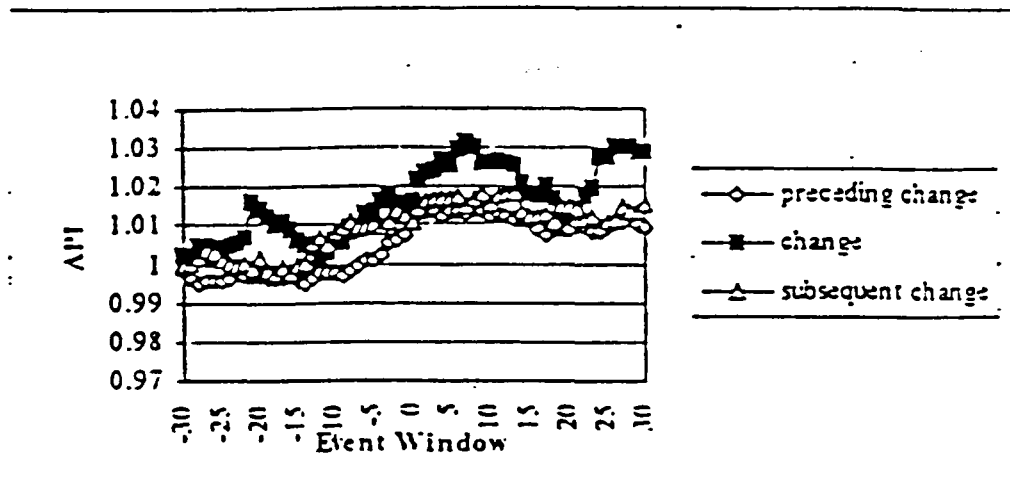
*"The results suggest that IAS-based earnings releases do not possess statistically significant information content beyond information content of earnings releases based on the former Swiss-GAAP. Comparing IAS-based and EC-Directives-based earnings releases the results also suggest that IAS-figures do not possess statistically significant higher information content for investors."*

**Figure 5.11**  
API-Sample EC-Directives



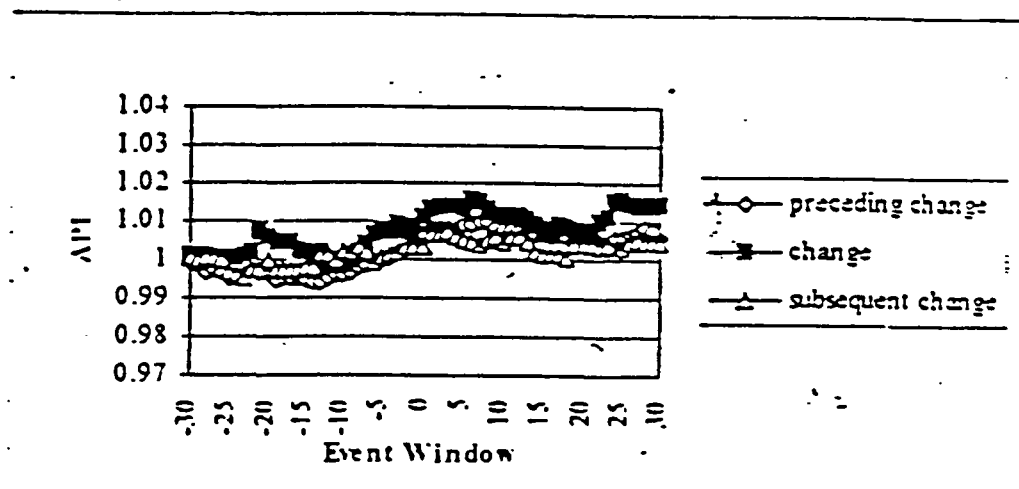
Source: Auer (1995), Figure 8, p. 26.

**Figure 5.12**  
**API-Sample IAS**



Source: Auer (1995), Figure 9, p. 26.

**Figure 5.13**  
**API-Total Sample**



Source: Auer (1995), Figure 10, p. 26.

### Summary of sections 5.3.5 and 5.3.6

To summarise, the empirical studies which investigate the information content of earnings announcements based on different accounting standards and the studies which

investigate the information content of IAS-based earnings figures generally provide mixed finding as to whether US or (IAS) GAAP is more informative than the GAAP of the country investigated. Furthermore, little empirical evidence currently exists on IAS-based earnings figures and their association with stock returns. What is available is conflicting in its conclusions, so there is a need for more research in this particular area.

### **5.3.7 Factors Influencing the Information Content of Accounting Data Releases**

Most empirical studies on market based accounting are concerned with the relation between stock returns and accounting earnings. However, these studies report mixed findings on the direction and the magnitude of capital market reaction to earnings releases by firms. Considerable evidence exists about factors explaining the direction and the magnitude of the stock market reaction to earnings announcements by firms. The four factors receiving much support from the many studies are as follows:

1. Firm size.
2. Timeliness of the release.
3. The sign and magnitude of the unexpected component of the earnings change.
4. Amount of predisclosure information.

#### **1. Firm Size**

The empirical research suggest that the information content of accounting data releases is associated with firm size. The size effect refers to the notion that market reactions to accounting earnings announcements of small firms exceed those of large firms. The evidence on the size effect appears to be robust across different stock exchanges, model specifications, and information content measures (mean, variance of abnormal returns and trading volume activity).

Several studies have examined the size effect in relation to the information content



of accounting earnings. Atiase (1980) argues that it is relatively more profitable for investors to search for additional information regarding potential inefficiencies in the pricing of large firms stock than to search for information about small firm's stocks. Indicators of such activities, such as number of analysts following a stock, are generally greater for large firms than small firms. Arguments have been put forward that, since alternative information sources are not as well-developed for small firms as for large firms, small firms experience greater reactions at earnings announcement dates than do large firms.

Atiase (1985) examined 200 second quarters earnings announcements made by NYSE, ASE and OTC firms over the 1971-1972 period. He provides evidence which indirectly supports this size-dependency relationship. He regressed a measure of the "unexpected" information conveyed to the market by actual earnings reports on firm market value and found that this measure is inversely related to firm capitalization. That is, small firms' reported earnings trigger a larger stock price reaction than do the reported earnings for large firms. In other words Atiase (1985) shows that security price reactions to small firms' earnings announcements exceed the reactions to large firms' announcements. This differential reaction also occurs when trading volumes are studied by Bamber (1986, 1987). Atiase's (1985) findings that the amount of "unexpected" information conveyed to the market by actual earnings reports is inversely related to firm capitalization were attributed to the existence of (private) predisclosure information production and dissemination by large firms.

Chari et al. (1988) examined the size effect on the stock return of 56,147 quarterly earnings announcements over the 1976-1984 period. They ranked the sample firms by market capitalization and formed portfolios representing the deciles of the firm-size distribution. They found that only stocks of relatively small firms show large positive mean abnormal returns around earnings announcements dates. For the smallest decile of

their sample, approximately 16% of the annual stock returns occur on the two days before the quarterly earnings announcement date. There is no such effect for firms in the largest size decile. Their findings also show that the three-day cumulative abnormal returns (CARs) from day -2 to day 0 are positive and significant for firms in the lowest four size deciles and the six decile. The CARs values are not significantly different from zero for firms in the largest two deciles. Ball and Kothari (1991) reported similar results for a sample of 51,178 quarterly earnings announcements made by NYSE and ASE listed firms from the first quarter of 1980 to the first quarter of 1988. Their results show that relative risk increases during the earnings announcements period for all firms, but significant positive abnormal returns exist only for small firms even after controlling for the risk increase.

The general tenor of these studies results is that small firms investors rely more heavily on published accounting earnings than do large firm investors.

## 2. Timeliness of the release

Another variable explaining the difference in the information content of accounting data releases is the timeliness. Timeliness means

*"having information available to decision makers before it loses its capacity to influence decisions."* (FASB, par. 56, 1980).

Statement No. 4 of the Accounting Principles Board (1970) specifies timeliness as one of the objectives of accounting. In Statement of Financial Accounting Concepts No. 2 (1980), the FASB views timeliness as an ancillary aspect of relevance, which is one of the two primary decision-specific qualities of "useful" accounting information.

Whether the timing of the release of information is related to the content of the information has been the subject of considerable accounting and finance research. For

example, several studies point out that late earnings announcements are more likely to contain bad news, either compared to forecasted earnings [Kross, 1981; Kross and Schroeder, 1984] or in terms of the market reaction [Chambers and Penman, 1984; Atiase, Bamber and Tse, 1989], than early announcements. While such findings are consistent with common perceptions, it is more striking that, after controlling for the type of news, timing alone still has a significant effect on stock returns [Kross and Schroeder, 1984].

Patell and Wolfson (1982) examined firms' behaviour with respect to intra day timing of earning and dividend announcements, and documented that good news is more likely to be released when the security markets are open while bad news appears more frequently after the close of trading.

Several studies have investigated the timing of quarterly earnings announcement to examine whether timing alone is viewed as a signal by investors. The key findings are:

1. Reports published earlier than expected tend to carry good news while reports released later than expected tend to convey bad news, as measured by the stock price reaction to the report [Chambers and Penman, 1984; Kross and Schroeder, 1984].
2. There is an inverse relationship between firm size and reporting lag, i.e., from fiscal year-end (quarter-end) to release date (Chambers and Penman, 1984). After controlling for firm size, the length of the reporting delay is inversely related to the market's reaction to the reporting delay (Atiase, Bamber and Tse, 1989). That is, longer delays tend to result in smaller market reactions to earnings announcements.

Chambers and Penman (1984) examined a sample of 2756 earnings announcements released by 100 NYSE firms over the 1970-1976 period. They developed predictions for the release date of each interim and annual earnings release in the study period by using the historical reporting date sequence for each firm. Early/late announcements were defined as those reports are announced before/after the predicted date. Table 7.2

summarized Chambers and Penman (1984) results, Table 5.2 shows that:

- i. Firms that report their earnings releases earlier than expected experience positive abnormal returns in the period around the announcement date (this is consistent with unexpectedly early reports conveying good news).
- ii. Firms that announce their earnings figures later than expected experience negative abnormal returns in the period around the announcement date.

**Table 5.2**  
**Mean Abnormal Return Around Announcement Dates**

<i>Interim Earnings Releases</i>			<i>Annual Earnings Releases</i>		
<i>Days Early</i>	<i>Mean Abnormal Return</i>	<i>t Statistic</i>	<i>Days Early</i>	<i>Mean Abnormal Return</i>	<i>t Statistic</i>
≥ 9	1.29	2.48	≥ 23	1.53	1.95
6 to 8	1.00	1.16	16 to 22	4.21	2.77
4 to 5	.35	.62	10 to 15	.01	.00
2 to 3	-.13	-.45	7 to 9	.16	.33
0 to 1	.16	.64	3 to 6	.76	1.02
-1 to -2	-.26	-.74	0 to 2	.35	.55
-3 to -4	-.08	-.29	-1 to -3	-.61	-.89
-5 to -6	-.77	-1.51	-4 to -7	1.01	1.83
≤ -7	-.72	-1.26	≤ -8	-1.10	-1.22

Source: Chambers and Penman (1984), Table 3, p. 28.

Kross and Schroeder (1984), using a sample of 3552 quarterly earnings announcements made by 297 NYSE and ASE firms over the 1977-1980 period, reported similar results. However, recently, Ball and Kothari (1991) empirically examined the "good news early, bad news late" hypothesis and reported empirical evidence that contradicts previous findings that the timing of an announcement alone has an effect on security returns. They argue that, if the timing of an announcement is informative because managers systematically announce good news early and bad news late, average abnormal returns should be positive at the earnings announcement, be negative prior to the

announcement, and cumulate to zero by the end of the announcement period. By examining the pattern of returns around earnings announcements for a population of stocks from the first quarter of 1980 to the first quarter of 1988, they report that the observed pattern is not as predicted by the hypothesis.

### **3. The sign and magnitude of the unexpected component of the earnings change.**

Ball and Brown (1968) investigated the relation between the sign and the magnitude of unexpected earnings and mean abnormal rates of return. They suggest that accounting news convey 'good news' if the actual earnings number is higher than expected, and convey 'bad news' if the actual earnings number is lower than expected. Accordingly they hypothesized that, if earnings number contained good news would cause a firm's stock price to increase, whereas bad news would have the opposite effect.

However, only recently have researchers followed the suggestion of Ball and Brown (1968) and investigated the relation between the magnitude of unexpected earnings and mean abnormal return. For example Foster et al. (1984) examined that relation, they estimated the unexpected component of interim and annual earnings releases of 2053 NYSE and ASE firms during the period from 1974 to 1981. The unexpected earnings were calculated as the difference between the actual earnings and the expected earnings based on a time series forecast model. The magnitude of unexpected earnings was computed as the ratio of the unexpected earnings at any quarter to its standard deviation for over the prior 20 quarters. Each earnings release was assigned to one of ten portfolios with portfolio 1 being the decile with the 10% most negative unexpected earnings observations, and portfolio 10 was the decile with the 10 % most positive unexpected earnings observation. The results of Foster et al. (1984) provide strong evidence that the sign and magnitude of unexpected earnings change are positively correlated with the sign and magnitude of mean abnormal stock returns in the two trading days around the earnings

announcement.

#### **4. Amount of predisclosure information.**

The information content of annual earnings releases to a large extent is anticipated by the market prior to the release date (Ball and Brown, 1968). This has been attributed in part to the argument that much of the data contained in the annual reports is made available on a more timely basis by many existing interim sources of information (i.e., accounting interim reports, security analysts' forecasts, industry forecasts, etc.). Differential market reactions to earnings announcements can be attributed to the extent to which such announcements entail surprise (i.e. contain unexpected information), the empirical evidence indicates that the greater the predisclosure information the less the surprise element in earnings release. Since there is no direct measure for predisclosure information, the following proxies have been used:

- a. firm size;
- b. exchange listing; and
- c. number of financial analysts' forecasts.

Firm size as a proxy for the amount of predisclosure information has been used by Freeman (1987). Freeman argued that the value-relevant publicly available information systematically differs between small and large companies. His results show that stock returns for large firms anticipate accounting earnings earlier than the stock return of small firms and that the magnitude of abnormal returns associated with bad and good news is inversely related to size of the firm. Grant (1980) tested the effect of the predisclosure information by assessing the difference in the information content of annual earnings announcements between OTC firms and NYSE firms. He hypothesized that the availability of predisclosure information sources differs between the NYSE listed firms and OTC traded stocks. Therefore, the amount of information available to firms listed in

the NYSE may be greater than that available for firms traded OTC. Given the absence of alternative sources of information, OTC investors may therefore rely more heavily on accounting annual reports as a source of information for decision making. Grant's (1980) results show that the variance of abnormal return for the OTC firms is significantly higher in the announcement week relative to that of the NYSE firms (for more details see section 5.3.1.4). Grant (1980) interpreted this difference as an evidence that OTC investors have fewer alternative sources from which to acquire information on the firms prior to the release of annual reports numbers. Therefore, when the report is made, the market reaction to its information was more significant. Bamber (1986) reported similar results using the trading volume activity as a measure of the information content of the earnings reports.

Lobo et al. (1989) used three proxies for the amount of predisclosure information; firm size, the number of analysts' annual earnings forecasts available for each firm before the actual announcement date. Their results show that the stock return variability around the earnings announcement dates is inversely related to the amount of predisclosure information available for the firm.

#### **5.4 SUMMARY**

This chapter has reviewed empirical studies on capital market reaction to accounting numbers releases. This area of research is known as information content studies. Most of the studies on the information content of accounting data are of the "announcement type", examining whether the announcement of some economic events (eg., earnings announcement) results in a change in the distributions of stock prices and / or trading volume activity at the time of their announcement. The empirical findings of these studies suggest that earnings releases are associated with changes in the distribution of stock performance (prices and/or trading volume) mainly prior to accounts publication. The overall conclusion of these studies is not only that earnings releases convey timely and

relevant information to the market but also that investors do use earnings information in their investment decisions. Furthermore, the results of the information transfer studies indicate that the stock market views earnings releases as being informative not only for the announcing firms but also for other firms in the same industry.

This chapter also reviewed empirical studies which investigate the information content of non-earnings data, such as dividends announcements and stock splits announcements. The empirical findings from these kind of studies suggest that releases of non-earnings data convey information to the capital market through its signals about the firm future earnings prospects. The overall conclusion is that the market responds to non-earnings data.

Under the mechanistic hypothesis, firms are able to increase their stock price by reporting increases in earnings per share, irrespective of whether that increase arises from an accounting change or from a factor such as increased operating efficiency. A subset of studies has investigated the behaviour of stock performance in the period around accounting change announcements (or announcement of earnings in which a new set of accounting methods is applied). This chapter reviewed the original studies investigating the market reaction to the voluntary accounting changes. In general these studies reported mixed results as whether it is consistent with the mechanistic hypothesis or not consistent with it.

Current accounting research includes numerous studies that attempt to identify firm-specific characteristics that are likely to differentially affect the relation between stock returns and earnings. These factors include firm size, timeliness of the release, the sign and magnitude of the unexpected component of the earnings change, and the amount of predisclosure information. This chapter also reviewed some of the empirical studies in this area.



This chapter surveyed most of the empirical studies which investigated the information content of earnings releases based on different accounting standards and also the empirical studies which investigated the information content of IAS-based earnings figures (relatively scarce). In general these studies produce mixed finding as to whether US or (IAS) GAAP is more informative than the GAAP of the country investigated. Currently there is little empirical evidence on the information content of IAS-based earnings figures and its effect on investors' decision making. What is available has conflicting conclusions. It is intended that the empirical work in this study will contribute to our understanding of what happens when IASs replace locally determined accounting standards via analysis of the Jordanian experience.

# CHAPTER SIX

## RESEARCH DESIGN AND METHODOLOGY

### 6.1 INTRODUCTION

The previous chapter provided an overview of the main empirical studies from the information content literature and a discussion of the research methods employed in those studies.

The purpose of this chapter is to describe the methodology used in this thesis to investigate changes in market prices brought about by the change to new accounting standards (IASs) from the old accounting rules for Jordanian companies.

This chapter is divided into two sections. Section 6.2 discusses research design. Section 6.3 describes the methodology used in this research to examine stock market reaction.

### 6.2 RESEARCH DESIGN

In a competitive market changes in stock market prices may be associated with many economic and non-economic events as well as with the behaviour of investors. In order to isolate the part of a price change associated with a change in accounting standards, a research design based on the theory of capital market equilibrium is used in this study. As mentioned in Chapter 5 this approach was first used by Fama, Fisher, Jensen and Roll (1969) to investigate the relationship between stock splits and stock prices. Other early users of this approach include Kaplan and Roll (1972) [to investigate the relationship between stock price changes and changes in accounting for

investment credit and depreciation] and Archibald (1972) [to analyse the stock market reaction for firms that changed methods of accounting for depreciation]. A description of the model, the research design and methodology (based on selected prior research from the literature review) are presented in the remainder of this chapter.

### **Objectives of study**

The main purpose of this study is to investigate the effects of introducing International Accounting Standards (IAS) on the Jordanian Stock Exchange. More specifically the study examines whether IAS-based earnings figures contain incremental information over earnings based on the Jordanian accounting practices.

#### **6.2.1 Description of Data**

This study concentrates on the information content of financial reports disclosed by Jordanian companies as reflected by the impact of their release on the share prices of stocks listed on the Amman Financial Market (AFM).

Because of the small size of the AFM, it was initially intended to include all of the listed companies in the this study. The number of companies listed at the end of 1990 was 104 as shown in Table 6.1.

**Table 6.1: No. of Companies Listed on the Amman Financial Market**

<b>Economic Sector</b>	<b>No. of Companies</b>
Banks and Financial Companies	19
Insurance Companies	17
Services Companies	17
Industrial Companies	51
<b>Total</b>	<b>104</b>

## 6.2.2 Selection of Sample Firms

A number of firms had to be eliminated from the 104 firms for the following reasons:

- i. Some firms did not publish their financial reports during the study period in the press (eg., Jordan Tourism and SPA Complex, Jordan Marketing Corporation).
- ii. Some firms were established very recently and therefore their financial reports and share prices were not available over the full period (eg., Jordan Industrial Resources).
- iii. Some companies were suspended from trading by a decision of the Economic Security Committee (eg., Jordan Gulf Bank).

In addition, three criteria were used in the selection of the final sample firms:

1. The firm must be listed in Amman Financial Market (AFM).
2. No stock splits were announced during the test period.
3. The firm must be relatively frequently traded (see Section 6.2.8).

The final number of firms included after the above eliminations and selection criteria decreased from 104 to 48. The final sample of firms used in this study are shown in Tables 6.2 and Table B.1 Appendix B.

**Table 6.2: Distribution of the Final Sample**

<b>Economic Sector</b>	<b>No. of Companies</b>
Banks and Financial Companies	9
Insurance Companies	2
Services Companies	9
Industrial Companies	28
<b>Total</b>	<b>48</b>

### 6.2.3 Classification of Study Sample (Control and Experimental Group)

In order to test our hypotheses, the stocks were broken into two major portfolios (control and experimental group) depending on whether the firms adopted IASs or not. The experimental group comprises firms that voluntarily adopted IAS in 1990. The control group comprises firms that did not adopt IAS in 1990. To find out which Jordanian companies adopted IAS the annual reports of Jordanian companies listed on AFM (study sample) were examined carefully and in detail. It was discovered that 31 companies out of the 48 adopted IAS and the rest did not adopt IASs (as shown in Table B.2 in Appendix B). A basic classification of the study samples is presented in Table 6.3. For further sensitivity analysis the two main portfolios were further divided into subportfolios according to economic sectors, trading pattern, firm ownership, firm size and firm performance [as shown in Table 6.4 (for more details see Appendix B)].

**Table 6.3: Classification of Study Sample (Control and Experimental Group)**

	Adoption IAS (1989)	Adoption IAS (1990)	No. of Companies
Control Group	No	No	17
Experimental Group	No	Yes	31
Total			48

**Table 6.4: Subportfolios**

Variable	Category	Control Group	Experimental Group	Total
<b>All Firms (Study Sample)</b>		17	31	48
<b>Economic Sector</b>	Banks and Financial Sector	3	6	9
	Insurance Sector	-	2	2
	Service Sector	5	4	9
	Industrial Sector	9	19	28
<b>Total</b>		17	31	48
<b>Trading Frequency *</b>	Low Traded Firms	10	10	20
	Heavily traded Firms	7	21	28
<b>Total</b>		17	31	48
<b>Firm Size **</b>	Small Size Firms	11	27	38
	Large Size Firms	6	4	10
<b>Total</b>		17	31	48
<b>Firm Ownership ***</b>	Domestic Ownership Firms	11	21	32
	Foreign Ownership Firms	6	10	16
<b>Total</b>		17	31	48
<b>Firm Performance +</b>	Winner Firms	15	24	39
	Loser Firms	2	7	9
<b>Total</b>		17	31	48

- \* Low Traded Firms = Firms with less than 300 trading days (during 1990 and 1991) (See Appendix B Table B.4)  
 Heavily Traded Firms = Firms with 300 or more trading days (during 1990 and 1991) (See appendix B Table B.4)
- \*\* Small Size Firms = Firms with total assets of 70,000,000 or less JD (at end of 1990) (see Appendix B Tables B.5 and B.6)  
 Large Size Firms = Firms with total assets of more than 70,000,000 JD (at end of 1990) (see Appendix B Tables B.5 and B.6)
- \*\*\* Domestic Ownership Firms = Firms in which domestic investors are the major shareholders. (See Appendix B Table B.7)  
 Foreign Ownership Firms = Firms in which foreign ownership %  $\geq$  25% (See Appendix B Table B.7)
- + Winner Firms = Firms with positive earnings results (at end of 1990) [see Appendix B Tables B.5 and B.6]  
 Loser Firms = Firms with negative earnings results (at end of 1990) [see Appendix B Tables B.5 and B.6]

**Chi-square test on sample characteristics and IAS adoption**

Since the research methodology employs the construction of subsamples it would seem appropriate to run some tests of whether the classification characteristics of the subsamples are associated with the decision to adopt IASs. Hence, chi-square test were undertaken and the results are presented in Table 6.5.

**Table 6.5: Chi-Square Test Results**

Categories	Chi-Square	DF	Prob.
<b>Economic Sectors</b> (financial, service and industrial sectors)	1.665	2	0.435
<b>Trading Pattern</b> (low traded firms and heavily traded firms)	3.188	1	0.074
<b>Firm Size</b> (small firms and large firms)	3.337	1	0.068
<b>Firm Ownership</b> (domestic owned firms and foreign owned firms)	0.046	1	0.831
<b>Firm Performance</b> (winner firms and loser firms)	0.843	1	0.359

DF = Degrees of Freedom

As can be seen from the Table 6.5 there is no significant relationship at 5 percent level between the decision to adopt IASs and any of the subsamples categories.

### **Characteristics of firms most likely to adopt IASs**

According to the chi-square tests in Table 6.5 there appears to be no significant relationship between the decision to adopt IASs and any of the subsample categories. Adoption is therefore either random or determined by some factors outside the scope of this study. This (rather surprising) result is actually an aid to interpreting results, which can be taken more at face value than if the decision to adopt IASs was associated with particular firm characteristics.

In analysing share price reactions to disclosure of companies' financial reports it is assumed that the higher the level of disclosure, the larger the information content, and vice versa. Since IASs increase the level of information disclosure for the Jordanian companies (see Chapter 4 Section 4.5.1) the anticipation is for higher information content for the experimental group of 1991 than for the experimental group of 1990.

## **Rationale**

This section provides reasons for the classification of subsamples used in this research.

### **i. Potential growth in earnings**

Potential growth in earnings is a factor taken into consideration by the market. To convey information about their companies' future prospects to the public, managers use different signalling devices. One of the most important signalling devices available are corporate financial statements. Therefore, the disclosure of accounting information (such as net profit, dividends, retained earnings) via financial statements by a company is one of the signals by which the market comes to know about future potential growth in earning. Since IASs increase the level of disclosure (see Chapter 4 Section 4.5.1) then the information signals should increase too. Therefore we expect to observe abnormal returns for the experimental group (IAS adopters) but not for control group (IAS non-adopters).

### **ii. Company size**

Company size is another factor taken into consideration by the market. Buzby(1974a) found that the extent of financial disclosure in US was positively associated with the size of a company's assets. Firth (1979), examining UK firms, found that both size and stock market listing variables were related to disclosure, but that size and status of a company's auditors had no impact. Companies with a stock market listing released significantly more information than companies that were unlisted. He also found that large companies tend to disclose more information in their annual reports than small companies. Kahi and Belkaoui (1981) investigated the



overall extent of disclosure by banks located in 18 countries. They concluded that there is a positive correlation between asset size and extent of disclosure. Yet another study [Atiase (1985)] shows that the information content of earnings announcement is associated with size of the firm. Cooke (1989a), using 90 Swedish annual reports including both listed and unlisted corporations, examined the effects of five variables on disclosure: total asset size, annual sales, parent company relationship, quotation status, and number of shareholders. He found that the extent of disclosure is significantly associated with firm size, and associated with listing status. Cooke (1992), using 35 Japanese annual reports listed corporations, investigated the influence of size, stock market listing and industry type on the extent of disclosure (both voluntary and mandatory) in the annual reports. He, again, found that size and listing status are important explanatory variables. He also found that manufacturing companies disclosed significantly more information than other types of Japanese corporations.

In summary, accordingly most previous studies into the matter show that the extent of disclosure is significantly associated with firm size with large companies disclosing more information than small ones. Since IASs increase the level of information disclosure for Jordanian firms we expect a higher level of disclosure for small firms after adoption IAS. Therefore, we expect to observe abnormal returns for small firms in the experimental group but not for large firms.

### **iii. Company Ownership**

Salamon and Smith (1979) found that the relationship between accounting information signals and share prices is influenced by the companies' ownership. In the literature it has been argued that IAS adoption is an accounting change which affects and benefits the foreign owners more than local owners (for more details see Chapter four). An opposite view is put forward by Tang (1994) who argues that IASs adoption

benefits both foreign and local users. He states that;

*"another misunderstanding is that needs for harmonization focus narrowly on foreign users, often neglecting the needs of local users and the effects of accounting changes on local affected groups. The harmonization of accounting standards usually means a change of local standards in favour of international standards. The change not only affects foreign users, but local groups as well. The change may seriously affect the interests of particular local groups."*

By constructing portfolios of foreign-owned and domestic-owned firms it will be possible to test which of these two views is correct.

iv. **Economic Sector**

Table 4.1 (which summarises differences between Jordanian accounting practices and IASs) shows differences in disclosure by industry (eg. for segmental reporting). The economic sector subportfolios will allow examination of how each sector reacted to IASs.

v. **Trading frequency**

There may be an association between level of financial disclosure and trading frequency. Therefore subportfolios for high-traded and low-traded firms are employed in this study. Note that a low-traded firm is defined in this study as one traded has "less than 300 days during 1990 and 1991 but more than 199". This is for methodological reasons (See Section 6.2.4).

vi. **Firm performance**

It is possible that high (low) performing firms would wish to disclose more (less) information than low (high) performing firms. To test for such an effect subportfolios are constructed for "winners" and "losers" according to whether firms reported profits

or losses in 1990.

#### 6.2.4 Trading Frequency on the AFM

The trading days for all firms listed on the Amman Financial Market (AFM) during the study period from (January 1, 1990 to December 31, 1991) were examined. The data in Table B.3 in Appendix B, Table 6.6 and Table 6.7 show the trading patterns at the AFM.

Table 6.6 shows the distribution of trading days categorised into 5 sub-periods, each sub-period covering 99 days (except the fifth one which covers 94 days). Table 6.7 provides a summary of trading frequency of stocks, divided into three categories of trading (frequent, moderate and infrequent). The trading profile for the complete study sample is shown in Appendix B Table B.4.

The following points should be noted:

1. Total number of trading days during the study period was 494 days (248 days in 1990 and 246 days in 1991);
2. Stocks are well represented across the spectrum of trading frequency in the sample. Some are traded very frequently, some moderately frequently, and some very infrequently.

**Table 6.6: Trading Days Distribution of Jordanian Stocks**

No of Trading Days	No of Firms	Percent of Firms	Cumulative % of Firms
0 - 99	38	36.54	36.54
100 - 199	12	11.54	48.08
200 - 299	5	04.81	52.89
300 - 399	20	19.23	72.12
400 - 494	29	27.88	100
<b>Total</b>	104	100%	100%

**Table 6.7: Jordanian Stock Classified According to Trading Frequency**

Trading Profile	No. of Days	No of Firms	% of Firms
Very Heavily Traded	420-494	29	27.88
Moderately Traded	200-419	25	24.04
Less Heavily Traded	0-199	50	48.08
<b>Total</b>		104	100%

As shown in Table 6.7, on average 28% of stocks are traded very frequently, 24% of stocks are moderately traded and the majority 48% are less frequently traded. It is clear from these patterns that thin trading is a characteristic of on the Amman Financial Market. Thin trading (non trading) can be a problem in an event study. In this regard Strong (1992) states that:

*" In particular, infrequently traded shares have a beta estimate that is biased downwards, while for frequently traded shares the bias is upwards".*

This problem of bias will inevitably be exacerbated as the return measurement interval is reduced and will therefore be greatest when using daily data. Biased beta estimates have the potential to cause biased estimates of abnormal returns and consequently misspecified test statistics in event studies (Strong, 1992). To overcome the problem of beta bias a number of methods have been proposed in the literature [Scholes and Williams, 1977; Dimson, 1979; Cadel and Theobald, 1980; and Fowler et al., 1980] including the following:

- i. The "aggregated coefficients" method, According to this method, beta is estimated by summing the coincident, lagged and leading betas from a multiple regression of month end security returns on coincident, lagged and leading market returns [see Scholes and Williams (1977)].
- ii. Estimate betas on the basis of variable-rather than fixed-length periods, where each period is the time between adjacent recorded prices. The return on the index

is calculated over the same period and the market model parameters are estimated using these paired observations [see Dimson (1979)].

- iii. By using only stocks which are frequently traded, [see Cadle and Theobald (1981)].

Fowler et al., (1980) presents some evidence of the thin trading problem on the Toronto Stock Exchange. To overcome the biased beta problem they used the Scholes and Williams (1977) method. They (Fowler et al.) conclude that:

*"In general, the OLS beta estimates seem to be better than those produced using any of the bias correcting techniques... overall, there does not yet exist a technique that seems to have general applicability and effectiveness in reducing thin trading induced bias so as to produce any significant improvement over the OLS estimator....it is quiet clear from the results presented that for most circumstances OLS provides the best overall beta estimates".*

Also, Strong (1992) points out that:

*"Although the OLS market model abnormal return may be biased for an individual security, in an event study, the bias in conditional abnormal returns may average out to zero in the sample."*

Hence, to overcome the beta bias problem, the last method is used in this study, using only stocks which are frequently traded [following Cadle and Theobald (1980)]. The sample companies were drawn from 28 very heavily traded companies, except one (Arab Bank) because of stock splits announcement during the study period, and 20 companies from the moderately traded, to arrive at a final sample of 48 companies out of the 104 companies listed in AFM.

### **6.2.5 Announcement Dates**

Since the study deals with the impact of the disclosure of accounting reports prepared according to the old accounting rules [Jordanian accounting rules (JAR)] and according to new accounting standards (IAS), details of the precise dates on which the

reports were actually released to the market is essential (Brown and Warner 1980 and 1985). Furthermore, Strong(1992) points out:

*"The ability to detect information content in an event study may be considerably enhanced if the precise event day for the sample securities can be established"*

For the purpose of this study, the dates of accounts releases were obtained from the Jordanian daily newspapers. These dates are shown in Table B.8 Appendix B.

### **6.2.6 Time Lags**

The time lag between the end of the financial year and the date of announcement of the firms' annual reports range from three to six months. The lags between accounting year end and release of reports for the study sample are shown in Table B.9 in Appendix B. As can be seen, the lags are considerable. The long lags open the door to possible information leakage, especially in Jordanian society where personal relationships are very strong. Jordan is a small country, so it might be easy to obtain information from non-accounting sources, such as personal contacts. In Jordan people tend to know each other so it may be possible for some participants in the stock market to obtain information from bank managers, company officers...etc, which, in turn, will reduce the impact of published accounting reports.

### **6.2.7 Regression Analysis**

In order to estimate the parameters of the market model, daily share prices of Jordanian companies traded in the stock market and the daily market index published by the Amman Financial Market were collected. The market is still in its infancy and lacks a computerised system and experienced management staff. Thus much work had to be undertaken in order to create and build up a suitable database. After collecting the data, several steps were undertaken before the statistical analysis was possible. It

is worth mentioning and describing the most important of these steps:

1. The companies were each assigned a code, codes ranging from 000 to 103.
2. All the figures recorded on the Amman Stock Market lists in Indian numerals were translated into Arabic (English) numerals.
3. All the data were checked and rechecked again to eliminate any errors.
4. Finally, the data were manually put into machine-readable format for feeding into the computer. The data were again checked for fresh errors introduced by this procedure. This stage was very time consuming !

One might reasonably query the reliability of share price data drawn from Jordanian financial market for the following reasons:

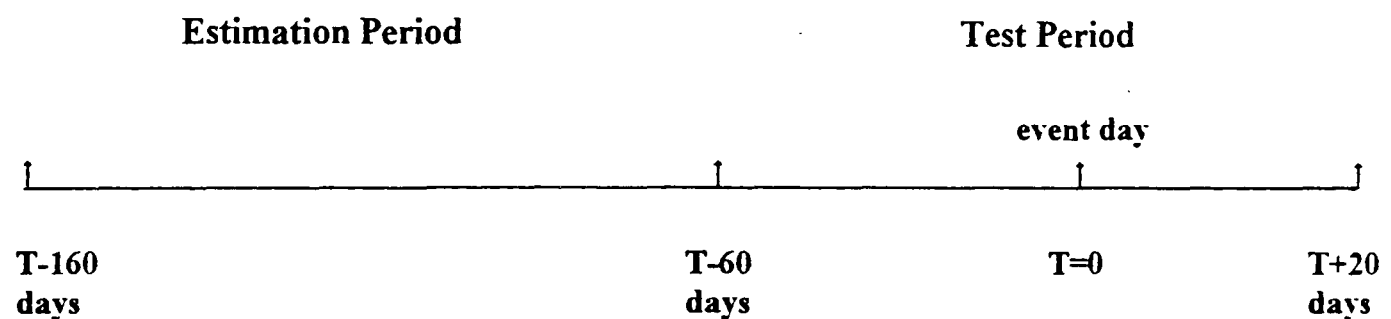
- i. Transaction prices are recorded by hand on a blackboard and the price list is typed up later.
- ii. Closing prices are based on the last transaction.
- iii. There are some missing price observations. Missing prices are replaced by the last recorded closing share prices. This has the potential to increase the dependence between successive price changes, i.e. reduce the degree of randomness. It should, however, be noted that the problem of missing data is a common one for most market studies of share price behaviour.
- iv. In comparison with UK or USA, the Amman Financial Market is a small, thin, new market.

In order to ensure the reliability of the data prior to analysis, they were verified at every stage of the study and double checked against several sources, (including the Amman Financial Market and the newspapers) for any errors. Some comfort can be taken from the fact that the different sources always reported the same prices (presumably because they were drawn from the same original source).

The parameters of the market model were calculated by regressing each stock's daily return on the corresponding daily returns from the market daily index using the

ordinary least square (OLS) estimation method. Each regression used 100 daily observations immediately preceding the test period as shown in Figure 6.1. The market model parameter estimations for the study sample are presented in Chapter 8 (Tables 8.1 and 8.2).

**Figure 6.1: Parameter Estimation and Test Period**



### 6.2.8 Research Questions

The following questions provide the basis for the line of enquiry followed in this study:

- Q1. With the introduction of IASs, has the accounting information changed in a way that is observable in price formation?
- Q2. Do earnings figures releases based on the IASs have higher information content than earnings figures releases based on Jordan Accounting Rules (JARs)?
- Q3. Do price reactions vary between economic sectors?
- Q4. Is price reaction associated with trading frequency?
- Q5. Is price reaction associated with size of company?
- Q6. Is price reaction associated with company ownership patterns (domestic or foreign owned)?



Q7. Is price reaction associated with company performance?

### 6.2.9 Research Hypotheses

In order to answer these questions empirically the following hypotheses are set up in relation to stock price behaviour around the release dates of the annual financial reports. The hypotheses are stated in null form:

$H_{01}$ : The change in accounting regimes has no effect on price movement.

$H_{02}$ : For all firms (study sample) earnings releases based on IAS in period  $t$  (1991) do not have price reactions which differ to those from firms with earnings releases based on a Jordanian accounting rules used in period  $t-1$  (1990). i.e., the average abnormal returns for the event window in period  $t$  are not significantly different from the average abnormal returns for the event windows in the period  $t-1$ , or

$$H_{02}: AR_{IAS} = AR_{JAR}$$

where :

$AR_{IAS}$  = average abnormal returns based on the international accounting standards for event window  $t_0$  (1991).

$AR_{JAR}$  = average abnormal returns based on the Jordanian accounting rules for event windows  $t_{-1}$  (1990).

In addition to the above major hypotheses, the following supplementary hypotheses are identified:

#### Hypotheses 3 to 11

These are basically the same as  $H_{02}$  (i.e., that 1990 and 1991 earnings based on IAS and JAR do not have different share price movement) but apply to different subsamples as follows:

$H_{03}$ : (financial sector)

$H_{04}$ : (service sector)

$H_{05}$ : (industrial sector)

- $H_{06}$ : (low traded firms)
- $H_{07}$ : (heavily traded firms)
- $H_{08}$ : (small size firms)
- $H_{09}$ : (large size firms)
- $H_{010}$ : (domestic ownership firms)
- $H_{011}$ : (foreign ownership firms)
- $H_{012}$ : Winner firms do not have positive abnormal returns in period  $t$  (1991) as well as period  $t-1$  (1990)
- $H_{013}$ : Loser firms do not have negative abnormal returns in period  $t$  (1991) as well as period  $t-1$  (1990)

### 6.3 RESEARCH METHODOLOGY

This section describe the methodology used to examine the changes in market prices associated with the change to new accounting standards (IAS) from the old accounting rules of Jordanian firms.

#### 6.3.1 Research Models

Many methods are available to test our hypotheses. This study employs the market model (presented in this section) but also the average return model and raw return model (Section 6.3.7).

Basically, the market model states that individual security returns can be expressed as a linear function of general market returns. The capital market model was selected for use in this study for the following reasons:

1. The model is simple. It involve two variables, return on the market portfolio and return on the stock, which is in keeping with the analytical style of relatively unsophisticated investors. There is much support for the model in the literature.

For example Roll (1977) concludes that:

*"the best way to do an event study is by using the simple market model"*

More recently, Brown and Warner (1980) show that simple models such as market model and average return model, perform at least as well as more complex models. They state that:

*"... a simple methodology based on the market model performs well under a wide variety of conditions. In some situations, even simpler methods which do not explicitly adjust for market wide factors or for risk perform no worse than the market model."*

Furthermore, Dyckman et. al. (1984) find a slight preference for the market model over other procedures .

2. The model can discriminate between two types of events influencing a stock's return; The rate of return on the market portfolio ( $R_{m,t}$ ) is presumed to capture variables that affect the rates of return of all assets, and the disturbance (error) term  $\epsilon_{i,t}$  is presumed to capture variables that only affect the rate of return on asset  $i$  ( $R_{i,t}$ ). In other words, in terms of the general model, the effects of all the other unspecified variables are impounded in the error terms.
3. There is wide acceptance of the model (theoretically and empirically) for generating residual returns. Strong (1992) states that:

*"The Market Model (MM) has probably been the most popular benchmark employed in event studies."*

4. The model facilitates powerful statistical test. In this respect Strong (1992) points out:

*" it results in smaller variances of abnormal returns (relative to raw returns), leading to more powerful statistical tests, and that it produces smaller correlations across security abnormal returns giving closer conformity to standard statistical test".*

### 6.3.2 Measurement Intervals

Various measurement intervals have been employed in the literature for

computing returns, popular intervals being monthly, weekly and daily intervals. In this study daily data are used for the following reasons:

- i. Using daily data provides a sufficient number of observations. Therefore, there is no need to worry about thin trading or non-normality. Brown and Warner (1980) find that although daily security returns and abnormal returns typically depart from normality, mean abnormal returns across securities converge to normality as the size of the samples increases. The findings of Dyckman et. al. (1984) on daily data reinforce the views of Brown and Warner. They (Dyckman et. al.) find a slight preference for the market model over other procedures and demonstrate that any non-normality of daily abnormal returns has little effect on event study tests. Moreover, Morse (1984) examined the econometric trade-off between the choice of monthly and daily data from an analytical perspective. Morse's results generally support the choice of a shorter measurement interval to detect information effects.
- ii. Both Brown and Warner (1985) and Dyckman et al. (1984) show that use of daily data produce more powerful test statistics than monthly data.
- iii. On a daily basis the impact of a particular event can be more clearly identified than over a longer period (Brown and Warner, 1980).

### 6.3.3 Event Dates

The actual day of earnings announcements is defined as  $t=0$ , and subsequent time is measured relative to it. Thus different companies reporting at different calendar dates can be grouped in the same event time. Day  $t=1$  is defined as the trading day immediately following the reports release day. Day  $t-1$  is the trading day immediately preceding the reports release day, and so forth. If day  $t$  coincides with a holiday, the successive first trading day is used as day  $t=0$ .

### 6.3.4 Estimation Period

As mentioned in section 6.2.7 the estimation period for the parameters include 100 days before the event window (see Figure 6.1). This is consistent with Peterson (1989) who points out that:

*"the typical lengths of estimation period range from 100 to 300 day for daily studies"*.

In order to examine whether or not the results differ on the basis of number of observations used in the estimation process, other estimation periods were also used (50 and 150 days before the event day). The empirical results from these tests were similar to those from using a 100 day estimation period and are therefore not presented in this thesis.

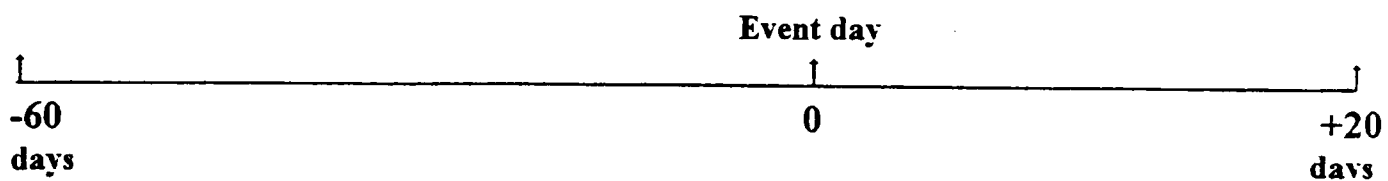
### 6.3.5 Test Period

The period examined in detail for the purpose of this study is thus 81 days in length, consisting of the actual day of the release (announcement day) of the annual reports in the newspaper ( $t=0$ ), the 20 trading days immediately following the event day and 60 trading days immediately preceding it as shown in Figure 6.2. A period of this particular length was chosen for three reasons:

1. The available evidence on capital market semi-strong form efficiency indicates that the impact of new information with economic value is fully reflected in share prices within a few days [for example, the rapid daily stock price reaction to dividend announcements described in Foster (1986) and Fama, Fisher, Jensen and Roll (1969)].
2. On the other hand there is evidence that the Jordanian Stock Market is less than efficient [Errunza and Losq (1985) and Al-Homud (1987)]. There is also the possibility of extensive information leakage (see Section 6.2.6).

3. This choice of test period length is consistent with Peterson (1989) who states *"the typical lengths of event window range from 21 to 121 days for daily studies"*.

**Figure 6.2: The Test Period**



### **6.3.6 Average Abnormal Returns (AARs) and Cumulative Abnormal Returns (CARs)**

To test the hypotheses, differences between information content as reflected in price reaction surrounding the release of the experimental group's 1990 and 1991 reports are examined and compared to that of the control group. The information content of earnings releases is measured by the Abnormal Return ( $AR_{it}$ ) and the unexpected security price revisions associated with the firms' earnings releases by the Cumulative Abnormal Return ( $CAR_t$ ). The procedures of calculating the average abnormal returns (AARs) and associated CARs are presented in this section.

#### **6.3.6.1 Calculation of average abnormal returns**

##### **Calculation of normal (estimated) returns**

In order to measure abnormal returns for a period of 60 days before the annual earnings announcement day to 20 days after the announcement a model is required to

generate the normal (estimated) returns. The "normal" returns in this study are generated by the market model:

$$R_{it} = \alpha_i + \beta_i R_{mt} + e_{it} \quad (6.1)$$

where:

- $R_{it}$  = the return on stock  $i$  for day  $t$ ;
- $R_{mt}$  = the return on the value-weighted market portfolio for day  $t$ ;
- $e_{it}$  = the residual return on stock  $i$  for day  $t$ ;
- $\alpha_i$  = the regression intercept;
- $\beta_i$  = the beta coefficient of the regression.

### Calculation of returns

#### i. Return on stock

The rate of return of each stock is measured in two ways. The first uses discrete returns according to the following equation:

$$R_{it} = \frac{P_{it} - P_{it-1}}{P_{it-1}} \quad (6.2)$$

where:

- $R_{it}$  = the rate of return on stock  $i$  at day  $t$ ;
- $P_{it}$  = the closing price of security  $i$  at day  $t$ ;
- $P_{it-1}$  = the closing price of security  $i$  at day  $t-1$ .

The second procedure uses continuously compounded returns (logarithmic) according to the following equation:

$$R_{it} = \text{Log}[(P_{it})/P_{it-1}] \quad (6.3)$$

There are however both theoretical and empirical reasons for preferring logarithmic returns. From a theoretical point of view, logarithmic returns are analytically more

tractable when linking together sub-period returns to form returns over longer intervals (sub-period returns can simply be added). Furthermore, logarithmic returns are more likely to be normally distributed and thus conform to assumptions of standard statistical techniques.

It should be noted that the equation used in most other studies in calculating the return during period  $t$  is as follows:

$$R_{it} = \frac{P_{it} + D_{it} - P_{i,t-1}}{P_{i,t-1}} \quad (6.4)$$

where:

$R_{it}$	=	the rate of return on stock $i$ at period $t$ ;
$D_{it}$	=	dividends paid during period $t$ ;
$P_{it}$	=	the closing price of security $i$ at period $t$ ;
$P_{i,t-1}$	=	the closing price of security $i$ at period $t-1$ .

In markets where dividend data are not available or is insignificant relative to price change, the procedure adopted is to consider  $D_t$  as equal to zero. This approach [adopted by Solnic (1973) when testing the Netherlands, Sweden and Switzerland stock markets and Officer (1975) in testing the Australian stock market] was adopted in this study and for the same reasons.

## ii. Return on the market

The rate of return of the market is measured by one of the following equations:

$$R_{mt} = \frac{I_{mt} - I_{mt-1}}{I_{mt-1}} \quad (6.5)$$

$$R_{mt} = \log I_{mt} - \log I_{mt-1} \quad (6.6)$$



where:

- $R_{mt}$  = the rate of return on the market at day  $t$ .  
 $I_{mt}$  = the market index at day  $t$ .  
 $I_{mt-1}$  = the market index at day  $t-1$ .

By using the regression parameter estimates, a prediction is made for each of the 81 days surrounding the announcement date. The parameters  $\alpha_i$  and  $\beta_i$  were estimated over the period  $-160$  to  $-101$  days before the announcement (results are presented in Chapter 8, Tables 8.1 and 8.2).

### Calculation of excess returns

Excess returns for each individual stock (from 60 trading days before to 20 days after the event day) are calculated as:

$$e_{it} = R_{it} - (\alpha_i + \beta_i R_{mt}) \quad (6.7)$$

The resulting residual terms (the deviations between the 81 actual daily observations and the regression estimates) impound all the factors influencing the firm during the period surrounding the accounting standards change independent of general market movements.

This technique is not suitable for a detailed assessment of the impact of the accounting standards change on individual firms because estimates for a specific firms are highly uncertain. Thus this study focuses on the general effect of the accounting standards change and employs an averaging process to abstract the general trend from the individual firm fluctuations.

### Calculation of average abnormal returns

The excess returns for each subportfolio group (control and experimental) for each year's report (1990, 1991) were averaged (over the test period) cross-sectionally to arrive at average residuals. The average residual for day  $t$ , ( $\bar{AR}_t$ ), is defined as:

$$\bar{AR}_t = \frac{1}{N} \sum_{i=1}^N e_{it} \quad (6.8)$$

Where:

- $e_{it}$  = the residual from the regression for company  $i$  in day  $t$ .
- $N$  = the sample size and the number of firms for each subportfolio group.

#### 6.3.6.2 Calculation of cumulative abnormal returns

The average residuals are then cumulated over the test period (*81 days*) for sample firms and for each subportfolio group (control and experimental) for each year's report (1990, 1991) to form cumulative average abnormal returns (CARs). In this respect Strong (1992) points out that:

*"Almost all event studies call for abnormal returns to be cumulated over a number of periods. This may be in order to fully capture the effect of an event on share prices, or to accommodate uncertainty over exact date of the event.... A further reason for computing abnormal returns over a longer interval arises in some event studies from the need to specify an expectations benchmark for the accounting disclosure."*

The CAR (from days K to L) is defined as:

$$CAR_{KL} = \sum_{t=k}^L \bar{AR}_t \quad (6.9)$$

### 6.3.7 Further Models

Brenner (1979) examines different models and concludes:

*"If 'practical' differences are required we may, depending on what is considered 'practical', conclude that the different models do not lead to different conclusions."*

Brown and Warner (1980) show that simple models, such as the market model, perform at least as well as more complex models. Nevertheless, to confirm the results obtained with the market model, other models are used in this study. They are the average return model (the procedure is the same as in market model, except that instead of using equation (6.1) to estimate the model parameters, the regression intercept,  $\alpha_i$ , is defined to be zero, and the regression slope,  $\beta_i$  is defined to be one) and the raw return model (under this model, the regression intercepts,  $\alpha_i$  and  $\beta_i$  are defined to be zero). The empirical results from using the market model and these additional models are presented in Chapter 8.

### 6.3.8 Market Reaction Tests (Tests of Significance)

Each average residual was t-tested to determine whether the return for that day was of unusual size, Brown and Warner (1980) put forward the view that:

*"t-tests are reasonably well-specified; but certain non-parametric tests are not"*

Justification for this aspect methodology is provided by Strong (1992) who concluded:

*"If the sample securities have no unrepresentative exposure to extra-market factors and event dates are diffusely spread out in calendar time for the sample securities, then calculating abnormal returns using the ordinary least squares market model and using standard parametric statistical tests appears to be a well-specified procedure."*

The t-test was of form  $AR_t / Sd_t$ , where  $Sd_t$  is the standard deviation of the abnormal returns ( $AR_t$ ) across time from -60 to 20 (test period). The standard deviation computed

as follows:

$$SD_t(AR) = \sqrt{\frac{\sum_{i=1}^n (AR_{it} - \bar{AR}_t)^2}{n-1}} \quad (6.10)$$

The change in the CAR is tested for significance using the methodology described in Brenner (1979), with a t-test:

$$t = \frac{CAR_{KL}}{CSD_{KL}} \quad (6.11)$$

where:

- CAR<sub>KL</sub> = Cumulative Average Abnormal Return from day K to L.
- CSD<sub>KL</sub> = Cumulative Standard Deviation from day K to L.

The cumulative *SD* is computed as follows:

$$CSD_T(AR) = \sqrt{\frac{\sum_{t=1}^T \sum_{i=1}^N (AR_{it} - \bar{AR}_t)^2}{n-1}} \quad (6.12)$$

The CARs t-test results for the experimental and control groups over various subintervals are presented in Tables 8.3 to 8.14 in Chapter 8.

## 6.4 SUMMARY

This chapter has presented and discussed the model, hypotheses and tests employed in this study to investigate stock market reactions for the 48 firms included in this study. The proposed use of subportfolios for examining the effect of IAS adoptions by particular sectors of the market is also explained. Specifically, the aim is to examine the changes in market prices brought about by the change to new accounting standards (International Accounting Standards) from the old accounting rules of Jordanian firms listed on Jordanian stock market. The results obtained are described and presented in Chapter 8 and interpretation of results follows in Chapter 9.

# CHAPTER SEVEN

## DESCRIPTIVE STATISTICS AND PRELIMINARY ANALYSIS

### 7.1 INTRODUCTION

Chapter six presented the methodology used for testing and estimating information content reactions in relation to adoption new standards (IAS) announcements.

The purpose of this chapter is:

- i. to identify the specific events underlying the empirical examination; and
- ii. to present a descriptive analysis of the data and to describe the diagnostic test procedures which will be used to determine the specification of the empirical model of the returns generating process.

This chapter is divided into three sections and each are dealing with a different aspect of share price data analysis. Section 7.2 presents the descriptive statistics for the Jordanian companies share price data. Section 7.3 presents the diagnostic test results relating to the statistical assumptions underlying the regression model. Finally, Section 7.4 provides a summary and the conclusions from preliminary analysis.

## 7.2 DESCRIPTIVE ANALYSIS OF RAW RETURNS

### 7.2.1 Summary Statistics

The study is based upon a sample of annual earnings announcements released by 48 companies listed in AFM during the years 1990 and 1991. The study period covers 181 days, the estimation period covers 100 trading days and the test period covers 81 days (60 days prior to the announcement date and 20 days after), (for more details see Chapter 6 Sections 6.2.8, 6.3.4 and 6.3.5).

As the AFM is still in its infancy, it lacks a computerised system and experienced management staff. Thus much work had to be undertaken in order to create and build up a suitable database. Daily share prices of the Jordanian companies traded in the stock market and the daily market index published by the Amman Financial Market were collected, and processed according to the method described in Chapter 6 Section (6.2.8).

Tables 7.1 and 7.2 provide summary statistics for the study sample. For each company, the tables show sample estimates of the mean, standard deviation, skewness and kurtosis coefficients calculated from the 100 daily returns available for the shares of each company during the estimation period. Formulas for these calculations are as follows:

Sample mean for company 'i' :

$$R_i = \sum R_{it} / R$$

Sample standard deviation for company 'i':

$$S_i = \sqrt{\frac{\sum^n (R_{it} - \bar{R}_i)^2}{n-1}}$$

Sample skewness coefficient for company 'i':

$$SK_i = \frac{\sum^n (R_{it} - \bar{R}_i)^3 / (n-1)}{S_i^3}$$

Sample kurtosis coefficient for company 'i':

$$KU_i = \frac{\sum^n (R_{it} - \bar{R}_i)^4 / (n-1)}{S_i^4}$$

where:

$R_{it}$  = return on shares of company 'i' on day 't';

$n$  = number of observations.



**TABLE 7.1: Summary Statistics for The Study Sample (1990)**

No.	Mean	Standard Deviation	Min.	Max.	Skewness	Kurtosis	Cases
1	-0.00094136	0.0114246	-0.022727	0.022989	0.22287	3.1500	100
2	-0.00004408	0.0131409	-0.051502	0.050459	0.04372	7.9727	100
3	0.00004281	0.0100109	-0.072165	0.057937	-1.79816	38.8603	100
4	-0.00277331	0.0172463	-0.088889	0.048780	-0.75730	8.1991	100
5	-0.00152680	0.0240728	-0.155556	0.171875	1.09391	44.1658	100
6	-0.00105853	0.0161061	-0.046875	0.032258	-0.02136	2.0374	100
7	-0.00191430	0.0197283	-0.138889	0.037383	-3.23513	24.1679	100
8	-0.00325585	0.0197137	-0.106667	0.111111	0.59997	19.7133	100
9	-0.00162496	0.0143379	-0.036364	0.025397	-0.02802	1.9557	100
10	0.00074814	0.0114242	-0.042553	0.050000	0.65529	7.8482	100
11	-0.00454831	0.0146813	-0.050725	0.030534	0.17722	2.8149	100
12	-0.00044519	0.0191614	-0.093023	0.115385	1.12107	19.4387	100
13	0.00034308	0.0166643	-0.040268	0.044118	0.38207	2.6541	100
14	0.00088136	0.0130545	-0.075061	0.058974	-0.62290	17.3381	100
15	-0.00256647	0.0258005	-0.154545	0.105263	-1.10930	15.8937	100
16	-0.00247901	0.0383941	-0.189189	0.200000	0.37547	13.9048	100
17	-0.00416083	0.0183115	-0.038461	0.029412	0.27509	1.7822	100
18	-0.00178588	0.0113539	-0.026667	0.028169	0.21556	2.1979	100
19	-0.00206220	0.0159587	-0.022222	0.032787	0.30732	1.6685	100
20	-0.00066019	0.0112911	-0.026316	0.052632	0.87863	8.4314	100
21	0.00085583	0.0227758	-0.121739	0.138614	0.64563	22.2957	100
22	0.00231973	0.0103023	-0.023622	0.027523	0.23205	3.5372	100
23	0.00066083	0.0126151	-0.048000	0.071429	1.25546	13.2571	100
24	0.00029610	0.0165164	-0.022026	0.039216	0.14665	1.7484	100
25	-0.00034787	0.0137509	-0.039261	0.038186	0.23895	2.8741	100
26	0.00060979	0.0094679	-0.020202	0.043636	0.89902	7.3406	100
27	0.00008881	0.0221810	-0.082192	0.109375	0.39647	10.1244	100
28	0.00003017	0.0439848	-0.265233	0.334928	2.23919	47.3186	100
29	-0.00233160	0.0142226	-0.038961	0.041379	0.19764	2.8682	100
30	-0.00218211	0.0173353	-0.034884	0.041885	0.26781	1.9247	100
31	-0.00119887	0.0240551	-0.100000	0.125000	0.75024	12.1133	100
32	0.00099210	0.0240796	-0.129344	0.140969	0.36824	20.7596	100
33	-0.00357738	0.0284675	-0.128571	0.122807	0.44467	12.1107	100
34	0.00288990	0.0151543	-0.030418	0.040486	-0.11707	2.1090	100
35	-0.00013252	0.0108172	-0.022727	0.020000	-0.01762	2.7750	100
36	0.00113411	0.0446337	-0.229167	0.270270	1.01120	22.9249	100
37	-0.00239658	0.0165805	-0.043103	0.022124	0.13358	1.7922	100
38	0.00017858	0.0135812	-0.065217	0.045454	-0.78041	7.9818	100
39	-0.00328459	0.0172473	-0.043956	0.041451	0.31536	1.9676	100
40	0.00143389	0.0171060	-0.038328	0.050000	0.09479	2.2914	100
41	0.00636812	0.0315709	-0.169742	0.163090	-0.24859	17.0431	100
42	-0.00210492	0.0464645	-0.272727	0.346939	2.28638	43.8059	100
43	-0.00262048	0.0540690	-0.186047	0.228571	0.82971	9.7684	100
44	0.00161054	0.0304958	-0.154185	0.208333	1.83185	28.8524	100
45	0.00038759	0.0160073	-0.021028	0.040089	0.09693	1.7178	100
46	-0.00068340	0.0153976	-0.022124	0.059091	0.63822	3.5561	100
47	-0.00156088	0.0144049	-0.034682	0.035503	0.19122	2.7314	100
48	-0.00351787	0.0139638	-0.033898	0.031008	0.16579	2.4738	100

**TABLE 7.2: Summary Statistics for The Study Sample (1991)**

No.	Mean	Standard Deviation	Min.	Max.	Skewness	Kurtosis	Cases
1	0.00105979	0.00421208	-0.0109066	0.0160233	-0.151796	5.2009	100
2	0.00093678	0.00457268	-0.0150436	0.0235390	0.852404	10.3051	100
3	0.00089204	0.00430270	-0.0109066	0.0160233	-0.323442	4.6280	100
4	0.00068008	0.00511850	-0.0153728	0.0235390	0.403872	8.1927	100
5	0.00142540	0.00330204	-0.0076278	0.0160233	0.759598	6.2644	100
6	0.00100561	0.00420394	-0.0109066	0.0160233	-0.342506	4.9588	100
7	0.00054933	0.00461587	-0.0153728	0.0235390	0.258111	10.4068	100
8	0.00148626	0.00327080	-0.0076278	0.0160233	0.748930	6.4258	100
9	0.00056732	0.00430730	-0.0109066	0.0160233	-0.202893	4.4630	100
10	0.00020726	0.00441397	-0.0109066	0.0160233	-0.027983	4.1563	100
11	0.00120546	0.00375814	-0.0109066	0.0160233	-0.023028	5.9302	100
12	0.00062637	0.00428997	-0.0109066	0.0160233	-0.236705	4.5387	100
13	0.00093972	0.00423911	-0.0109066	0.0160233	-0.308557	4.8004	100
14	0.00020202	0.00445579	-0.0109066	0.0160233	-0.031968	4.0444	100
15	0.00146139	0.00328872	-0.0076278	0.0160233	0.743683	6.3264	100
16	0.00106711	0.00407632	-0.0109066	0.0160233	-0.337393	5.4399	100
17	0.00142540	0.00330204	-0.0076278	0.0160233	0.759598	6.2644	100
18	0.00094294	0.00417692	-0.0109066	0.0160233	-0.318886	5.0517	100
19	0.00119161	0.00376517	-0.0109066	0.0160233	-0.014821	5.8879	100
20	0.00089204	0.00430270	-0.0109066	0.0160233	-0.323442	4.6280	100
21	0.00034597	0.00442159	-0.0109066	0.0160233	-0.131373	4.1575	100
22	0.00129289	0.00371793	-0.0109066	0.0160233	-0.047329	6.1251	100
23	0.00081419	0.00432480	-0.0109066	0.0160233	-0.284670	4.5304	100
24	0.00105533	0.00408800	-0.0109066	0.0160233	-0.334345	5.3854	100
25	0.00101664	0.00406761	-0.0109066	0.0160233	-0.308187	5.4671	100
26	0.00120546	0.00375814	-0.0109066	0.0160233	-0.023028	5.9302	100
27	0.00096860	0.00416807	-0.0109066	0.0160233	-0.328615	5.1012	100
28	0.00110724	0.00392151	-0.0109066	0.0160233	-0.199594	5.7496	100
29	0.00101664	0.00406761	-0.0109066	0.0160233	-0.308187	5.4671	100
30	0.00100561	0.00420394	-0.0109066	0.0160233	-0.342506	4.9588	100
31	0.00081419	0.00432480	-0.0109066	0.0160233	-0.284670	4.5304	100
32	0.00043566	0.00441461	-0.0109066	0.0160233	-0.185621	4.1946	100
33	0.00096315	0.00423553	-0.0109066	0.0160233	-0.323945	4.8228	100
34	0.00043566	0.00441461	-0.0109066	0.0160233	-0.185621	4.1946	100
35	0.00146407	0.00345377	-0.0101146	0.0160233	0.306139	6.4377	100
36	0.00119161	0.00376517	-0.0109066	0.0160233	-0.014821	5.8879	100
37	0.00088493	0.00416000	-0.0109066	0.0160233	-0.291175	5.1080	100
38	0.00148626	0.00327080	-0.0076278	0.0160233	0.748930	6.4258	100
39	0.00116708	0.00319771	-0.0076278	0.0160233	0.813544	6.9269	100
40	0.00142540	0.00330204	-0.0076278	0.0160233	0.759598	6.2644	100
41	-0.00024069	0.00338218	-0.0113235	0.0059259	-0.720464	3.8237	100
42	0.00106711	0.00407632	-0.0109066	0.0160233	-0.337393	5.4399	100
43	0.00142540	0.00330204	-0.0076278	0.0160233	0.759598	6.2644	100
44	0.00100561	0.00420394	-0.0109066	0.0160233	-0.342506	4.9588	100
45	0.00083987	0.00458797	-0.0150436	0.0235390	0.881711	10.2564	100
46	0.00106711	0.00407632	-0.0109066	0.0160233	-0.337393	5.4399	100
47	0.00101664	0.00406761	-0.0109066	0.0160233	-0.308187	5.4671	100
48	0.00096860	0.00416807	-0.0109066	0.0160233	-0.328615	5.1012	100

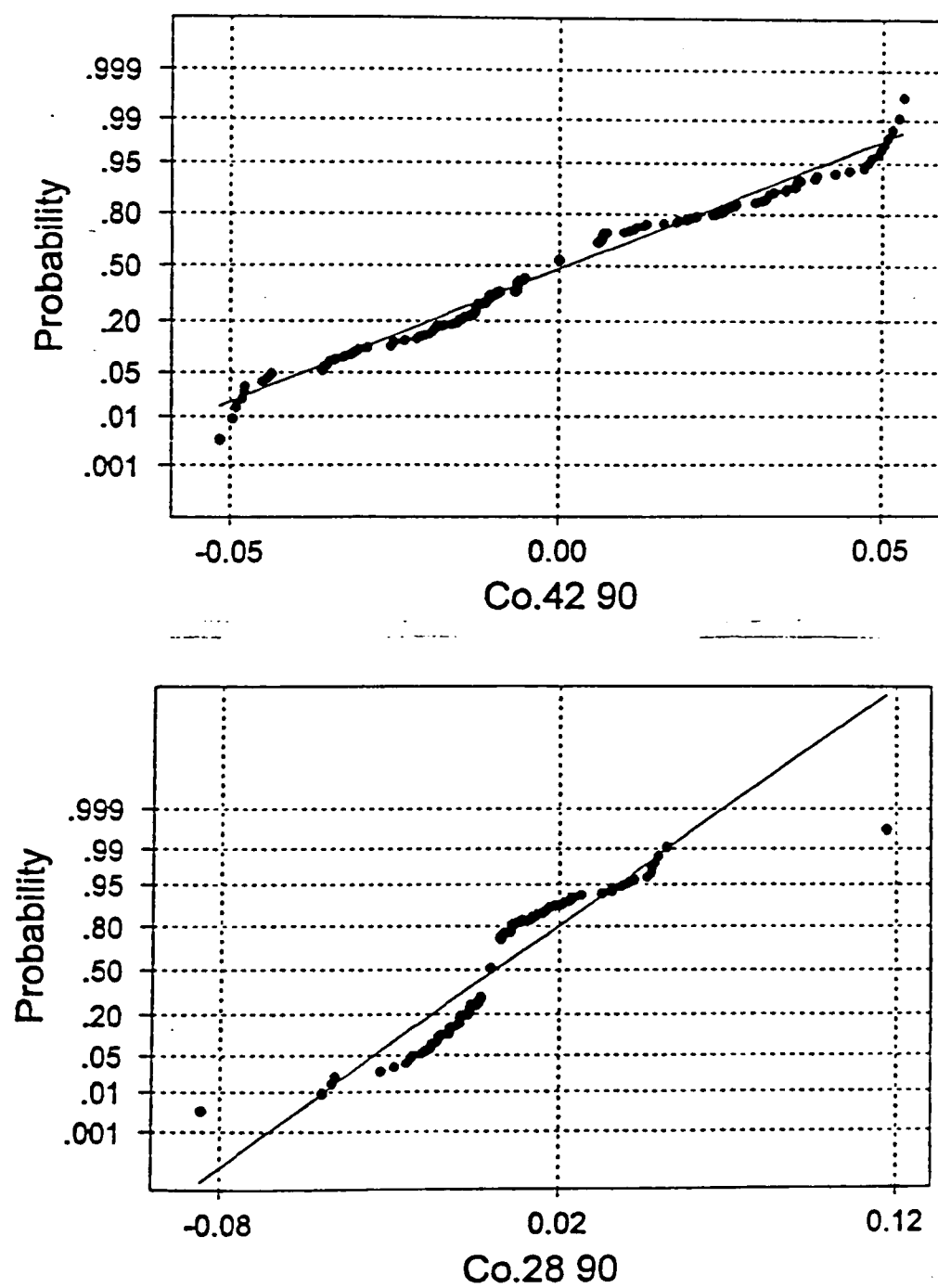
As shown in Tables 7.1 and 7.2 the average daily returns for 1990 and 1991 for the study sample during the estimation period are almost similar. Some companies have positive average returns and some have negative average returns, the standard deviation also does not differ significantly between 1990 and 1991.

The estimated skewness and kurtosis coefficients for the daily returns of each of the companies provide further information about the distribution of the sample data. The skewness coefficient indicates the extent to which the data are distributed symmetrically about their central value. Positive skewness exists if a distribution is skewed to the right, negative skewness exists if a distribution is skewed to the left; and skewness is zero for distributions which are symmetric about their own mean (including the normal distribution). Since there are an unlimited number of symmetric distributions, however, a further characteristic is required to identify if a random variable follows the normal distribution. Kurtosis provides a measure of the weight in the tails of a probability density function, using fourth powers of the discrepancies about the mean. Kurtosis can take values within the range  $(0, +\infty)$ , and the higher is the value of the kurtosis coefficient, the greater is the frequency in the tails. It is known that for a normal distribution, the kurtosis coefficient takes a value of three.

The results suggest that the daily returns of our sample is not normally distributed. The sample skewness for some companies in 1990 and 1991 are positive and the sample kurtosis coefficients for most of the companies is higher than three, and in some cases substantially higher than three (namely firms 3, 5, 7, 21, 28, 36, 42, and 44). Luckily, studies using simulation techniques show that the non-normality of daily returns has no obvious impact on event study methodology with a sufficient number of observation (Dyckman et al, 1984; Brown et al, 1985). Nevertheless, further analysis was undertaken to examine the data distribution. Figure 7.1 shows the normal probability plot for the returns for some of those companies with highest values of

kurtosis and skewness within our sample. The general conclusion is that, even in these extreme cases, the distribution of the data is influenced by a very few 'outliers'. Accordingly, from the observation of the normal probability plot, this influence does not appear to be severe.

Figure 7.1  
Normal Probability Plots of Returns



The results shown in Tables 7.1 and 7.2 do not 'however' provide any information about the strength of the relationships among the daily returns of different company stocks. If, as seems possible, the prices of shares of all Jordan companies tend to move up and down together, it is useful to have a measure of the strength of these relationships. The sample covariance between the daily returns of any two firms is of limited use in assessing the strength of the relationship between the two random variables. The correlation coefficient, which is a scale-free measure is however useful as a descriptive measure of the strength of the linear association between the daily returns earned on any pair of company stocks. The correlation coefficient must lie within the range (-1 and +1), and the larger is the correlation coefficient, the stronger is the linear relationship between the daily returns of any two firms.

Table 7.3 shows the matrix of sample correlations between the returns on companies stocks for the sample divided into three sectors [financial sector (Panel A), services sector (Panel B), and industrial sector (Panel C)]. As the table shows, the correlation between daily returns in our sample is low. The correlation coefficient measures the strength of the relationships among the daily returns of different company stocks. The implication from the table is, therefore that share prices of all Jordanian companies in the study sample does not move up and down with a high degree of correlation.

**TABLE 7.3****Panel A****Stock Return Correlation Matrices  
Financial Sector 1990**

	C1	C2	C3	C4	C5	C6	C7	C8	C9
C1	1.000								
C2	0.081	1.000							
C3	-0.113	0.016	1.000						
C4	0.122	0.013	-0.037	1.000					
C5	-0.099	-0.021	0.030	0.052	1.000				
C6	0.051	0.102	0.088	-0.067	-0.121	1.000			
C7	0.049	-0.123	-0.012	-0.010	-0.026	-0.037	1.000		
C8	0.221	0.032	-0.030	-0.044	-0.150	-0.046	0.008	1.000	
C9	0.060	-0.105	0.050	0.102	-0.030	0.072	-0.037	-0.193	1.000

**Stock Return Correlation Matrices  
Financial Sector 1991**

	C1	C2	C3	C4	C5	C6	C7	C8	C9
C1	1.000								
C2	-0.005	1.000							
C3	0.122	-0.049	1.000						
C4	-0.066	-0.009	0.014	1.000					
C5	0.029	0.022	-0.372	0.023	1.000				
C6	-0.078	0.032	-0.084	-0.084	0.058	1.000			
C7	-0.149	-0.047	-0.009	-0.062	0.029	0.057	1.000		
C8	-0.019	-0.022	-0.009	0.084	-0.046	0.005	-0.017	1.000	
C9	0.217	-0.024	-0.014	-0.061	0.025	-0.105	-0.094	0.120	1.000

**Panel B**

**Stock Return Correlation Matrices  
Services Sector 1990**

	C10	C11	C12	C13	C14	C15	C16	C17	C18
C10	1.000								
C11	0.046	1.000							
C12	0.054	0.069	1.000						
C13	-0.130	-0.027	-0.030	1.000					
C14	0.016	-0.058	0.103	-0.277	1.000				
C15	0.017	0.101	-0.032	0.015	0.017	1.000			
C16	0.067	0.142	0.172	0.126	-0.003	-0.012	1.000		
C17	0.055	0.043	-0.385	-0.092	-0.131	-0.093	0.043	1.000	
C18	0.029	0.041	-0.014	-0.063	0.123	-0.290	0.045	-0.028	1.000

**Stock Return Correlation Matrices  
Services Sector 1991**

	C10	C11	C12	C13	C14	C15	C16	C17	C18
C10	1.000								
C11	0.043	1.000							
C12	0.055	-0.022	1.000						
C13	-0.067	-0.061	-0.094	1.000					
C14	0.066	-0.096	-0.008	-0.128	1.000				
C15	-0.098	0.236	0.066	-0.186	0.002	1.000			
C16	-0.121	-0.004	0.070	0.001	-0.055	0.063	1.000		
C17	-0.293	0.094	-0.069	-0.063	-0.124	-0.109	-0.061	1.000	
C18	0.065	-0.127	-0.065	-0.276	0.105	0.119	-0.106	-0.070	1.000

Panel C

Stock Return Correlation Matrices  
Industrial Sector (1990)

	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31	C32	C33	C34	C35	C36	C37	C38	C39	C40	C41	C42	C43	C44	C45	C46	C47	C48	
C19	1.000																														
C20	0.233	1.000																													
C21	-0.048	-0.022	1.000																												
C22	-0.022	0.080	-0.138	1.000																											
C23	0.053	0.112	0.010	-0.136	1.000																										
C24	-0.089	-0.139	0.034	-0.073	0.010	1.000																									
C25	0.138	0.058	0.013	0.016	0.246	0.118	1.000																								
C26	0.074	0.093	0.079	-0.126	0.100	-0.118	0.086	1.000																							
C27	0.056	-0.023	0.016	-0.035	0.138	0.118	-0.034	0.002	1.000																						
C28	0.105	-0.044	-0.064	-0.253	0.124	0.114	-0.070	0.189	-0.007	1.000																					
C29	0.057	0.260	0.015	0.218	-0.041	-0.123	0.115	0.123	-0.029	0.079	1.000																				
C30	-0.034	-0.140	0.062	-0.083	-0.063	-0.040	-0.055	0.111	-0.140	0.191	-0.011	1.000																			
C31	-0.004	0.014	-0.023	0.005	0.211	0.139	0.018	0.072	0.217	-0.029	-0.009	-0.089	1.000																		
C32	0.033	-0.084	-0.098	0.043	-0.146	-0.066	0.072	0.096	0.069	0.107	0.178	0.006	-0.011	1.000																	
C33	-0.042	0.210	-0.008	0.166	-0.042	-0.188	0.010	0.209	-0.076	0.006	0.005	-0.079	-0.001	-0.047	1.000																
C34	-0.119	-0.076	-0.032	0.002	-0.166	-0.028	-0.147	-0.040	0.010	-0.021	0.000	-0.157	-0.071	0.145	-0.074	1.000															
C35	-0.107	0.006	0.042	0.004	0.026	-0.181	-0.112	0.127	0.003	-0.056	0.145	0.019	-0.007	0.218	0.147	0.197	1.000														
C36	0.278	0.065	-0.009	-0.063	-0.078	-0.152	-0.066	-0.017	0.093	-0.055	0.075	0.084	0.071	0.089	-0.110	-0.005	-0.057	1.000													
C37	0.030	0.005	-0.067	-0.093	0.128	0.057	-0.020	0.024	0.031	0.098	-0.031	0.137	0.073	-0.047	0.093	0.010	0.009	-0.070	1.000												
C38	-0.061	0.011	0.130	-0.002	-0.112	-0.076	-0.172	0.021	0.062	-0.116	-0.080	0.071	0.065	-0.018	0.016	0.310	0.065	-0.016	0.192	1.000											
C39	0.088	0.202	-0.201	-0.029	0.006	0.085	0.012	-0.094	-0.070	0.044	0.206	0.130	0.003	0.122	0.014	0.064	0.088	-0.025	0.070	0.025	1.000										
C40	0.094	0.234	-0.054	-0.037	0.079	0.042	0.084	-0.071	-0.009	0.001	0.040	-0.058	0.026	0.008	0.137	-0.067	-0.116	-0.123	0.103	0.061	0.182	1.000									
C41	-0.036	0.039	0.009	-0.043	0.081	-0.178	0.023	0.080	-0.022	0.133	0.108	0.105	0.017	0.026	-0.001	0.097	0.142	-0.038	-0.045	0.018	-0.013	0.028	1.000								
C42	-0.065	-0.125	-0.005	-0.019	0.018	-0.040	-0.030	0.015	-0.052	-0.098	-0.145	-0.024	-0.083	-0.147	-0.068	0.028	0.027	-0.212	0.051	-0.005	-0.156	0.097	0.012	1.000							
C43	0.015	0.145	-0.126	-0.090	0.244	-0.021	0.061	0.067	0.121	-0.029	-0.028	-0.109	-0.078	0.008	0.084	0.014	-0.085	-0.142	-0.103	-0.035	0.148	0.184	0.141	0.017	1.000						
C44	-0.056	-0.015	0.103	-0.063	0.014	0.183	0.055	0.028	-0.020	0.184	0.018	0.104	0.041	-0.108	0.017	-0.053	0.025	0.025	0.019	-0.162	0.024	-0.170	-0.034	-0.246	-0.013	1.000					
C45	-0.024	0.022	0.023	0.107	-0.024	0.047	0.010	-0.034	0.018	0.047	-0.008	-0.176	-0.094	0.143	-0.041	0.041	0.025	0.045	-0.144	-0.072	0.039	0.009	0.007	-0.034	0.124	0.025	1.000				
C46	-0.139	0.053	-0.085	0.020	0.012	0.090	0.136	0.049	0.133	-0.187	0.162	0.034	0.029	0.132	-0.122	-0.001	0.128	-0.128	0.013	0.079	0.048	0.069	0.036	0.354	0.102	-0.132	0.047	1.000			
C47	0.098	0.089	0.016	-0.032	-0.071	0.252	-0.118	0.126	0.066	0.256	-0.026	0.133	-0.155	-0.070	0.056	0.107	0.025	-0.019	0.084	0.000	0.040	-0.072	-0.106	-0.123	0.067	0.177	0.038	-0.090	1.000		
C48	-0.024	-0.008	-0.021	0.063	0.004	0.077	-0.007	0.077	-0.040	-0.043	0.055	0.127	0.038	0.045	0.203	-0.058	-0.076	-0.019	0.104	-0.059	0.038	-0.071	-0.044	0.018	-0.013	-0.075	0.019	-0.029	0.042	1.000	



## Stock Return Correlation Matrices Industrial Sector (1991)

	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30	C31	C32	C33	C34	C35	C36	C37	C38	C39	C40	C41	C42	C43	C44	C45	C46	C47	C48	
C19	1.000																														
C20	-0.042	1.000																													
C21	0.040	-0.061	1.000																												
C22	-0.033	0.021	-0.024	1.000																											
C23	-0.092	0.117	0.067	0.083	1.000																										
C24	-0.040	-0.016	0.015	-0.056	-0.011	1.000																									
C25	-0.256	0.010	0.154	0.048	-0.024	-0.233	1.000																								
C26	-0.084	0.103	-0.211	-0.062	-0.169	-0.225	0.089	1.000																							
C27	-0.055	0.059	-0.082	0.093	0.018	-0.115	0.117	-0.052	1.000																						
C28	-0.005	-0.098	0.275	0.011	-0.018	0.108	0.107	0.004	-0.000	1.000																					
C29	0.210	0.038	0.014	0.009	-0.006	-0.180	-0.003	0.027	0.224	0.037	1.000																				
C30	-0.088	0.082	0.010	0.056	-0.077	-0.163	0.490	0.154	0.321	0.024	-0.102	1.000																			
C31	-0.095	-0.052	-0.132	0.166	0.000	-0.029	0.042	0.052	0.085	-0.223	-0.045	-0.007	1.000																		
C32	0.011	0.026	0.801	-0.015	0.257	0.028	0.075	0.127	0.085	0.299	0.007	-0.067	-0.190	1.000																	
C33	0.083	-0.030	0.095	-0.042	-0.078	-0.176	0.177	0.206	0.120	0.027	0.029	0.155	-0.015	-0.008	1.000																
C34	-0.092	0.074	-0.033	0.048	0.117	-0.002	0.192	0.045	-0.170	0.015	-0.008	0.144	0.009	0.023	0.028	1.000															
C35	0.039	0.063	0.043	-0.142	-0.090	-0.220	0.171	0.221	0.245	0.032	-0.003	0.452	-0.160	0.072	0.293	0.026	1.000														
C36	0.060	0.016	-0.097	0.043	0.057	-0.122	-0.102	0.061	0.046	-0.042	0.085	-0.189	-0.077	0.051	0.112	0.118	-0.009	1.000													
C37	0.132	-0.152	-0.080	-0.049	-0.025	0.022	-0.041	0.007	-0.030	-0.000	0.027	-0.069	0.011	-0.069	0.133	-0.179	0.089	-0.019	1.000												
C38	0.148	0.086	0.076	-0.031	0.034	-0.078	-0.106	0.006	0.099	-0.086	-0.033	0.016	0.013	-0.027	-0.019	-0.099	-0.030	-0.257	-0.238	1.000											
C39	-0.129	0.164	0.006	-0.164	-0.044	0.161	-0.091	0.305	0.000	-0.013	-0.052	-0.098	-0.120	0.015	-0.133	-0.102	0.090	0.029	-0.051	-0.012	1.000										
C40	-0.153	-0.266	-0.026	-0.059	0.076	-0.224	0.029	0.081	0.067	-0.084	0.016	0.117	0.029	0.073	0.095	-0.109	0.095	0.022	0.167	-0.022	-0.115	1.000									
C41	0.050	0.053	0.033	-0.219	0.034	0.061	0.126	-0.156	-0.009	-0.039	0.072	0.051	-0.071	0.010	0.019	0.049	0.131	0.043	-0.118	0.035	-0.007	-0.034	1.000								
C42	0.050	-0.002	-0.024	-0.061	-0.101	-0.103	0.213	0.209	-0.060	-0.002	-0.028	0.163	-0.084	-0.080	0.310	0.156	0.130	-0.038	-0.052	-0.060	0.067	0.108	-0.054	1.000							
C43	-0.022	-0.024	-0.159	-0.015	0.089	-0.007	-0.052	-0.028	-0.137	-0.113	-0.033	-0.089	-0.018	-0.052	-0.412	0.124	-0.171	0.083	-0.074	-0.044	-0.083	0.013	-0.020	0.078	1.000						
C44	0.149	-0.034	0.037	0.049	0.056	-0.099	0.043	0.103	-0.076	0.029	0.209	-0.080	0.121	0.093	-0.038	0.116	-0.151	0.188	-0.163	0.073	-0.036	-0.215	-0.022	-0.026	-0.048	1.000					
C45	0.275	-0.108	-0.124	-0.109	-0.053	-0.025	-0.154	0.012	-0.035	-0.012	0.192	-0.254	-0.018	-0.054	-0.183	-0.217	-0.181	0.080	0.083	-0.105	0.061	0.095	-0.023	0.172	0.069	-0.138	1.000				
C46	0.104	-0.105	-0.107	-0.043	-0.221	-0.176	-0.055	0.117	-0.099	0.314	0.218	-0.237	-0.057	-0.096	-0.026	-0.033	-0.164	0.116	0.079	-0.132	0.054	0.045	0.030	0.117	0.021	-0.036	0.596	1.000			
C47	-0.291	0.050	0.124	-0.036	-0.001	0.093	0.042	0.060	0.077	-0.103	-0.258	-0.054	0.064	0.052	0.095	-0.077	0.019	0.026	-0.166	-0.075	0.490	-0.067	0.030	0.106	-0.125	0.068	-0.050	0.048	1.000		
C48	-0.076	-0.119	-0.063	-0.115	-0.095	-0.197	0.061	0.105	0.070	0.068	0.248	0.161	-0.015	-0.092	-0.045	0.013	0.039	0.113	-0.033	0.107	0.064	0.178	0.051	0.010	-0.021	-0.018	0.125	0.202	-0.005	1.000	

### 7.3 DIAGNOSTIC TESTS

The ordinary least squares (OLS) provides a procedure for the estimation of the parameters of a population regression line. In order to obtain estimators with desirable properties using this procedure a number of statistical assumption must be satisfied. Under these assumptions, the OLS estimators of the regression coefficients are the best linear unbiased estimator [or BLUE (Gujarati, 1988)] and it is possible to test hypotheses about the population regression coefficients. Accordingly, before the estimation results and the results of the hypothesis tests are presented and discussed, it is important to diagnose whether or not our regression model satisfies the five standard assumptions required for the OLS estimation to be BLUE and for standard hypothesis testing procedures to be valid. The five assumptions which we test in this part of the analysis in the preliminary analysis are the following:

- Assumption 1.  $\text{Cov}(u_{it}, u_{it-k}) = 0$  for all  $K \neq 0$  and for all  $i$ ; ie. There is no serial correlation among the error terms for any company;
- Assumption 2. The relationship between the independent variables and the dependent variable in each equation is correctly specified by means of a linear functional form;
- Assumption 3.  $\text{Var}(u_{it}) = \delta_i^2$  for all  $i$ ; ie. The error terms for each company are homoscedastic and not heteroscedastic;
- Assumption 4.  $u_{it}$  follows a normal distribution for all  $i$ ;
- Assumption 5.  $\text{Cov}(u_{it}, u_{jt}) = 0$  for all  $i, j$ ; ie there is no contemporaneous correlation among the error terms for any pairs of companies.

The diagnostic tests for the validity of these assumption were carried out using Microfit, an interactive econometric software package. The market model equation:

$R_{it} = \alpha_{it} + \beta_i R_{mt} + u_{it}$ , as defined in Chapter six, was estimated separately for each company using the ordinary least squares (OLS) method. Tests of the null hypothesis of no serial correlation, linearity, normality and homoscedasticity were carried out using the estimated version of each of these equations individually. Each of these tests are now explained:

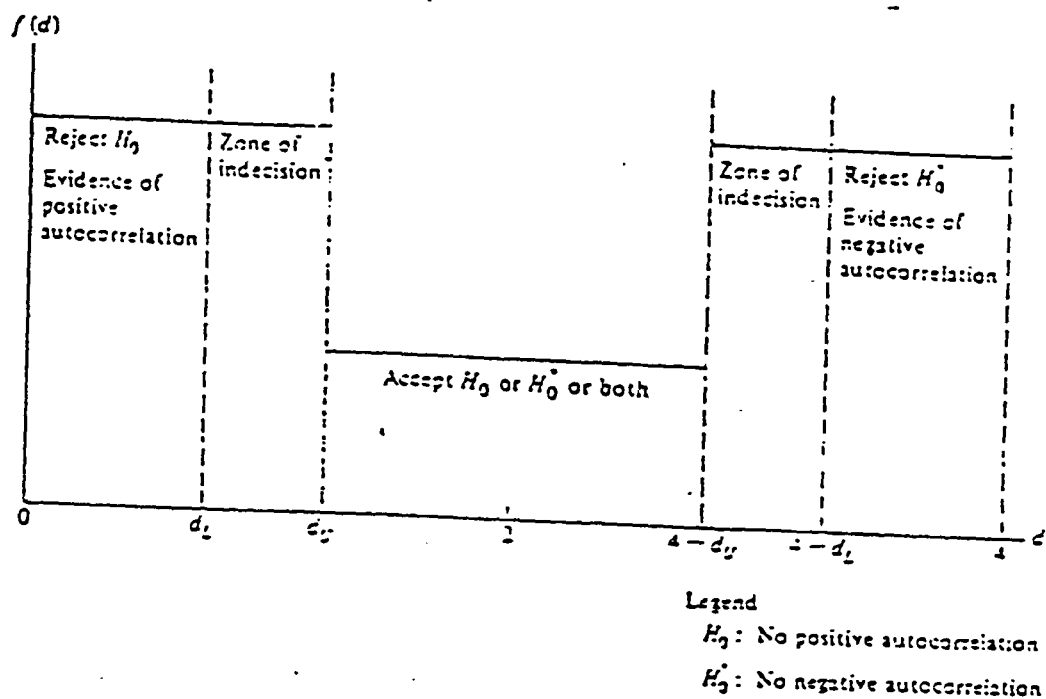
### 7.3.1 Test for Serial Correlation

One way in which the assumption  $(\text{cov}(e)=\sigma^2\mathbf{I})$  can be violated is when errors correspond to different observations being correlated. In other case, when the errors corresponding to different observations have different variances, the error covariance matrix can no longer be written as a scalar times the identity matrix. Under these circumstances the error covariance matrix is no longer diagonal; that is, the off-diagonal elements are no longer all zero. When autocorrelation among residuals occurs, the OLS estimators are still linear-unbiased as well as consistent, but they are not longer efficient (*i.e*, they do not exhibit minimum variance). Ignoring the existence of autocorrelation means that the reported covariance matrix for the least squares estimator will be biased, and thus the true variance is likely to be underestimated. As a result, standard errors and consequently interval estimates and hypothesis tests will be invalid (Griffiths *et al*, 1993).  $R^2$  will be overestimated, and the usual t-test and F-tests of significance will no longer be valid (Gujarati, 1988). To establish confidence intervals and to test hypotheses, therefore, one should utilise generalized least squares (GLS) rather than ordinary least squares (OLS) even though the OLS estimators are unbiased and consistent.

The most popular and powerful tool to test serial correlation is a test developed by Durbin and Watson (1950). This test is based on the 'Durbin-Watson Statistic' (DW). Critical values for the Durbin-Watson test and decision rules are shown graphically in

Figure 7.2. Tables for critical values of the Durbin-Watson test provide the values of  $d_L$  and  $d_U$ .

**Figure 7.2**  
**Durbin-Watson Statistic and Decision Rules**



Durbin-Watson  $d$  statistic.

The null hypothesis of no autocorrelation is rejected against the alternative of positive autocorrelation in the errors if the calculated  $d$  is less than  $d_L$ . The null hypothesis is accepted if  $d$  is bigger than  $d_U$ , while if  $d$  lies between  $d_L$  and  $d_U$ , the test is inconclusive. Newbold (1991) states that whatever the independent variables, the distribution of  $d$  lies between that of two other random variables ( $d_L$  and  $d_U$ ) whose percentage points are tabulated and used for tests of significance.

Column one in Tables 7.4 and 7.5 shows the DW statistics calculated from the residuals of the estimated equations for each company for each year (1990 and 1991).

For 1990, only in one case does the test statistic falls within the zone of indecision while in the other forty seven cases, the null hypothesis of no serial correlation is accepted. For 1991, in sixteen cases the test statistics falls within the zone of indecision while in the other thirty two cases, the null hypothesis of no serial correlation is accepted.

In circumstances where there is doubt that the regression errors are autocorrelated, it is preferable to use an alternative estimator. In order to deal with company 4 (for 1990) and companies 1, 11, 12, 13, 15, 19, 25, 28, 32, 34, 35, 37, 39, 45, 46 and 47 (for 1991) which fall into the indecision area, following Newbold (1991), we transformed the dependent variable  $R_{it}$  and the independent variable  $R_{mt}$  of our model (6.1) in Chapter six into:

$R_{it} - \pi R_{i,t-1}$  for the dependent variable and

$R_{mt} - \pi R_{m,t-1}$  for the independent variable.

where:  $\pi = 1 - \text{Durbin-Watson statistic} / 2$

The parameters of the model are precisely the same as those of the original model, except that the intercept term in the new equation is  $\alpha(1-\pi)$  rather than  $\alpha$ . There is, however, an important difference; in the former model the error terms could be autocorrelated but in this new model they are not. Therefore, the usual inferential procedure, when applied to this model, are perfectly valid.

With the new model the value of the Durbin-Watson statistic increased for company 4 in 1990 to 2.57 and, for the companies 1, 11, 12, 13, 15, 19, 25, 28, 32, 34, 35, 37, 39, 45, 46, 47 in 1991 to 2.21, 2.37, 2.95, 2.70, 1.95, 2.42, 2.62, 2.19, 3.24, 2.42, 2.61, 2.50, 2.48, 2.81, 2.96, 2.46 respectively. This allows the hypothesis of no serial correlation to be accepted.

**TABLE 7.4: Diagnostic Tests for OLS Regression Models (1990)**

Company	D.W	RESET	Normality	HETRO
1	1.9741	1.0146	1541.8*	0.1607
2	1.6222	0.3605	137.14*	0.1378
3	2.0328	7.9398*	3119.2*	0.9910
4	1.5764 +	0.0020	287.79*	0.2615
5	1.9645	0.0038	314.39*	0.0669
6	1.9553	0.0101	191.3*	0.8688
7	2.0075	0.0021	2142.9*	0.0611
8	1.9747	1.4626	2851.4*	0.0014
9	2.0152	0.1323	98.482*	4.9071*
10	1.9213	0.0032	602.99*	0.1528
11	1.9032	0.5130	90.740*	3.4411*
12	1.8097	0.0304	92.335*	0.7908
13	1.8751	0.4536	78.327*	10.634*
14	1.8830	0.5744	199.00*	1.6248
15	1.8934	0.1260	334.8*	0.0984
16	1.8633	0.0184	176.68*	0.0284
17	2.0758	0.0573	9369.2*	0.0528
18	1.9847	0.8720	1652.7*	17.945*
19	1.9410	4.7126*	1332.3*	1.9965
20	2.1732	1.9700	122.14*	0.0547
21	2.0320	1.1047	2135.5*	0.5584
22	1.9422	7.0955*	1496.2*	0.5409
23	1.7595	0.1915	12.473*	0.4952
24	2.0872	4.9658	50.314*	4.0436*
25	1.9386	3.1436	511.20*	0.0192
26	1.9256	0.2010	118.81*	1.4495
27	1.9989	0.0196	2682.1*	0.0069
28	1.9374	4.2906*	479.80*	0.6671
29	1.9979	4.0596*	131.74*	11.738*
30	1.8500	0.3324	532.80*	0.0064
31	1.9733	9.5899*	30.433*	2.4469
32	1.8677	1.7712	388.01*	0.1949
33	1.8641	0.3659	20.671*	18.977*
34	1.9887	5.5874*	3177.7*	5.4168*
35	1.8449	0.0030	183.48*	0.0666
36	2.0335	1.3838	79.545*	0.5616
37	1.9806	0.2182	123.86*	0.0116
38	2.0101	0.1322	81.986*	0.0274
39	2.0726	0.0379	88.507*	1.1451
40	2.0554	2.8488	29.847*	13.051*
41	1.9711	0.1891	3940.5*	0.2233
42	1.9257	3.5984	33.656*	1.5689
43	1.9144	0.2676	45.419*	3.8475*
44	2.0128	0.1528	225.51*	2.8770
45	1.8693	0.1777	1610.5*	0.0243
46	2.0069	2.4558	56.998*	1.0654
47	1.9411	0.5753	555.70*	0.0085
48	2.0685	0.5605	34847.7*	0.1135

\* Significant at 5% level

+ Test inconclusive ( before the adjustment for serial correlation )  
(after adjustment D.W for Co. 4 = 2.57)

**TABLE 7.5: Diagnostic Tests for OLS Regression Models (1991)**

Company	D.W	RESET	Normality	HETRO
1	1.5765 +	1.0126	7.4426*	2.0349
2	1.7821	0.5859	74.585*	0.4816
3	1.9014	0.2448	40.456*	0.0557
4	1.9362	4.5687*	580.47*	0.1506
5	2.1906	0.0991	154.54*	0.0142
6	1.7473	4.5276*	27.563*	0.4595
7	1.8079	2.4854	13.544*	0.5497
8	1.8878	8.9206*	22.076*	4.9787*
9	1.6048	7.1846*	0.2262	10.294*
10	1.9270	7.3406*	145.24*	1.7143
11	1.4246 +	0.1826	1.6967	1.4810
12	1.4225 +	3.0135	10.503*	0.1495
13	1.5019 +	0.0319	42.926*	5.7667*
14	1.7540	0.0841	1501.8*	0.2441
15	1.5711 +	2.0998	7.1228*	0.0316
16	2.0098	0.0607	2391.8*	3.2360
17	1.5940	1.8038	0.2368	0.8346
18	1.6712	1.1503	0.0188	3.6544
19	1.4209 +	0.4287	1.7947	3.8734
20	1.9805	0.8136	154.36*	0.2584
21	1.6413	0.4482	3.0750	0.0982
22	1.9296	0.6815	33.588*	4.5746*
23	1.4183	23.582*	55.613*	37.958*
24	1.6129	0.9710	4.9367	14.448*
25	1.4193 +	0.1700	27.907*	1.1847
26	1.6508	0.0893	37.461*	0.8776
27	1.8412	1.2545	596.72*	0.4893
28	1.5098 +	0.0066	20.385*	0.4304
29	1.6487	2.0528	26.920*	0.8237
30	1.7273	0.1410	5.4307	1.0282
31	1.8750	0.0135	1269.2*	0.1979
32	1.4087 +	0.0919	4.8397	0.0672
33	1.8263	0.8215	2710.5*	0.3805
34	1.5205 +	0.7802	19.086*	14.764*
35	1.5166 +	0.8727	10.540*	1.0699
36	1.9519	0.2211	5203.9*	0.2989
37	1.3775 +	0.2379	0.8678	0.8121
38	2.0275	0.0103	2.4914	0.3657
39	1.4038 +	0.0363	10.799*	18.542*
40	1.5756	0.0078	13.944*	9.9260*
41	1.9002	0.0500	1200.8*	0.0240
42	1.5666	5.9055*	0.0092	2.1039
43	1.9289	4.2746*	919.64*	0.0287
44	2.2839	0.0429	4806.1*	0.0010
45	1.3049 +	0.8515	1.0518	23.395*
46	1.4321 +	1.1408	1.2145	0.4147
47	1.4439 +	0.1718	11.426*	1.7280
48	1.8254	1.8914	0.4874	1.8326

\* Significant at 5% level

+ Test inconclusive ( before the adjustment for serial correlation )

( after adj. D.W Co.1= 2.21 Co. 11= 2.37 Co. 12= 2.95 Co.13= 2.70 Co. 15= 1.95 Co. 19= 2.42  
Co.25= 2.62 Co. 28= 2.19 Co.32= 3.24 Co.34= 2.42 Co. 35= 2.61 Co. 37= 2.50 Co. 39=2.48  
Co. 45= 2.81 Co. 46= 2.96 Co.47= 2.46 )

### 7.3.2 Test for Linear Functional Form

The classical linear regression model assumes that the relationship between the dependent and independent variables used in the model is linear. The functional form assumption is tested by Ramsey's RESET (Regression Specification Error Test) test (Ramsey, 1969). The RESET test statistics follow the chi-square distribution with 1 degree of freedom under a null hypothesis that the functional form is correctly specified. Gujarati (1988, p. 412) states that:

*"One advantage of RESET is that it is easy to apply, for it does not require the one to specify what the alternative model is. But this is also a disadvantage because knowing that a model is misspecified does not help us necessarily in choosing a better alternative."*

Column two in Tables 7.4 and 7.5 shows the Ramsey RESET test statistics, which follow a chi-square distribution with 1 degree of freedom under the null hypothesis. The null hypothesis is accepted at 1% significance level for all the companies in 1990 except the following companies (3, 19, 22, 28, 29, 31, 34) which rejected at the 5% level. For 1991 the null hypothesis is accepted at 1% significance level for all the companies, and rejected at 5% level for companies 4, 6, 8, 9, 10, 23, 42, and 43, (the critical values are  $X^2_{1,1\%} = 6.63$  and  $X^2_{1,5\%} = 3.84$ ).

### 7.3.3 Test for Normality

The classical normal linear regression assumes that each  $u_i$  is distributed *normally*:

with: Mean:  $E(u_i) = 0$ ,

Variance:  $E(u_i^2) = \delta^2$ , and

cov ( $u_i, u_j$ ):  $E(u_i u_j) = 0 \quad i \neq j$ .

However, the normality assumption is not essential if our objective is merely estimation (Gujarati, 1988, pp.88-89), since the OLS estimation is BLUE regardless of whether



the residuals are normally distributed or not. In the absence of normality, the residuals cannot be regarded as asymptotically efficient. Furthermore, if the residuals are not normally distributed, then the usual test procedures t-test and F-tests are only valid asymptotically; that is, in large samples (Theil, 1971; Gujarati, 1988).

In this study the normality was tested using the  $\chi^2$  statistic suggested by Jarque and Bera (1980) who show that under the null hypothesis the residuals follow a normal distribution and test statistic follows the chi-square distribution with 2 degrees of freedom.

Column three in Tables 7.4 and 7.5 shows the Jarque-Bera test statistics, which are distributed chi-square with two degrees of freedom under the null hypothesis. For 1990 all the companies and for all the companies in 1991 (except companies 9, 11, 17, 18, 19, 21, 24, 30, 32, 37, 38, 45, 46, 48), the null hypothesis of normality is rejected at the 5% level ( $X^2_{2,5\%} = 5.99$ ), so overall there is overwhelming evidence that the error terms are non-normal. However, since our sample is large, we can still use large sample approximations to the standard t-test and F-tests to test hypotheses concerning the coefficients of the model.

Further evidence for the acceptability of the methodology used in this study are provided by two previous simulation studies to analyse the effect of the non-normality nature of daily share prices on event studies methodology arrived to similar conclusions. Dyckman et al (1984, p.64) conclude that:

*"the non-normality of individual-security-return residuals has little effect on the inferences drawn from the use of the t-test applied to portfolios".*

And Brown and Warner (1985, p.25) conclude that:

*"the non-normality of daily returns has no obvious impact on event studies methodologies".*

Accordingly, it is assumed in this study that the violation of the normality assumption of our data sample does not have serious effects on the efficiency of standard estimation procedures.

#### 7.3.4 Test for Homoscedasticity

An important assumption of the classical linear regression model is that the disturbances  $u_i$  appearing in the population regression function are homoscedastic; that is, they all have the same variance (Gujarati, 1988).

Heteroscedasticity occurs when the residuals do not have the same variance. Heteroscedasticity among the residuals affects the standard deviation of the estimators. Therefore, the OLS estimators are still unbiased but not efficient. As a result, the usual t-test and F-test procedures for hypothesis testing are invalid. Heteroscedasticity can be detected by estimating a simple linear regression. In this regression, the dependent variable is the square of the residuals that is  $e^2$  and the independent variable is the predicted value  $\hat{Y}$ .

In this study, to test whether there is evidence of heteroscedasticity in the residual variance, the Lagrange Multiplier (LM) test is used. The test is performed by regressing the residuals onto the predicted values from which they were obtained. Calculating  $LM = NR^2$  from the auxiliary regression, where 'N' is the sample size and the  $R^2$  obtained from this regression, gives the test statistics. Its distribution will be chi-square with 's' degree of freedom under a null hypothesis that the residuals are homoscedastic, where 's' is the number of restrictions in the model.

Homoscedasticity and functional form were tested by using the F-statistics suggested by White (1980). Column four in Tables 7.4 and 7.5 shows the

homoscedasticity test statistics, which follow a chi-square distribution with 1 degree of freedom under the null hypothesis. For 1990, ten cases (9, 11, 13, 18, 24, 29, 33, 34, 40, 43) out of forty eight companies the test produced evidence of heteroscedastic errors at 5% significance level . For 1991, again, ten cases (8, 9, 13, 22, 23, 24, 34, 39, 40, 45) out of forty eight companies the test produce evidence of heteroscedastic errors at 5% significance level ( $X^2_{1,5\%} = 3.84$ ).

### **7.3.5 Test for Contemporaneous Correlation**

The classical residual regression model implicitly assumes that there is no other regression model with residuals which are correlated with the residuals of the regression model in question.

The extent of correlation among the residuals across the regression models may be informally investigated in two ways by plotting the residuals and by calculating correlation coefficients for the residuals (see Theil, 1971). The correlation coefficient between the residuals of any two companies must fall within the range -1 to +1. To detect the extent to which the residuals in our sample are correlated, we can calculate the correlation coefficient matrix of regression residuals.

Table 7.6 shows the sample correlation coefficients between the residuals of the estimated equations for each sector [financial sector (Panel A), services sector (Panel B), and industrial sector (Panel C)] in the sample companies. The table indicates that, there is no significant amount of contemporaneous correlation between the residuals of any pairs of companies in our sample study.

**TABLE 7.6****Panel A****Error Correlation Matrices  
Financial Sector (1990)**

	C1	C2	C3	C4	C5	C6	C7	C8	C9
C1	1.000								
C2	0.058	1.000							
C3	-0.124	-0.070	1.000						
C4	0.012	-0.019	0.025	1.000					
C5	-0.064	-0.042	0.062	0.054	1.000				
C6	-0.018	0.089	0.023	-0.072	-0.020	1.000			
C7	0.056	-0.101	0.001	-0.029	-0.039	-0.051	1.000		
C8	0.250	-0.023	-0.061	0.009	-0.178	-0.075	0.014	1.000	
C9	0.093	-0.072	0.039	0.158	-0.028	0.053	-0.040	-0.131	1.000

**Error Correlation Matrices  
Financial Sector (1991)**

	C1	C2	C3	C4	C5	C6	C7	C8	C9
C1	1.000								
C2	-0.097	1.000							
C3	0.105	-0.027	1.000						
C4	-0.104	-0.089	-0.022	1.000					
C5	0.033	0.019	-0.374	0.019	1.000				
C6	-0.191	0.056	-0.110	0.076	0.082	1.000			
C7	-0.162	-0.015	0.041	-0.099	0.017	0.040	1.000		
C8	0.011	-0.062	-0.015	0.038	-0.019	-0.005	-0.037	1.000	
C9	0.173	-0.019	-0.010	-0.035	0.020	-0.159	-0.044	0.066	1.000

**Panel B****Error Correlation Matrices  
Services Sector (1990)**

	C10	C11	C12	C13	C14	C15	C16	C17	C18
C10	1.000								
C11	0.031	1.000							
C12	0.022	0.064	1.000						
C13	-0.149	0.062	0.031	1.000					
C14	0.079	-0.017	0.051	-0.251	1.000				
C15	0.020	0.205	-0.001	-0.050	-0.047	1.000			
C16	0.039	0.083	0.204	0.180	0.097	0.014	1.000		
C17	0.074	-0.035	-0.403	-0.132	-0.076	-0.055	-0.028	1.000	
C18	0.074	-0.028	-0.022	-0.029	0.173	-0.271	0.124	-0.046	1.000

**Error Correlation Matrices  
Services Sector (1991)**

	C10	C11	C12	C13	C14	C15	C16	C17	C18
C10	1.000								
C11	-0.021	1.000							
C12	-0.067	0.021	1.000						
C13	-0.013	-0.054	-0.137	1.000					
C14	0.161	0.015	-0.019	-0.146	1.000				
C15	-0.041	0.080	0.075	-0.116	0.066	1.000			
C16	-0.116	0.022	0.048	-0.021	-0.051	0.025	1.000		
C17	-0.253	0.026	0.012	0.070	-0.043	-0.005	-0.008	1.000	
C18	0.108	-0.196	-0.006	-0.092	0.128	0.129	-0.087	-0.032	1.000

Panel C

**Error Correlation Matrices  
Industrial Sector (1990)**

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30
C1	1.000																													
C2	0.168	1.000																												
C3	-0.030	-0.032	1.000																											
C4	-0.015	0.079	-0.181	1.000																										
C5	0.045	0.118	-0.017	-0.105	1.000																									
C6	-0.082	-0.155	-0.003	-0.066	0.019	1.000																								
C7	0.146	0.027	0.012	0.035	0.257	0.127	1.000																							
C8	-0.015	0.086	0.059	-0.126	0.059	-0.102	0.090	1.000																						
C9	0.090	-0.009	0.010	-0.062	0.121	0.093	-0.012	0.022	1.000																					
C10	0.133	-0.063	-0.071	-0.197	0.188	0.111	-0.058	0.203	0.022	1.000																				
C11	0.043	0.247	0.040	0.234	-0.039	-0.144	0.098	0.115	-0.057	0.047	1.000																			
C12	-0.009	-0.200	0.002	-0.181	-0.070	-0.024	-0.079	0.116	-0.120	0.170	-0.096	1.000																		
C13	-0.112	0.017	-0.037	0.091	0.072	0.076	-0.031	-0.012	0.046	-0.020	-0.005	-0.091	1.000																	
C14	0.064	-0.119	-0.125	0.068	-0.091	-0.102	0.091	0.031	0.044	0.149	0.193	-0.050	-0.058	1.000																
C15	-0.105	0.186	0.004	0.143	0.014	-0.173	-0.040	0.191	-0.105	-0.048	-0.068	-0.235	0.106	-0.089	1.000															
C16	-0.083	-0.103	-0.054	0.013	-0.106	-0.059	-0.134	-0.087	-0.006	-0.006	0.006	-0.221	-0.084	0.001	-0.132	1.000														
C17	-0.141	0.033	-0.002	0.036	0.045	-0.175	-0.159	0.109	-0.030	-0.095	0.154	-0.044	-0.022	0.170	0.129	0.153	1.000													
C18	0.258	0.026	0.001	-0.039	-0.179	-0.064	-0.001	-0.047	0.143	-0.031	0.105	0.135	-0.077	0.049	-0.075	-0.033	-0.073	1.000												
C19	0.038	-0.044	-0.054	-0.076	0.083	0.023	-0.055	-0.001	0.043	0.086	-0.092	0.148	0.011	0.012	-0.025	0.068	-0.043	0.028	1.000											
C20	-0.048	0.015	0.135	-0.023	-0.128	-0.081	-0.184	0.037	0.046	-0.129	-0.093	0.079	0.075	-0.086	-0.055	0.292	0.038	-0.014	0.154	1.000										
C21	0.017	0.217	-0.207	-0.030	0.008	0.067	-0.033	-0.063	-0.098	0.038	0.224	0.088	0.034	0.075	0.039	0.059	0.117	-0.071	0.008	0.033	1.000									
C22	0.104	0.222	-0.062	-0.054	0.047	0.021	0.065	-0.069	0.004	0.002	0.018	-0.088	-0.063	-0.011	0.053	-0.077	-0.087	-0.149	0.058	0.078	0.204	1.000								
C23	-0.044	0.042	0.017	-0.038	0.069	-0.162	0.016	0.087	-0.026	0.123	0.089	0.078	0.002	-0.024	0.040	0.068	0.131	-0.042	-0.055	-0.002	0.020	0.005	1.000							
C24	-0.009	-0.302	0.041	-0.026	-0.041	-0.041	0.036	0.024	-0.034	-0.028	-0.121	0.064	-0.208	-0.144	-0.145	0.058	-0.032	-0.080	0.023	-0.024	-0.191	0.042	-0.002	1.000						
C25	0.018	0.130	-0.114	-0.118	0.265	0.014	0.056	0.078	0.135	0.028	-0.049	-0.105	-0.011	0.009	0.090	0.035	-0.054	-0.208	-0.184	-0.025	0.141	0.159	0.112	-0.096	1.000					
C26	-0.073	-0.030	0.071	-0.049	-0.008	0.226	0.054	0.041	-0.008	0.162	-0.010	0.047	-0.008	-0.108	0.032	-0.044	0.041	0.027	0.080	-0.160	0.001	-0.183	-0.049	-0.200	-0.007	1.000				
C27	-0.048	-0.022	-0.016	0.029	-0.013	0.162	0.008	-0.097	0.061	0.079	-0.061	-0.096	-0.057	0.118	0.025	0.042	-0.034	-0.012	-0.104	-0.069	0.055	0.031	0.027	-0.033	0.072	0.051	1.000			
C28	-0.141	-0.057	-0.072	0.002	-0.031	0.114	0.187	0.067	0.152	-0.172	0.204	0.093	-0.043	0.155	-0.218	-0.011	0.136	-0.029	-0.028	0.059	0.009	0.002	0.021	0.202	0.000	-0.087	0.074	1.000		
C29	0.141	0.082	-0.013	-0.029	-0.047	0.217	-0.134	0.105	0.049	0.193	-0.033	0.134	-0.191	-0.032	0.022	0.156	0.032	0.036	0.055	-0.006	0.091	-0.075	-0.074	-0.133	0.083	0.176	0.014	-0.097	1.000	
C30	-0.031	-0.003	-0.043	0.035	0.045	0.032	-0.003	0.021	-0.084	-0.047	0.029	0.112	0.033	-0.012	0.220	-0.107	-0.078	0.006	0.032	-0.071	0.024	-0.061	-0.054	0.044	-0.000	-0.088	0.026	-0.029	0.022	1.000

## Error Correlation Matrices Industrial Sector 1991

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29	C30
C1	1.000																													
C2	0.003	1.000																												
C3	-0.035	-0.084	1.000																											
C4	0.002	0.029	-0.008	1.000																										
C5	-0.072	0.072	0.071	0.093	1.000																									
C6	0.049	-0.071	0.038	-0.043	0.047	1.000																								
C7	-0.305	-0.033	0.075	0.027	-0.005	-0.025	1.000																							
C8	-0.082	0.111	-0.176	-0.022	-0.131	-0.275	-0.010	1.000																						
C9	-0.091	0.054	-0.016	0.058	0.083	-0.031	0.046	-0.104	1.000																					
C10	-0.010	-0.100	0.285	-0.020	0.075	0.125	0.083	0.003	-0.022	1.000																				
C11	-0.110	0.097	0.053	0.028	0.017	-0.097	0.086	0.040	-0.206	0.064	1.000																			
C12	-0.024	0.068	-0.048	0.013	-0.056	0.005	0.250	0.098	0.108	-0.010	0.000	1.000																		
C13	-0.059	-0.056	-0.047	0.148	-0.031	0.086	0.019	0.066	0.059	-0.205	0.008	-0.060	1.000																	
C14	-0.017	0.001	0.780	0.020	0.276	0.001	0.045	-0.075	0.020	0.321	-0.017	-0.084	-0.101	1.000																
C15	0.033	0.000	0.091	-0.035	-0.089	-0.103	0.082	0.166	0.120	0.025	-0.041	0.075	-0.019	0.009	1.000															
C16	-0.129	0.059	-0.081	-0.029	-0.017	0.115	0.150	0.104	-0.248	0.023	-0.021	0.081	-0.152	-0.081	0.048	1.000														
C17	0.069	0.065	0.041	-0.206	-0.134	-0.179	-0.052	0.179	0.043	0.002	0.010	0.091	-0.181	0.098	0.265	-0.004	1.000													
C18	-0.051	-0.029	-0.123	0.034	-0.025	-0.150	-0.131	0.046	0.142	-0.041	-0.007	-0.201	-0.101	0.036	0.186	0.105	0.145	1.000												
C19	0.076	0.015	-0.085	0.014	-0.025	0.029	-0.044	0.083	0.018	0.014	-0.058	-0.060	0.057	-0.059	0.069	-0.135	0.121	0.055	1.000											
C20	0.073	0.100	0.088	-0.062	0.090	-0.075	-0.048	0.018	0.089	-0.093	0.024	0.087	0.021	-0.009	-0.049	-0.131	-0.052	-0.275	-0.027	1.000										
C21	-0.010	0.084	0.103	-0.071	-0.027	-0.015	-0.013	0.220	0.071	0.089	0.089	-0.162	0.048	0.034	-0.134	-0.043	0.097	0.002	0.166	0.074	1.000									
C22	-0.014	-0.263	0.028	-0.015	0.161	-0.101	-0.087	0.006	-0.010	-0.017	0.183	-0.020	0.023	0.098	0.016	-0.129	0.022	0.056	0.043	-0.109	-0.123	1.000								
C23	0.037	0.069	0.048	-0.252	-0.003	0.032	0.078	-0.147	-0.040	-0.049	0.090	0.022	-0.037	0.025	-0.005	0.024	0.115	0.032	-0.026	0.050	0.101	0.014	1.000							
C24	0.010	0.006	-0.010	-0.052	-0.073	-0.105	0.134	0.213	-0.033	0.003	-0.090	0.092	-0.061	-0.063	0.334	0.202	0.194	-0.017	-0.116	-0.053	0.014	0.020	-0.031	1.000						
C25	-0.002	-0.012	-0.132	-0.013	0.060	-0.018	-0.008	-0.016	-0.142	-0.037	-0.015	-0.037	-0.090	-0.044	-0.479	0.099	-0.196	0.045	-0.170	-0.042	-0.032	-0.056	-0.027	0.039	1.000					
C26	0.073	-0.040	0.011	0.029	-0.028	-0.025	0.071	0.103	-0.021	0.029	0.145	-0.083	0.102	0.063	-0.020	0.068	-0.091	0.118	-0.128	0.071	-0.024	-0.221	-0.010	-0.024	-0.062	1.000				
C27	0.086	0.085	-0.209	0.027	0.103	0.148	-0.182	0.095	0.195	-0.166	-0.130	-0.107	0.026	-0.106	-0.228	0.008	-0.115	0.187	-0.026	0.020	-0.001	0.086	-0.131	0.079	0.074	-0.148	1.000			
C28	-0.203	0.007	-0.159	0.054	-0.162	-0.135	-0.050	0.184	-0.025	0.315	0.043	-0.164	-0.038	-0.170	0.023	0.092	-0.147	0.157	0.063	-0.061	0.042	-0.000	-0.062	0.035	0.047	0.004	0.231	1.000		
C29	-0.224	-0.028	0.207	0.033	-0.036	0.007	0.042	-0.046	0.144	-0.064	-0.163	-0.136	0.089	0.085	0.136	-0.125	0.014	0.048	0.035	-0.040	0.220	-0.082	0.079	0.080	-0.156	0.093	-0.094	0.084	1.000	
C30	-0.202	-0.129	-0.043	-0.104	-0.036	-0.100	-0.085	0.072	0.004	0.058	0.217	0.080	-0.088	-0.043	-0.160	-0.087	-0.091	0.117	0.027	0.141	-0.009	0.159	0.055	-0.022	0.021	-0.015	0.072	0.167	-0.082	1.000

In order to test the degree of contemporaneous correlation more formally, the following test was carried out based on the results of both OLS estimation and Seemingly Unrelated Regressions Estimation (SURE) for each sector in our study sample:

$$H_0: [ \text{cov}(U_{it}, U_{jt}) \neq 0 \text{ for } i \neq j ]$$

The test statistic used is:

$$\tau = n [ \sum \log_e (S^2_i) - \log_e |\Sigma| ]$$

where :

$$\begin{aligned} S^2_i &= \sum e^2_{it} / n \\ e^2_{it} &= \text{OLS residuals from estimation of the } i\text{th equation} \\ \Sigma &= \begin{matrix} \delta_{11} & \delta_{12} & \dots & \delta_{1j} \\ \cdot & \cdot & \dots & \cdot \\ \cdot & \cdot & \dots & \cdot \\ \cdot & \cdot & \dots & \cdot \\ \delta_{j1} & \delta_{j2} & \dots & \delta_{jj} \end{matrix} \end{aligned}$$

$$\delta_{ij} = \frac{\sum e_{it} \cdot e_{jt}}{n}$$

$e_{it}$ ,  $e_{jt}$  are the SURE residuals from estimation of the  $i$ th and  $j$ th equations

$\Sigma$  = the determinant of the matrix  $\Sigma$

Under  $H_0$ ,  $\tau \sim \chi^2$  with degrees of freedom  $1/2M(M-1)$ , where  $M$  = number of equations. As contemporaneous correlation increase,  $\tau$  increase. Accordingly, the decision rule is that:

If  $\tau < \chi^2$  critical value, OLS is used,

If  $\tau > \chi^2$  critical value, SURE is used.



Table 7.7 shows the values of the test statistic  $\tau$  for both years 1990 and 1991 for each sector in our study sample. The test statistic is distributed chi-square with  $M(M-1)/2$  degrees of freedom (where  $M$ = number of companies in each sector ) under a null hypothesis of zero contemporaneous correlation. The null hypothesis is accepted for both years for each sector in our sample companies indicating that contemporaneous correlation is not present, and that OLS rather than SURE is the estimation procedure which should be employed in our empirical analysis.

**TABLE 7.7**

**Test results for Contemporaneous Correlation  
1990**

	Test statistic $\tau$
Banks and Financial Sector	16.662
services Sector	56.025
Industrial Sector	54.012

**Test results for contemporaneous correlation  
1991**

	Test statistic $\tau$
Banks and Financial Sector	36.753
services Sector	53.018
Industrial Sector	84.014

Since our regression model does fulfill all the underlying assumptions of standard linear regression and the OLS method. It can be concluded that the regression results reported in Tables 8.1 and 8.2 (in Chapter 8) are very reliable from a statistical point of view.

## 7.4 SUMMARY

This chapter has investigated various statistical properties of the share price data. A number of descriptive statistics were presented, which helped to identify basic statistical characteristics of the data set which used to construct the true model (the market model in Chapter six, Section 6.3.6.1).

Diagnostic tests indicate that some of the assumptions underlying standard estimation and hypothesis testing procedures have been violated. Nevertheless, the hypothesis of no serial correlation is accepted for all companies in our study sample for 1990. Only in one case does the test statistic falls within the zone of indecision. For 1991, in sixteen cases the test statistics fall within the zone of indecision while, in the other thirty two cases, the null hypothesis of no serial correlation is accepted. The autocorrelation of the errors of these companies were corrected. Potential difficulties with the statistical analysis were reduced since the assumptions of linearity and homoscedasticity are accepted for the majority of cases.

Error terms are clearly shown to be non-normally distributed for the companies in both years. However, in previous event studies, researchers have concluded that non-normality does not have a serious effect on the efficiency of standard estimation procedures, and large sample theory still provides a justification for hypothesis testing even in the presence of non-normality.

Finally, clear evidence is found that there is no contemporaneous correlation between the error terms of different equations within the study sample. This suggests that Ordinary Least Squares (OLS) rather than Seemingly Unrelated Regressions Estimation (SURE) is the appropriate procedure to be used for estimation in the empirical chapter.

# CHAPTER EIGHT

## JORDANIAN STOCK MARKET REACTION TO THE CHANGE TO IAS

### 8.1 INTRODUCTION

The two preceding chapters discussed the methodology employed for estimating and testing for market reactions, identified the events to be examined and described the data used. This chapter reports the results of the empirical analysis. The analysis centres on the stock price performance of Jordanian companies listed on the Amman Financial Market (AFM) around annual reports announcement dates. Some of these firms adopted IASs in 1990. Others did not.

This chapter continues as follows. Section 8.2 presents the regressions undertaken in this study. Section 8.3 presents the abnormal returns and cumulative abnormal returns (CARs) calculations. Section 8.4 describes the stock market reaction and presents the empirical results.

### 8.2 REGRESSION ANALYSIS

In order to estimate the market model (MM) parameters, daily share prices and market indices were collected from of the AFM. The parameters were measured by regressing each stock's daily return on the corresponding daily return from the market daily index using the ordinary least square (OLS) estimation method. Each regression used 100 daily observations preceding the test period [see Chapter 6 Section 6.2.8]. The MM parameters estimates for the study sample are presented in Tables 8.1 and 8.2.

**Table 8.1: Market Model Estimation Results (1990)**

Stock Code	Stock No.	Alpha ( $\alpha$ )	Beta ( $\beta$ )	T-ratio	R-sq ( $R^2$ )	Corr.
00	1	-0.000277	0.3583	0.91	0.8%	0.092
02	2	0.000913	0.1752 *	2.20	4.7%	0.218
04	3	-0.000688	1.1466 **	4.20	15.4%	0.392
05	4	0.001699	2.0247 **	5.36	22.9%	0.478
07	5	0.002173	0.9052 *	2.09	4.3%	0.208
08	6	0.000073	2.0281 **	4.65	18.2%	0.427
11	7	0.001484	0.8090	0.58	0.4%	0.059
14	8	0.000569	0.7076 *	2.31	5.2%	0.228
18	9	0.001958	0.9123 *	2.22	2.9%	0.171
19	10	0.000048	0.4606	1.42	2.0%	0.143
25	11	-0.002474	0.4443	0.39	6.5%	0.255
36	12	-0.001005	0.6501 **	2.33	5.3%	0.230
40	13	-0.001542	1.4609 **	4.02	14.3%	0.378
41	14	-0.001123	1.7406 **	6.10	27.75	0.527
42	15	0.003279	1.0130 *	2.18	4.7%	0.216
45	16	0.005810	1.5068 *	1.75	3.1%	0.175
46	17	-0.004226	0.7302 *	2.18	5.4%	0.232
48	18	0.000312	0.2751 **	2.61	7.5%	0.274
51	19	0.001845	0.7706 *	1.71	2.8%	0.167
52	20	0.000100	0.1057	0.32	0.1%	0.032
55	21	0.000698	1.0130 *	1.82	3.3%	0.181
56	22	-0.001065	0.8223 *	2.07	4.2%	0.205
58	23	-0.000021	0.2444 **	2.67	6.8%	0.261
61	24	0.002010	1.0629 *	1.91	3.6%	0.190
63	25	0.000409	0.6676 *	1.70	2.9%	0.170
64	26	0.001329	0.7336	1.61	2.6%	0.161
65	27	0.003310	0.8840 *	2.28	5.1%	0.226
67	28	0.001703	1.4924 **	2.43	5.8%	0.241
70	29	0.003197	0.3735	0.99	1.0%	0.100
71	30	-0.000542	0.2050	1.27	5.8%	0.198
73	31	0.000303	0.3038	0.96	0.6%	0.077
74	32	0.000957	1.5087 **	4.43	16.8%	0.410
75	33	0.002940	0.9189 **	2.45	6.8%	0.261
76	34	0.002688	0.8276 **	3.17	13.4%	0.366
81	35	0.000355	0.8551 *	2.24	4.9%	0.222
82	36	0.003376	0.9288	1.53	2.3%	0.153
83	37	0.000942	1.2121 **	3.11	9.1%	0.301
84	38	0.002212	1.2512	1.43	2.1%	0.143
85	39	0.007515	0.5167 *	1.74	2.2%	0.148
86	40	0.004247	0.9952	1.51	2.3%	0.151
87	41	0.002353	1.7950	1.51	2.3%	0.152
88	42	0.000330	0.8473 **	2.52	13.9%	0.373
89	43	-0.000791	0.8702 *	2.26	6.3%	0.251
90	44	0.001938	0.5287	1.54	2.4%	0.155
91	45	0.005651	0.2721	1.60	5.8%	0.241
92	46	0.001281	1.6623 **	4.02	14.3%	0.378
93	47	0.000923	0.4487	1.45	2.1%	0.145
94	48	0.007059	1.6176 *	1.67	2.8%	0.167
<b>Average</b>			0.89700 5	2.23	6.3%	0.227

\* significant at 5% level

\*\* significant at 1% level

**Table 8.2: Market Model Estimation Results (1991)**

Stock Code	Stock No.	Alpha ( $\alpha$ )	Beta ( $\beta$ )	T-ratio	R-sq ( $R^2$ )	Corr.
00	1	-0.000184	0.7891 **	2.83	7.6%	0.276
02	2	0.000452	0.6026 *	2.21	4.8%	0.219
04	3	-0.000220	0.1325	0.53	0.3%	0.054
05	4	-0.001160	1.7461 **	4.34	16.3%	0.404
07	5	-0.001534	0.6386 *	2.17	4.6%	0.214
08	6	-0.000473	0.3500	0.84	0.9%	0.095
11	7	-0.000952	1.4511 **	3.21	9.6%	0.310
14	8	-0.002537	0.8009 *	1.72	3.0%	0.172
18	9	-0.001150	0.8696 **	4.65	15.7%	0.396
19	10	-0.000323	0.8208 **	4.08	14.6%	0.383
25	11	-0.002506	0.2220 **	2.45	6.4%	0.253
36	12	-0.000300	2.0009 **	4.32	16.15%	0.402
40	13	0.002743	0.7305 *	1.69	3.8%	0.195
41	14	0.000352	0.8067 **	2.77	7.3%	0.271
42	15	0.000234	0.6473 *	1.65	2.6%	0.161
45	16	-0.002181	0.5870 *	1.78	2.3%	0.152
46	17	-0.002525	0.6353 **	2.46	5.7%	0.239
48	18	-0.001521	0.5248 *	1.79	3.2%	0.179
51	19	-0.001033	0.9760	1.58	3.4%	0.184
52	20	-0.000642	0.1537	0.51	0.3%	0.052
55	21	0.001334	1.7018 **	2.92	8.1%	0.284
56	22	0.002442	0.4906 *	2.08	4.3%	0.207
58	23	0.000368	1.2676 **	4.39	16.6%	0.407
61	24	0.001624	1.4955 **	4.01	14.2%	0.377
63	25	0.000697	0.8113 *	1.87	3.7%	0.192
64	26	0.0006713	0.0956	0.42	0.2%	0.042
65	27	0.000855	0.2582 *	2.23	5.5%	0.194
67	28	0.000194	0.4410 *	2.04	4.6%	0.214
70	29	-0.001257	1.7848 **	6.55	30.7%	0.554
71	30	-0.001233	0.1712	0.41	0.2%	0.044
73	31	-0.002140	0.7206 *	1.72	2.5%	0.158
74	32	0.001399	0.4341 *	1.94	4.7%	0.217
75	33	-0.002485	0.9513 **	2.37	6.2%	0.249
76	34	0.002287	0.1862	0.38	0.4%	0.063
81	35	0.0005379	1.5085 **	6.27	28.8%	0.537
82	36	-0.000430	2.0796 **	2.47	5.9%	0.243
83	37	-0.000104	0.8157 *	2.21	6.6%	0.257
84	38	0.000001	0.2651	0.81	0.7%	0.082
85	39	-0.001077	1.0291 **	10.96	55.3%	0.744
86	40	0.002062	0.7624 **	2.37	7.8%	0.279
87	41	0.004299	1.5843 **	2.60	6.5%	0.256
88	42	-0.001834	0.7110 *	1.96	4.1%	0.202
89	43	-0.001506	1.1700 **	3.81	13.0%	0.361
90	44	0.001906	0.7740 *	1.68	3.1%	0.176
91	45	0.0014496	0.9724 **	2.34	5.1%	0.226
92	46	0.000052	0.8556 *	2.16	4.5%	0.212
93	47	-0.000451	1.6631 **	5.49	23.7%	0.487
94	48	-0.003192	0.6712 *	1.86	3.5%	0.186
<b>Average</b>			0.8574	2.66	8.3%	0.251

\* significant at 5% level

\*\* significant at 1% level

## **Beta ( $\beta$ )**

Beta values for the complete sample average 0.897 and 0.857 for 1990 and 1991 respectively, which is less than the expected value of 1. This indicates that low beta is a dominant characteristic for stocks in our sample. The significance of the beta coefficients as can be ascertained by the corresponding t-values. As can be seen from Tables 8.1 and 8.2, ten stocks in 1990 (namely stocks 4, 6, 13, 14, 16, 28, 32, 41, 46, 48) and nine stocks in 1991 (namely stocks 4, 7, 12, 21, 24, 29, 35, 36, 47) have the largest beta coefficients, and these are greater than 1. This implies that those stocks are more volatile than the market and can be classified as "aggressive stocks". The estimated regression equations are generally statistically significant according to the t-statistics (2.23 and 2.66 on average for 1990 and 1991 respectively).

## **R-square ( $R^2$ )**

Tables 8.1 and 8.2 reveal low average R-sqs (6.3% for 1990 and 8.3% for 1991). The R-square represents the proportion of the total variance in a stock's return which is explained by the market variable. Fitzgerald (1975) pointed out that, in studies where daily data are used, the mean R-sq is usually low. The low average R-square is, therefore, not inconsistent with the estimated low betas in other similar studies. A subset of previous studies reported similar or even lower r-sqs [i.e., Pogue and Solnik (1974); Bertonche (1979); Al-Hmoud (1987); Bowen, Burgstahler and Daley (1987); Smirlock and Kaufold (1987); and El-Issa (1988)]. Furthermore, a close look at any issue of the Risk Measurement Service journal produced by London Business School will show that even on the London Stock Exchange, there are many stocks with a very low R-sqd. In common with other studies this research therefore proceeds on the assumption that low R-sqrd does not present an obstacle.

### **8.3 ABNORMAL RETURNS AND CUMULATIVE ABNORMAL RETURNS**

Tables 8.1 and 8.2 show the market model parameters estimates. The intercept ( $\alpha$ ) and slope ( $\beta$ ) parameter estimates obtained for each of the 48 firms were used to calculate the normal (estimated) return for each of the 81 days in the test period (see Chapter 6 Figure 6.2). Using Equation 6.7, daily abnormal returns were calculated for each of the 48 firms. To confirm the results obtained with the market model, two further models were employed; the average return model and raw return model. To answer the questions and to test the hypotheses posed in this study, the average daily abnormal returns were calculated using Equation 6.8. The cumulative abnormal returns (CARs) were then calculated using Equation 6.9.

To examine whether IAS-based earnings figures possess incremental information over earnings figures based on the Jordanian accounting rules (JAR) the stocks were broken into two portfolios depending on whether the firms adopted international accounting standards (IAS) or not. Adopter firms in 1990 constitute the experimental group and the non-adopter firms provide the control group. For purposes of sensitivity analysis the two major portfolios were further divided into subportfolios according to economic sector, trading pattern, firm ownership, firm size and firm performance (for more details see Chapter 6 Section 6.2.3). Accordingly, the average daily abnormal returns and CARs were calculated for each subportfolio for both years 1990 and 1991. The results are now presented.

### **8.4 STOCK MARKET REACTION TO ACCOUNTING CHANGE**

This section presents and describes the results [average abnormal returns (AARs) and cumulative abnormal returns (CARs)] for the two major portfolios (the control and experimental groups) for 1990 and 1991 and the results from each sub-portfolio.

#### 8.4.1 All Firms (Study Sample) Share Price Reactions

This section reports the results of the tests of the  $H_{01}$  and  $H_{02}$  formulated in Chapter 6, Section 6.2.11 for the sample study (all firms). Summaries of the results [(AARs) and (CARs)] for each group (control and experimental) of 1990 and 1991 using the market model (MM) are shown in Appendix C Table C.1. For the average return model (ARM) the results are shown in Appendix D Table D.1. Appendix E Table E.1 shows the results using the raw return model (RRM).

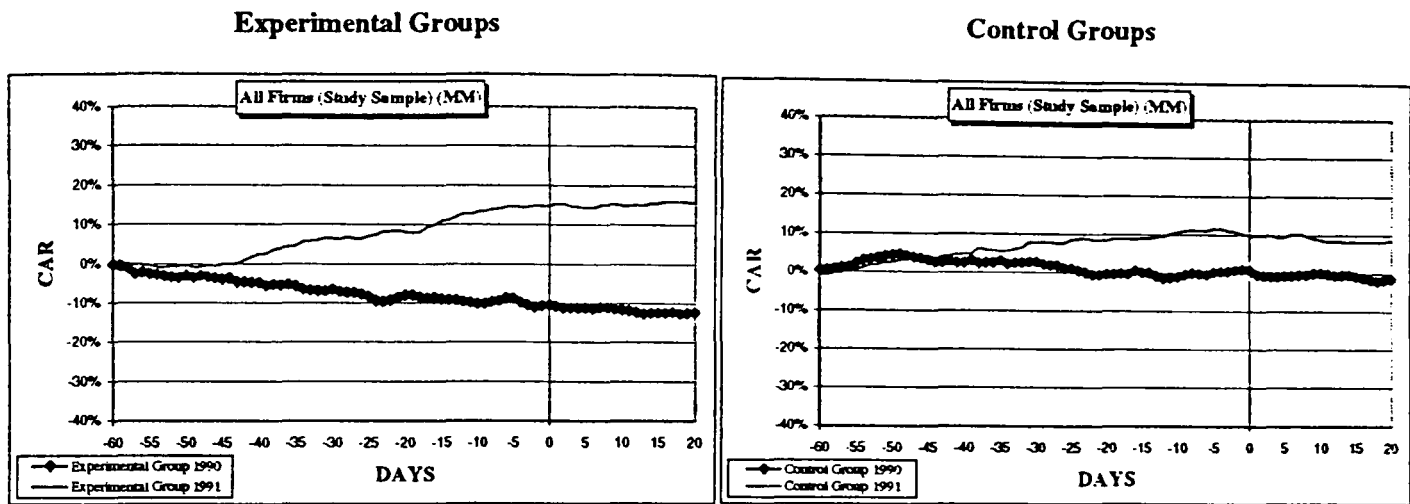
The first question posed in Chapter 6 was, essentially, "Has the accounting information changed in a way that is observable in price formation?". The second question was "Do international accounting standards (IAS) have higher information content than the Jordanian accounting rules (JAR)?". The corresponding null hypotheses are  $H_{01}$ , which states that, the change in accounting regimes has no effect on price movement, and  $H_{02}$ , which states that for all firms (study sample) earnings releases based on IAS in period  $t$  (1991) do not have price reactions which differ to those from firms with earnings releases based on a Jordanian accounting rules used in period  $t-1$  (1990). i.e., the average abnormal returns for the event window in 1991 are not significantly different from the average abnormal returns for the event windows in 1990.

To test  $H_{01}$  and  $H_{02}$  we focus on the (CARs) on the days surrounding the earnings announcements. Visual and statistical analyses of the (CARs) were carried out. Figure 8.1 shows the CARs curves for the study sample for 1990 and 1991 using the MM, ARM and RRM in panels A, B and C respectively.

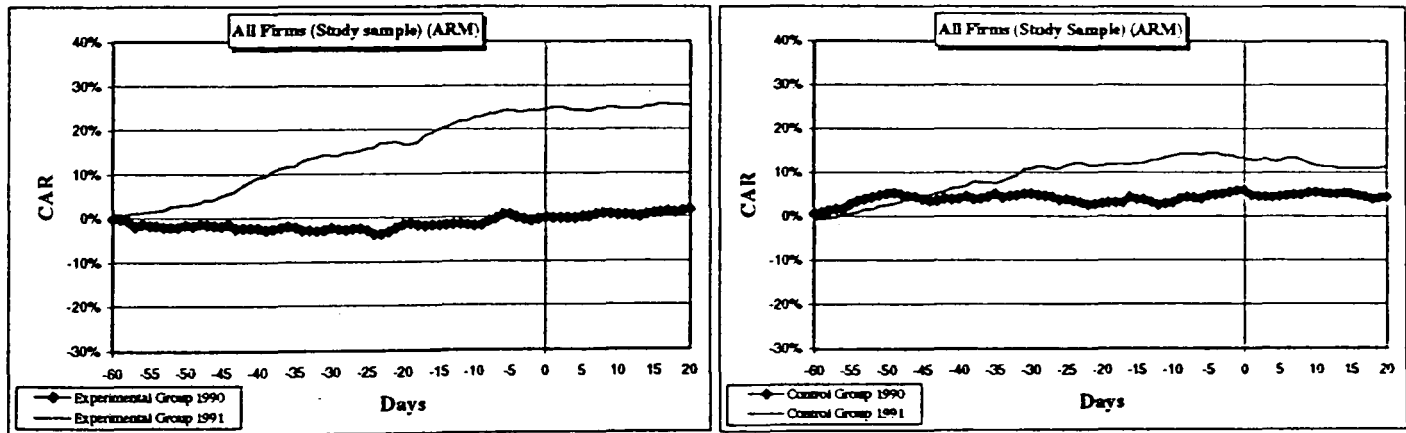


**Figure 8.1**  
**Cumulative Abnormal Returns (CARs) Around Earnings Announcements**  
**All Firms (Study Sample)**

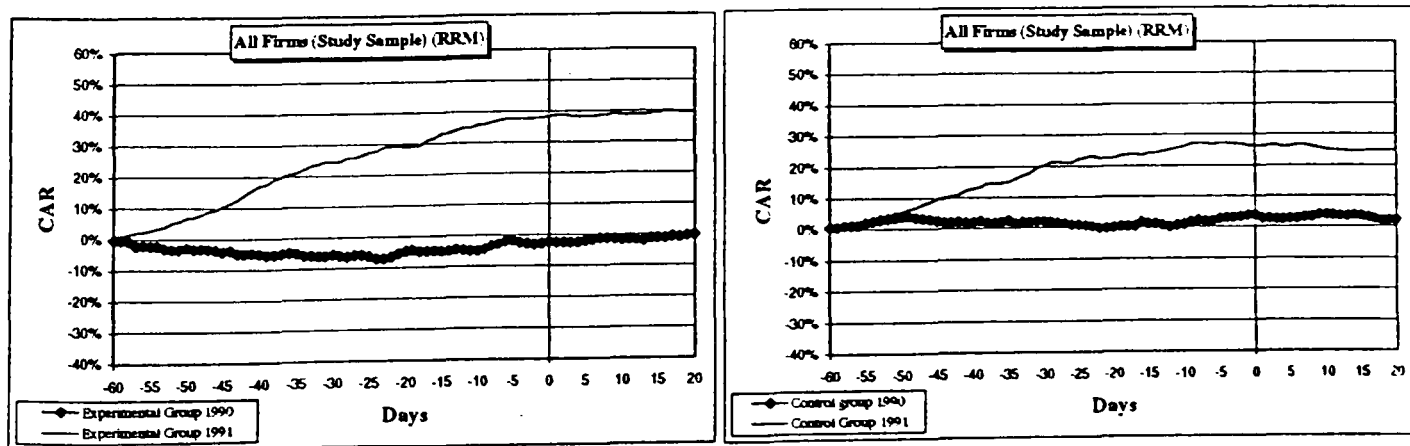
**Panel A (Market Model)**



**Panel B (Average Return Model)**



**Panel C (Raw Return Model)**



As can be seen from Figure 8.1 panel A (MM results) the experimental group of 1991 recorded positive CARs over the test period, whilst the experimental group of 1990 recorded negative CARs. Using the ARM (panel B) the experimental group of 1991 recorded highly positive CARs whilst the experimental group of 1990 recorded almost zero CARs. Similar results were obtained under the RRM as can be seen in panel C. The size of the reaction observed on the control group is much smaller (as can be seen from Figure 8.1) than for the experimental group.

To test  $H_{01}$  and  $H_{02}$  more formally, a t-test is used, in which the cross sectional variance across time is used to test the significance of the drift in the CARs over various intervals (Equations 6.10, 6.11 and 6.12) as indicated in Chapter 6 Section 3.8. Table 8.3 presents the CARs t-test results for study sample (experimental and control groups) over various subintervals for the MM, ARM and RRM in panels A, B and C respectively.

Panel A in Table 8.3 shows that the MM over all intervals recorded significant negative CARs at 1 percent level for experimental group of 1990, whilst the experimental group of 1991 recorded significant positive CARs at 1 percent level. Panel B shows that ARM recorded significant positive CARs at 1 percent level for the experimental group of 1991, but for 1990 no reaction is noticeable, also, RRM recorded similar to ARM results (in panel C). Therefore, we can reject  $H_{01}$ . A possible interpretation is that the new accounting standards (IAS) do have higher information content than the Jordanian accounting rules (JAR).

For  $H_{02}$  the evidence is mixed. Firstly, the results from the three tests differ. The CARs for the experimental group 1990 show almost no reaction for the ARM and the RRM, but a negative movement for the MM. For 1991 experimental groups, all models show a positive drift. This would be consistent with the IASs providing more

information of a positive nature. Caution should be exercised in interpreting this results, however, since there is a dual hypothesis present. i.e., A) more information was provided and B) the information was positive.  $H_{02}$  will therefore be revisited after further test have been carried out.

**Table 8.3: Cumulative Abnormal Returns (CARs) t-test Results, All Firms (Study Sample)**

Year	Interval	Experimental Groups				Control Groups			
		N	CAR	CSD	t-test	N	CAR	CSD	t-test
<b>Panel A (Market Model)</b>									
1990	-60-30	31	-0.06576	0.02392	-2.749 **	17	0.02640	0.02786	0.947
	-30-0		-0.10509	0.02417	-4.347 **		0.00794	0.02661	0.298
	0-10		-0.11692	0.01185	-9.866 **		0.00020	0.01297	0.015
	0-20		-0.12369	0.01549	-7.985 **		-0.01493	0.01664	-0.897
	-60-20		-0.12369	0.03698	-3.344 **		-0.01493	0.04159	-0.358
1991	-60-30	31	0.06489	0.02281	2.845 **	17	0.07850	0.02636	2.977 **
	-30-0		0.14892	0.02470	6.029 **		0.10092	0.02912	3.465 **
	0-10		0.15072	0.01094	13.77 **		0.08667	0.01545	5.609 **
	0-20		0.15665	0.01400	11.89 **		0.08679	0.01843	4.709 **
	-60-20		0.15665	0.03580	4.375 **		0.08679	0.04274	2.030 *
<b>Panel B (Average Return Model)</b>									
1990	-60-30	31	0.02456	0.02415	1.016	17	0.05071	0.02865	1.769 *
	-30-0		0.02459	0.02417	1.017		0.05787	0.02649	2.184 *
	0-10		0.01157	0.01137	1.017		0.05473	0.01297	4.219 **
	0-20		0.01528	0.01502	1.017		0.04360	0.01664	2.620 **
	-60-20		0.01699	0.03693	0.460		0.04360	0.04200	1.038
1991	-60-30	31	0.14127	0.02163	6.531 **	17	0.10967	0.02666	4.113 **
	-30-0		0.24614	0.02398	10.26 **		0.13206	0.02966	4.452 **
	0-10		0.24782	0.01086	22.81 **		0.11715	0.01586	7.386 **
	0-20		0.25475	0.01399	18.20 **		0.11394	0.01900	5.996 **
	-60-20		0.25475	0.03467	7.347 **		0.11394	0.04348	2.620 **
<b>Panel C (Raw Return Model)</b>									
1990	-60-30	31	-0.05598	0.02511	-2.229 *	17	0.02263	0.03012	0.751
	-30-0		-0.02427	0.02475	-0.980		0.03636	0.02704	1.344
	0-10		-0.01736	0.01166	-1.488		0.04009	0.01345	2.980 **
	0-20		-0.00282	0.01543	-0.182		0.02193	0.01716	1.277
	-60-20		-0.00282	0.03807	-0.074		0.02193	0.04351	0.504
1991	-60-30	31	0.2457	0.02354	10.43 **	17	0.20283	0.02952	6.870 **
	-30-0		0.38405	0.02459	15.61 **		0.26221	0.03062	8.563 **
	0-10		0.38772	0.01122	34.55 **		0.25099	0.01594	15.74 **
	0-20		0.39660	0.01450	27.35 **		0.24973	0.01934	12.91 **
	-60-20		0.39660	0.03653	10.85 **		0.24973	0.04608	5.419 **

\* Significant at the 5 percent level \*\* Significant at the 1 percent level

CAR = Cumulative Average Abnormal Returns CSD = Cumulative Standard Deviation N = The sample size

## 8.4.2 Financial Sector Share Price Reactions

This section reports the results of the tests of  $H_{03}$  formulated in Chapter 6, section

6.2.11 for the financial sector. A summary of the results [(AARs) and (CARs)] using the MM are presented in Appendix C Table C.2. For the ARM the results are presented in Appendix D Table D.2. Appendix E Table E.2 presents the results using RRM. All these results are summarized in Figure 8.2. Panel A shows the CARs curves using the MM, panel B shows the CARs curves using ARM. The CARs curves using RRM are shown in panel C.

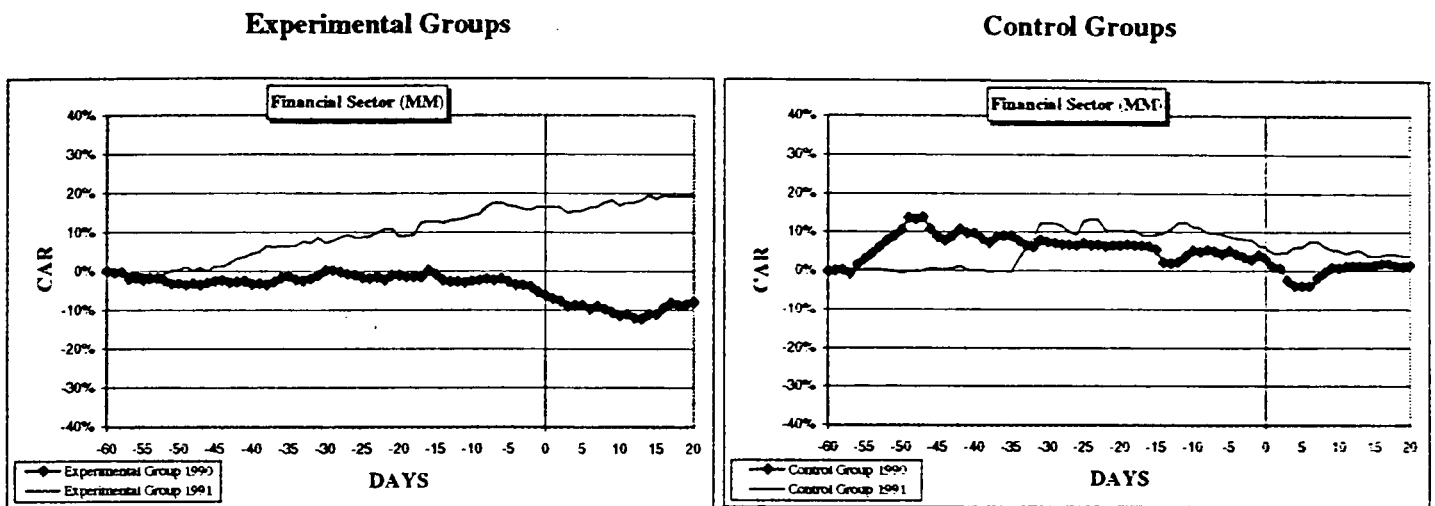
From Figure 8.2 panel A it can be seen that, the experimental group of 1991 recorded a continuous positive increasing CARs trend, but the experimental group of 1990, for the period following the earnings announcements, recorded a continuous negative CARs trend. Panels B and C record almost similar results. No such clear reaction was observed for the control groups (as can be seen from Figure 8.2).

To test  $H_{03}$  (which states that, for the financial sector earnings releases based on IAS in 1991 do not have price reactions which differ to those from firms with earnings releases based on a Jordanian accounting rules in 1990) CARs t-tests were carried out over various sub-intervals. The results for the experimental and control groups are presented in Table 8.4 for the MM, ARM and RRM in panels A, B and C respectively.

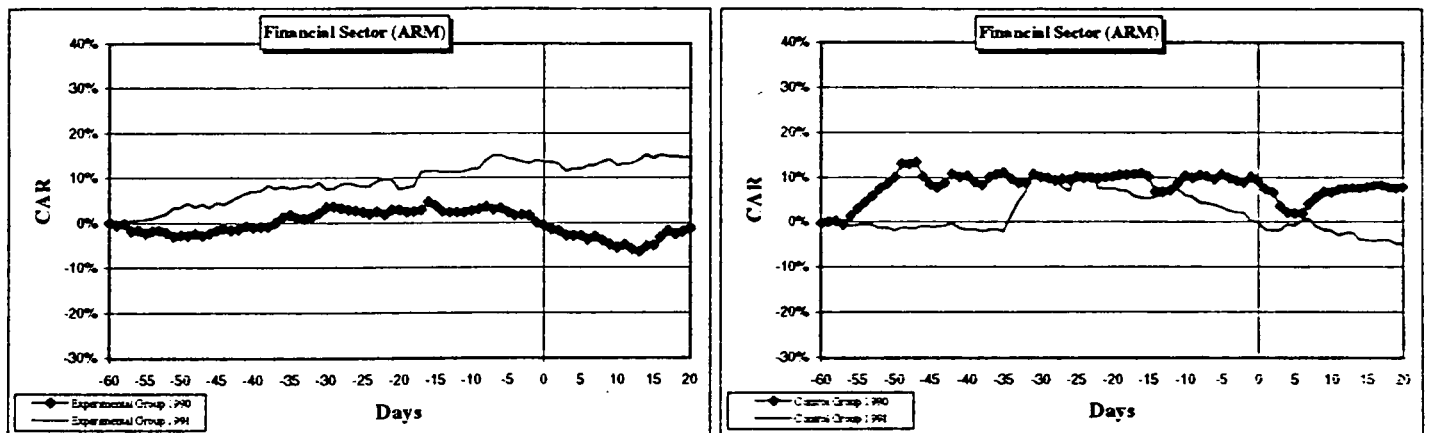
Using the MM (panel A in Table 8.4) the experimental group of 1990 recorded significant negative CARs at 1 and 5 percent levels over the 0 to 10 and 0 to 20 intervals respectively. For the experimental group of 1991 the intervals -30 to 0 and -60 to 20 recorded significant positive CARs at the 5 percent level and intervals 0 to 10 and 0 to 20 recorded significant positive CARs at the 1 percent level. Using ARM, panel B shows that, for 1990, there was no reaction. For 1991 the intervals -30 to 0, 0 to 10 and 0 to 20 recorded significant positive CARs at 5, 1 and 1 percent levels respectively.

**Figure 8.2**  
**Cumulative Abnormal Returns (CARs) Around Earnings Announcements**  
**Financial Sector**

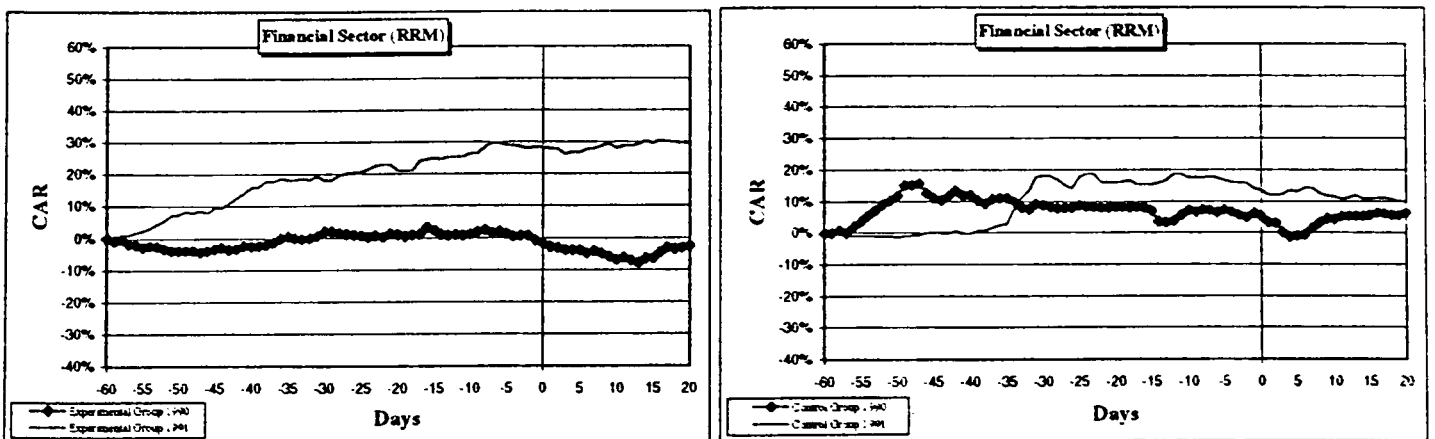
**Panel A (Market Model)**



**Panel B (Average Return Model)**



**Panel C (Raw Return Model)**



In panel C Table 8.4 (using RRM) interval 0 to 10 recorded significant negative CARs at the 5 percent level. For 1991 there are significant positive CARs at the 1 percent level over all intervals. No reactions are recorded for control groups for the three models as can be seen from Table 8.4. Accordingly, we reject  $H_{03}$ , that, for the financial sector, earnings releases based on IAS do not have price reactions which differ to those from firms with earnings releases based on Jordanian accounting rules.

The results are supportive of the view that the accounts of the experimental group of 1991 (financial sector) have higher information content than those of the experimental group of 1990.

**Table 8.4: Cumulative Abnormal Returns (CARs) t-test Results, Financial Sector**

Year	Interval	Experimental Groups				Control Groups			
		N	CAR	CSD	t-test	N	CAR	CSD	t-test
<b>Panel A (Market Model)</b>									
1990	-60-30	6	0.00107	0.04312	0.024	3	0.07280	0.08725	0.834
	-30-0		-0.06158	0.04074	-1.511		0.02941	0.07711	0.381
	0-10		-0.11428	0.02946	-3.879 **		0.00568	0.04577	0.124
	0-20		-0.07851	0.03804	-2.063 *		0.01519	0.04949	0.306
	-60-20		-0.07851	0.06866	-1.114		0.01519	0.12527	0.121
1991	-60-30	6	0.07268	0.04718	1.540	3	0.12325	0.07457	1.652
	-30-0		0.16553	0.05049	3.278 *		0.06139	0.07560	0.812
	0-10		0.16960	0.02434	6.967 **		0.05318	0.04455	1.193
	0-20		0.19394	0.03255	5.958 **		0.03917	0.05095	0.768
	-60-20		0.19394	0.07546	2.570 *		0.03917	0.11717	0.334
<b>Panel B (Average Return Model)</b>									
1990	-60-30	6	0.03454	0.04551	0.759	3	0.09915	0.08872	1.117
	-30-0		-0.00693	0.04054	-0.170		0.08924	0.07719	1.156
	0-10		-0.05617	0.02900	-1.936		0.06510	0.04587	1.419
	0-20		-0.01343	0.03815	0.352		0.07813	0.04978	1.569
	-60-20		-0.01343	0.07028	0.191		0.07813	0.12661	0.617
1991	-60-30	6	0.07570	0.04861	1.557	3	0.10613	0.07349	1.444
	-30-0		0.13677	0.04920	2.779 *		-0.00144	0.07469	-0.019
	0-10		0.12800	0.02466	5.190 **		-0.01966	0.04535	-0.433
	0-20		0.14673	0.03265	4.493 **		-0.04675	0.05188	-0.900
	-60-20		0.14673	0.07563	1.940		-0.04675	0.11649	-0.401
<b>Panel C (Raw Return Model)</b>									
1990	-60-30	6	0.01983	0.04819	0.411	3	0.08451	0.09442	0.895
	-30-0		-0.01934	0.04163	-0.464		0.05038	0.07853	0.641
	0-10		-0.06914	0.02911	-2.375 *		0.04163	0.04753	0.875
	0-20		-0.02631	0.03919	-0.671		0.06329	0.05181	1.221
	-60-20		-0.02631	0.07328	-0.359		0.06329	0.13195	0.479
1991	-60-30	6	0.18080	0.05168	3.498 **	3	0.18075	0.07593	2.380
	-30-0		0.28258	0.05091	5.550 **		0.13525	0.07439	1.818
	0-10		0.28146	0.02514	11.19 **		0.11482	0.04261	2.694
	0-20		0.29627	0.03382	8.760 **		0.10085	0.04976	2.026
	-60-20		0.29627	0.07928	3.737 **		0.10085	0.11704	0.861

\* Significant at the 5 percent level \*\* Significant at the 1 percent level

CAR = Cumulative Average Abnormal Returns CSD = Cumulative Standard Deviation N = The sample size

### 8.4.3 Service Sector Share Price Reactions

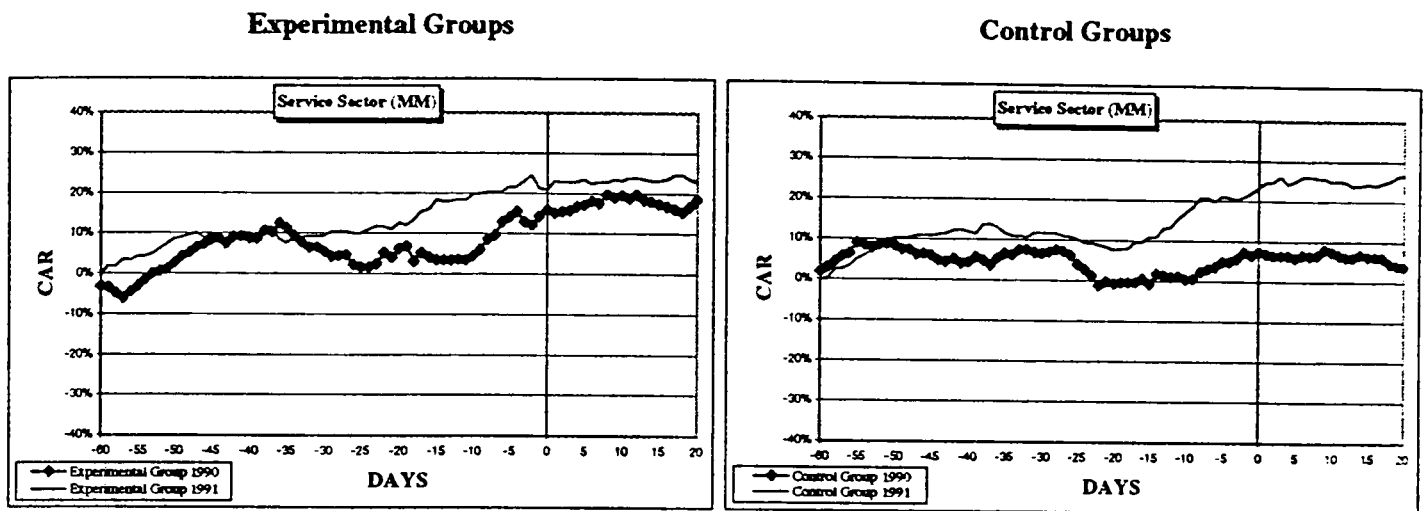
This section reports the results of the tests of  $H_{04}$  formulated in Chapter 6, Section 6.2.11 for the service sector. A summary of the results [(AARs) and (CARs)] are presented in Appendix C Table C.3, Appendix D Table D.3 and Appendix E Table E.3, using the MM, ARM and RRM respectively. These results are summarized in Figure 8.3.

As can be seen from Figure 8.3 the CARs curves for experimental and control groups of 1990 and 1991 track each other and both demonstrate a continuous positive trend. Also, the CARs t-test results in Table 8.5 reveal significant positive CARs for both the experimental and control groups of 1990 and 1991. Therefore, we accept  $H_{04}$ , that, for the service sector, earnings releases based on IAS do not have price reactions which differ to those from firms with earnings releases based on Jordanian accounting rules.

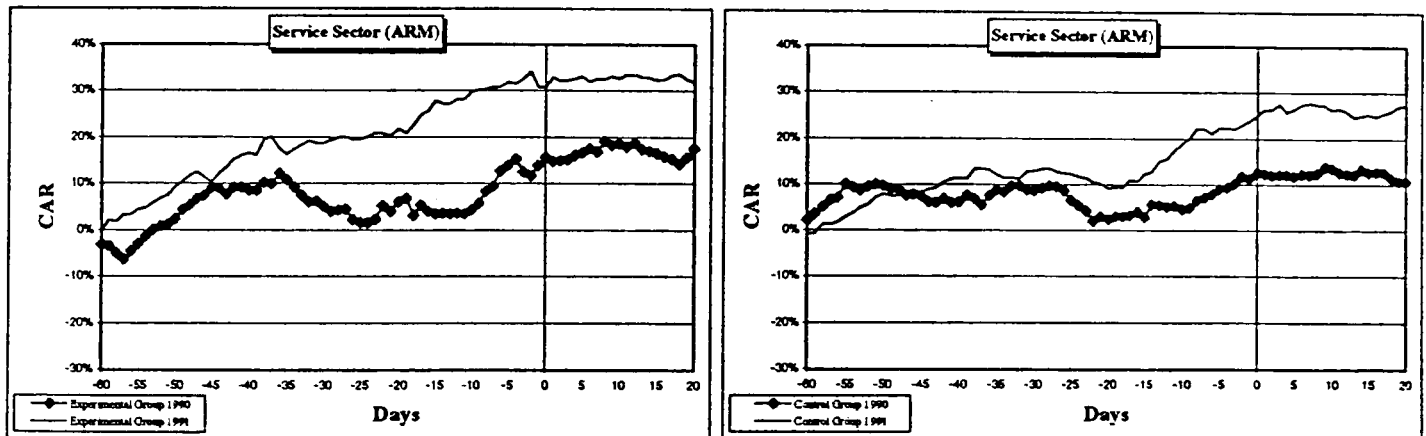
This result indicates that the experimental group of 1991 do not have higher information content than experimental group of 1990, which suggest that (for service sector investors) IAS-based earnings figures releases do not contain incremental information over earnings based on the Jordanian accounting rules.

**Figure 8.3**  
**Cumulative Abnormal Returns (CARs) Around Earnings Announcements**  
**Service Sector**

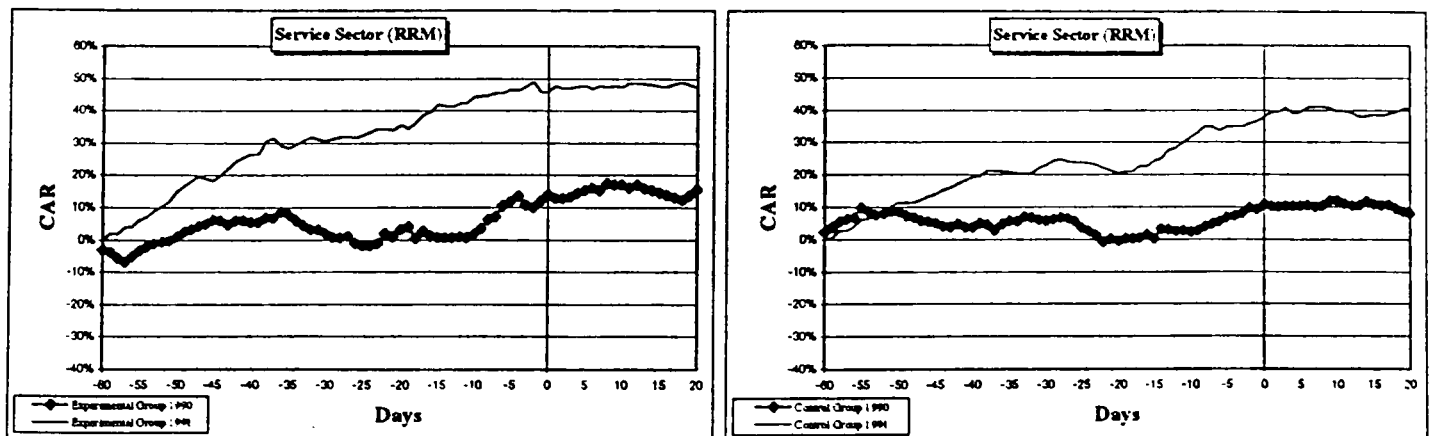
**Panel A (Market Model)**



**Panel B (Average Return Model)**



**Panel C (Raw Return Model)**





**Table 8.5: Cumulative Abnormal Returns (CARs) t-test Results, Services Sector**

Year	Interval	Experimental Groups				Control Groups			
		N	CAR	CSD	t-test	N	CAR	CSD	t-test
<b>Panel A (Market Model)</b>									
1990	-60-30	4	0.05341	0.10874	0.491	5	0.06572	0.06560	1.001
	-30-0		0.15921	0.11160	1.426		0.07472	0.05851	1.277
	0-10		0.19412	0.04659	4.166 *		0.07432	0.02867	2.592 *
	0-20		0.18580	0.06315	2.942 *		0.03867	0.03807	1.015
	-60-20		0.18580	0.16586	1.120		0.03867	0.09491	0.407
1991	-60-30	4	0.09530	0.08276	1.151	5	0.11879	0.06139	1.935
	-30-0		0.20840	0.09721	2.143		0.23364	0.06842	3.414 *
	0-10		0.23199	0.03677	6.309 **		0.24792	0.03135	7.908 **
	0-20		0.22928	0.04424	5.182 **		0.26779	0.04153	6.448 **
	-60-20		0.22928	0.13407	1.710		0.26779	0.09959	2.688 *
<b>Panel B (Average Return Model)</b>									
1990	-60-30	4	0.05081	0.10451	0.486	5	0.08660	0.06635	1.305
	-30-0		0.15668	0.11145	1.405		0.12678	0.05849	2.167 *
	0-10		0.18642	0.04588	4.063 *		0.13527	0.02874	4.706 **
	0-20		0.17490	0.06107	2.863 *		0.10592	0.03713	2.852 *
	-60-20		0.17490	0.16250	1.076		0.10592	0.09498	1.115
1991	-60-30	4	0.18712	0.07456	2.509 *	5	0.12896	0.06170	2.090
	-30-0		0.30721	0.09271	3.313 *		0.25041	0.07029	3.562 *
	0-10		0.32649	0.03753	8.699 **		0.26204	0.03209	8.165 **
	0-20		0.31988	0.04705	6.798 **		0.27482	0.04322	6.358 **
	-60-20		0.31988	0.12708	2.517 *		0.27482	0.10188	2.697 *
<b>Panel C (Raw Return Model)</b>									
1990	-60-30	4	0.01795	0.10365	0.173	5	0.05835	0.06913	0.844
	-30-0		0.14004	0.11307	1.238		0.10728	0.06061	1.770
	0-10		0.17007	0.04709	3.611 *		0.11983	0.02997	3.998 **
	0-20		0.15567	0.06258	2.487 *		0.07878	0.03818	2.069
	-60-20		0.15567	0.16348	0.952		0.07878	0.09851	0.799
1991	-60-30	4	0.30823	0.08148	3.782 *	5	0.23003	0.06811	3.377 *
	-30-0		0.45963	0.09507	4.834 **		0.37811	0.07267	5.203 **
	0-10		0.47470	0.03925	12.09 **		0.39708	0.03245	12.23 **
	0-20		0.47370	0.04918	9.631 **		0.40589	0.04511	8.997 **
	-60-20		0.47370	0.13376	3.541 *		0.40589	0.10825	3.749 **

\* Significant at the 5 percent level \*\* Significant at the 1 percent level

CAR = Cumulative Average Abnormal Returns CSD = Cumulative Standard Deviation N = The sample size

#### 8.4.4 Industrial Sector Share Price Reactions

This section reports the results of the tests of  $H_{05}$  formulated in Chapter 6, Section 6.2.11 for the industrial sector. The results [(AARs) and (CARs)] are presented in Appendix C Table C.4, Appendix D Table D.4 and Appendix E Table E.4, using the MM, ARM and RRM respectively. The CARs are plotted in Figure 8.4.

As can be seen from Figure 8.4 panel A, using the MM, the experimental group

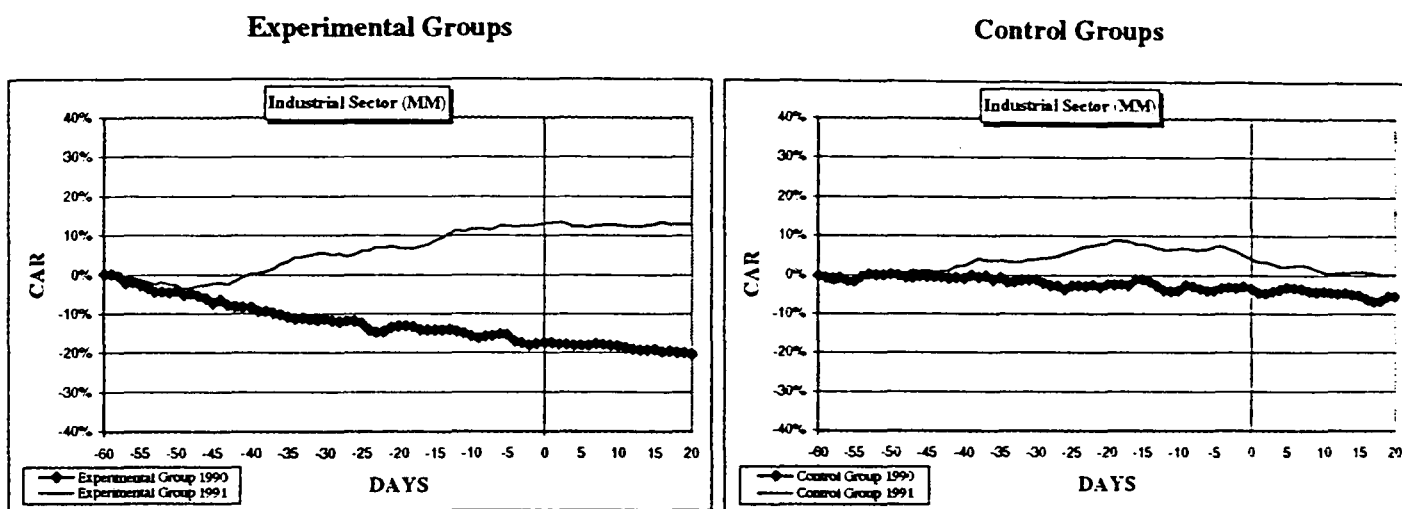
of 1990 recorded negative CARs over the test period, whilst the experimental group of 1991 recorded positive CARs. Using the ARM, panel B shows that the experimental group of 1990 recorded almost zero CARs whilst the experimental group of 1991 recorded highly positive CARs. Using RRM, as can be seen from panel C, similar results to ARM were recorded. Much weaker reactions were observed for the control groups as can be seen from the figure.

To test  $H_{05}$  (which states that, for the industrial sector earnings releases based on IAS in 1991 do not have price reactions which differ to those from firms with earnings releases based on Jordanian accounting rules used in 1990) CAR t-tests were carried out. The results for experimental and control groups are reported in Table 8.6.

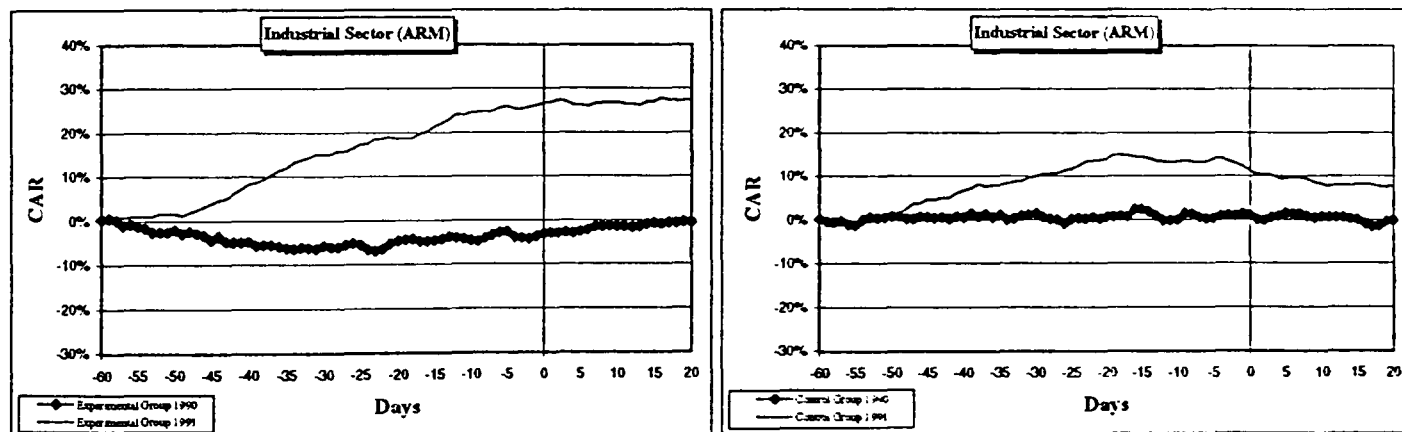
Panel A in Table 8.6 shows that for, experimental group of 1990, the MM recorded significant negative CARs at the 1 percent level over all intervals, whilst the experimental group of 1991 recorded significant positive CARs at 1 percent level over all intervals (except interval -60 to -30 which recorded a significant positive CARs at the 5 percent level). No reaction occurred for the control group of 1991. Panel B shows that ARM recorded positive CARs at a 1 percent level over all intervals for the experimental group of 1991. For 1990 it recorded significant negative CARs at the 5 percent level over the -60 to -30 interval. Over the other intervals no reaction was recorded. Using RRM, panel C reveals that the experimental group of 1991 recorded significant positive CARs at the 1 percent level. For the experimental group of 1990 it recorded significant negative CARs over -60 to -30, -30 to 0 and 0 to 10 intervals at 1, 5 and 1 percent levels respectively. Therefore, we can reject  $H_{05}$ , that for the industrial sector earnings releases based on IAS do not have price reactions which differ to those from firms with earnings releases based on Jordanian accounting practices.

**Figure 8.4**  
**Cumulative Abnormal Returns (CARs) Around Earnings Announcements**  
**Industrial Sector**

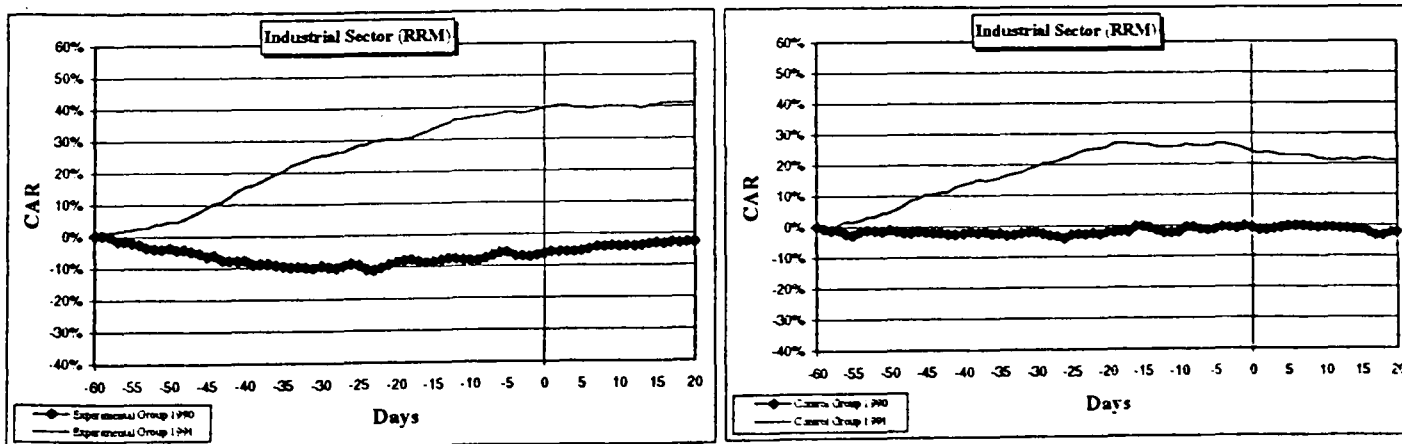
**Panel A (Market Model)**



**Panel B (Average Return Model)**



**Panel C (Raw Return Model)**



**Table 8.6: Cumulative Abnormal Returns (CARs) t-test Results, Industrial Sector**

Year	Interval	Experimental Groups				Control Groups			
		N	CAR	CSD	t-test	N	CAR	CSD	t-test
<b>Panel A (Market Model)</b>									
1990	-60-30	19	-0.11196	0.03012	-3.717 **	9	-0.01090	0.03219	-0.338
	-30-0		-0.17448	0.03009	-5.798 **		-0.03631	0.03373	-1.076
	0-10		-0.18324	0.01455	-12.59 **		-0.04280	0.01368	-3.128 **
	0-20		-0.20312	0.01866	-10.88 **		-0.05476	0.01950	-2.808 *
	-60-20		-0.20312	0.04620	-4.396 **		-0.05476	0.05015	-1.091
1991	-60-30	19	0.05603	0.03003	1.865 *	9	0.04121	0.03324	1.239
	-30-0		0.13115	0.03223	4.069 **		0.04036	0.03790	1.064
	0-10		0.12765	0.01440	8.864 **		0.00824	0.02119	0.388
	0-20		0.12958	0.01845	7.023 **		0.00210	0.02407	0.087
	-60-20		0.12958	0.04676	2.771 **		0.00210	0.05459	0.038
<b>Panel B (Average Return Model)</b>									
1990	-60-30	19	-0.0571	0.03079	-1.854 *	9	0.01463	0.03401	0.430
	-30-0		-0.03233	0.03012	-1.073		0.00914	0.03352	0.272
	0-10		-0.01513	0.01358	-1.114		0.00652	0.01339	0.486
	0-20		-0.00664	0.01775	-0.374		-0.00253	0.01965	-0.128
	-60-20		-0.00664	0.04628	-0.143		-0.00253	0.05118	-0.049
1991	-60-30	19	0.15232	0.02814	5.412 **	9	0.10013	0.03502	2.859 *
	-30-0		0.26782	0.03139	8.532 **		0.11082	0.03885	2.852 *
	0-10		0.26910	0.01403	19.18 **		0.08227	0.02210	3.722 **
	0-20		0.27515	0.01815	15.15 **		0.07812	0.02491	3.136 **
	-60-20		0.27515	0.04508	6.103 **		0.07812	0.05663	1.379
<b>Panel C (Raw Return Model)</b>									
1990	-60-30	19	-0.09548	0.03255	-2.933 **	9	-0.01783	0.03535	-0.503
	-30-0		-0.06042	0.03092	-1.954 *		-0.0077	0.03393	-0.226
	0-10		-0.04047	0.01393	-2.905 **		-0.0047	0.01440	-0.326
	0-20		-0.02877	0.01818	-1.582		-0.02343	0.02039	-1.147
	-60-20		-0.02877	0.04810	-0.598		-0.02343	0.05253	-0.445
1991	-60-30	19	0.25303	0.03071	8.239 **	9	0.19508	0.03989	4.890 **
	-30-0		0.40018	0.03224	12.41 **		0.24014	0.04062	5.911 **
	0-10		0.40296	0.01453	27.73 **		0.21522	0.02245	9.58 **
	0-20		0.41205	0.01878	21.94 **		0.21259	0.02523	8.426 **
	-60-20		0.41205	0.04761	8.65 **		0.21259	0.06103	3.483 **

\* Significant at the 5 percent level \*\* Significant at the 1 percent level

CAR = Cumulative Average Abnormal Returns CSD = Cumulative Standard Deviation N = The sample size

Given that the general performance of the industrial sector was better in 1991 than 1990 (i.e. in general, news was "positive") the suggestion is that the experimental group of 1991 have higher information content than the experimental group of 1990; i.e. (for industrial sector investors) IAS-based earnings figures do contain statistically significant incremental information over earnings figures based on Jordanian accounting rules.

#### 8.4.5 Low Traded Firms' Share Price Reactions

This section reports the results of the tests of  $H_{06}$  formulated in Chapter 6, Section 6.2.11 for low traded firms. The results [(AARs) and (CARs)] are presented in Appendix C Table C.5, Appendix D Table D.5 and Appendix E Table E.5, using the MM, ARM and RRM respectively. These results are summarized in Figure 8.5.

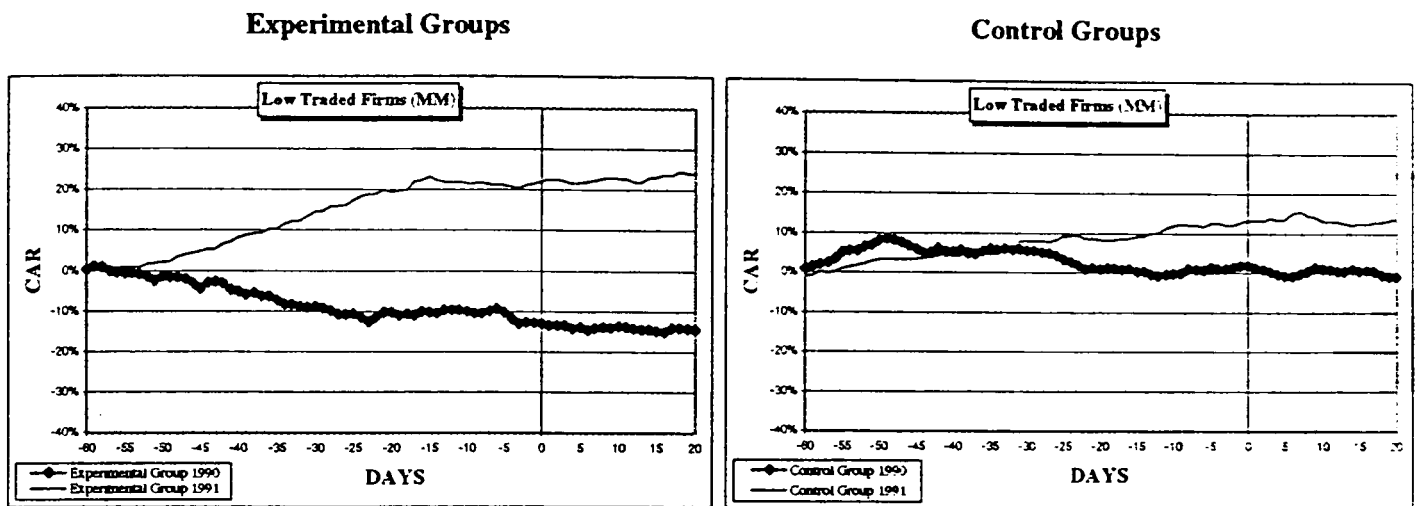
As can be seen from Figure 8.5 panel A the experimental group of 1991 recorded positive CARs over the test period, whilst the experimental group of 1990 recorded negative CARs. In Panel B (using ARM) the experimental group of 1991 recorded positive CARs, whilst the experimental group of 1990 recorded slightly negative CARs. Using RRM, as can be seen from panel C, similar results to ARM were recorded.

$H_{06}$  states that, for the low traded firms, earnings releases based on IAS do not have price reactions which differ to those from firms with earnings releases based on a Jordanian accounting rules. The CAR t-test results are presented in Table 8.7.

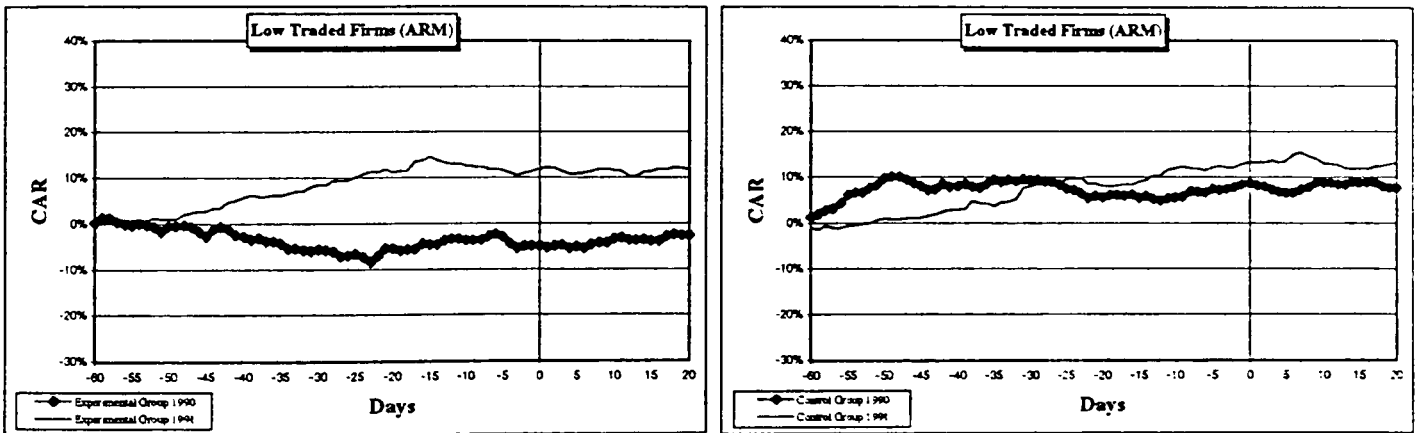
Panel A in Table 8.7 shows that the experimental group of 1990 recorded significant negative CARs at the 5 percent level over the -60 to -30 and -60 to 20 intervals but recorded significant negative CARs at the 1 percent level over the rest of the intervals. The experimental group of 1991 recorded significant positive CARs at the 1 percent level over all intervals. Panel B (using ARM) shows that experimental group of 1990 recorded significant negative CARs at the 5 percent level over the 0 to 10 interval. The experimental group of 1991 recorded significant positive CARs at the 1 percent level over the 0 to 10 and 0 to 20 intervals and significant positive CARs at the 5 percent level over the -60 to -30, -30 to 0 and -60 to 20 intervals.

**Figure 8.5**  
**Cumulative Abnormal Returns (CARs) Around Earnings Announcements**  
**Low Traded Firms**

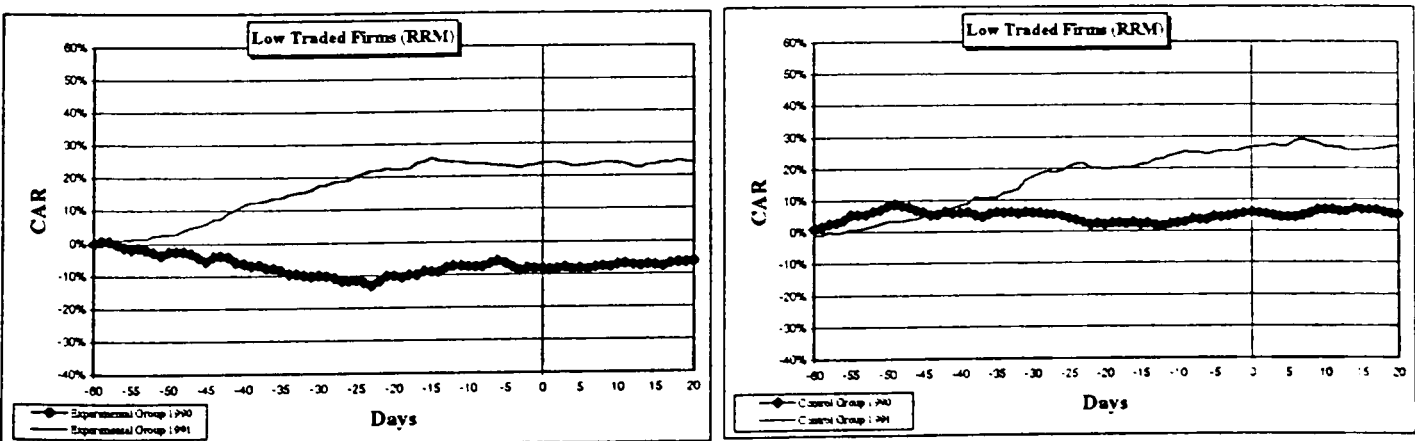
**Panel A (Market Model)**



**Panel B (Average Return Model)**



**Panel C (Raw Return Model)**



**Table 8.7: Cumulative Abnormal Returns (CARs) t-test Results, Low Traded Firms**

Year	Interval	Experimental Groups				Control Groups			
		N	CAR	CSD	t-test	N	CAR	CSD	t-test
<b>Panel A (Market Model)</b>									
1990	-60-30	10	-0.08847	0.03921	-2.256 *	10	0.05504	0.04050	1.359
	-30-0		-0.13075	0.03541	-3.692 **		0.01838	0.03646	0.504
	0-10		-0.13616	0.01770	-7.692 **		0.01012	0.01784	0.567
	0-20		-0.14418	0.02395	-6.020 **		-0.01073	0.02212	-0.485
	-60-20		-0.14418	0.05753	-2.506 *		-0.01073	0.05829	-0.184
1991	-60-30		0.14610	0.03452	4.232 **	10	0.08053	0.03688	2.183 *
	-30-0		0.22326	0.03996	5.587 **		0.13335	0.04282	3.113 **
	0-10		0.22744	0.01936	11.74 **		0.13148	0.02149	6.118 **
	0-20		0.23969	0.02693	8.900 **		0.13658	0.02597	5.259 **
	-60-20		0.23969	0.05811	4.124 **		0.13658	0.06146	2.222 *
<b>Panel B (Average Return Model)</b>									
1990	-60-30	10	-0.05588	0.03952	-1.413	10	0.09186	0.04065	2.259 *
	-30-0		-0.04930	0.03561	-1.384		0.08690	0.03627	2.395 *
	0-10		-0.03439	0.01736	-1.980 *		0.08762	0.01800	1.825
	0-20		-0.02600	0.02370	-1.097		0.07618	0.02206	3.453 **
	-60-20		-0.02600	0.05774	-0.450		0.07618	0.05821	1.308
1991	-60-30	10	0.08630	0.03404	2.535 *	10	0.08011	0.03701	2.164 *
	-30-0		0.12007	0.04029	2.980 *		0.13477	0.04358	3.092 **
	0-10		0.11546	0.01958	5.896 **		0.13048	0.02177	5.993 **
	0-20		0.11711	0.02733	4.285 **		0.13252	0.02666	4.993 **
	-60-20		0.11711	0.05798	2.019 *		0.13252	0.06226	2.128 *
<b>Panel C (Raw Return Model)</b>									
1990	-60-30	10	-0.10024	0.04113	-2.437 *	10	0.05797	0.04302	1.347
	-30-0		-0.08292	0.03607	-2.298 *		0.05986	0.03720	1.609
	0-10		-0.07086	0.01737	-4.079 **		0.06727	0.01867	3.603 **
	0-20		-0.06383	0.02383	-2.678 *		0.05080	0.02269	2.238 *
	-60-20		-0.06383	0.05910	-1.080		0.05080	0.06061	0.838
1991	-60-30	10	0.17652	0.03593	4.912 **	10	0.17341	0.03995	4.340 **
	-30-0		0.24142	0.04039	5.977 **		0.26693	0.04473	5.967 **
	0-10		0.23993	0.01978	12.12 **		0.26814	0.02114	12.68 **
	0-20		0.24012	0.02779	8.640 **		0.27008	0.02708	9.973 **
	-60-20		0.24012	0.05963	4.026 **		0.27008	0.06511	4.148 **

\* Significant at the 5 percent level \*\* Significant at the 1 percent level

CAR = Cumulative Average Abnormal Returns CSD = Cumulative Standard Deviation N = The sample size

Panel C in Table 8.7 (using RRM) shows that the experimental group of 1990 recorded significant negative CARs at the 1 percent level over 0 to 10 interval and significant negative CARs at the 5 percent level over the -60 to -30, -30 to 0 and 0 to 20 intervals. The experimental group of 1991 recorded significant positive CARs at the 1 percent level over all intervals. The CARs t-tests for control groups (mainly under ARM and RRM) recorded similar results to the experimental groups as can be seen from Table 8.7. Accordingly, we accept  $H_{06}$  that, for low traded firms, earnings releases based on IAS do not have price reactions which differ to those from firms with earnings releases based on Jordanian accounting rules.

#### 8.4.6 Heavily Traded Firms' Share Price Reactions

This section reports the results of the tests of  $H_{07}$  formulated in Chapter 6, Section 6.2.11 for heavily traded firms. The results [(AARs) and (CARs)] are presented in Appendix C Table C.6, Appendix D Table D.6 and Appendix E Table E.6, using the MM, ARM and RRM respectively. The CARs are plotted in Figure 8.6.

It can be seen from Figure 8.6 panel A that the experimental group of 1991 reported positive CARs around (mainly before) the earnings announcements, whilst the experimental group of 1990 reported negative CARs. In panel B (using ARM) the experimental group of 1991 recorded highly positive CARs. The experimental group of 1990 recorded almost zero CARs. Using the RRM, panel C recorded similar results to ARM. A weaker reaction was observed for the control groups.

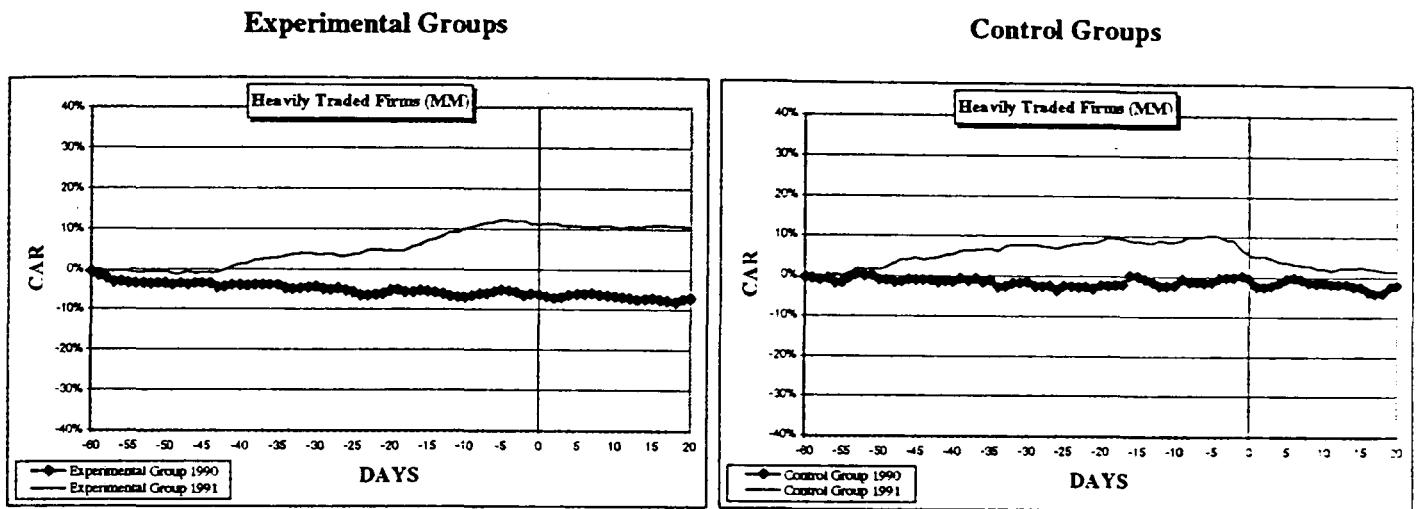
To test  $H_{07}$  (which states that, for the heavily traded firms earnings releases based on IAS do not have price reactions which differ to those from firms with earnings releases based on Jordanian accounting rules) CAR t-tests were carried out. The results are presented in Table 8.8.

Panel A in Table 8.8 shows that the experimental group of 1990 recorded significant negative CARs at the 1 percent level over the 0 to 10 and 0 to 20 intervals and significant negative CARs at the 5 percent level over the -30 to 0 interval. The experimental group of 1991 recorded significant positive CARs at the 1 percent level over the -30 to 0, 0 to 10 and 0 to 20 intervals and significant positive CARs at the 5 percent level over the -60 to 20 interval. No reaction is recorded for the control groups. Panel B (using ARM) shows significant positive CARs at the 1 percent level over all intervals for the experimental group of 1991, but no reaction for the experimental and control groups of 1990.

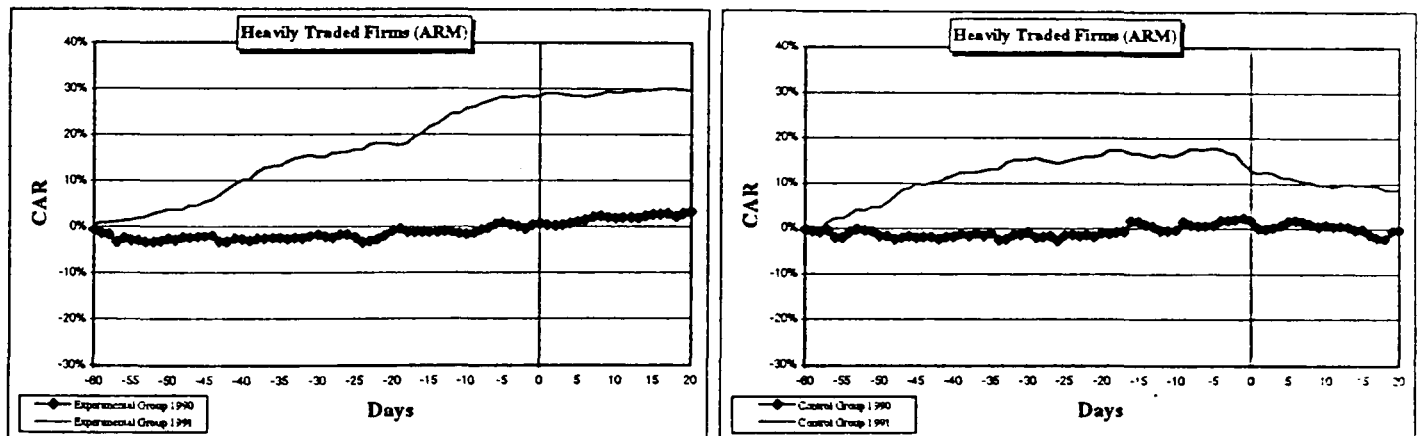


**Figure 8.6**  
**Cumulative Abnormal Returns (CARs) Around Earnings Announcements**  
**Heavily Traded Firms**

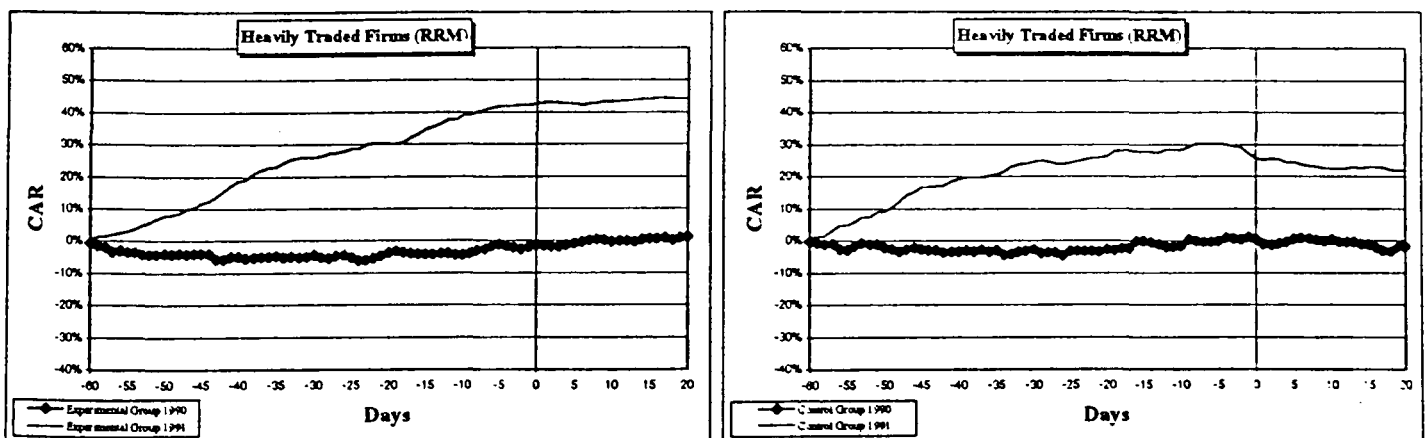
**Panel A (Market Model)**



**Panel B (Average Return Model)**



**Panel C (Raw Return Model)**



**Table 8.8: Cumulative Abnormal Returns (CARs) t-test Results, Heavily Traded Firms**

Panel A (Market Model)									
Year	Interval	Experimental Groups				Control Groups			
		N	CAR	CSD	t-test	N	CAR	CSD	t-test
1990	-60-30	21	-0.04264	0.02975	-1.433	7	-0.01450	0.03789	-0.382
	-30-0		-0.06240	0.03168	-1.969 *		-0.00697	0.04134	-0.168
	0-10		-0.06668	0.01548	-4.307 **		-0.01398	0.01880	-0.743
	0-20		-0.07065	0.01991	-3.548 **		-0.02094	0.02512	-0.833
	-60-20		-0.07065	0.04723	-1.495		-0.02094	0.06091	-0.343
1991	-60-30	21	0.03651	0.02869	1.272	7	0.07560	0.03933	1.922
	-30-0		0.11216	0.03116	3.599 **		0.05459	0.04011	1.361
	0-10		0.10593	0.01374	7.709 **		0.02265	0.02264	1.000
	0-20		0.10603	0.01678	6.318 **		0.01565	0.02684	0.583
	-60-20		0.10603	0.04479	2.367 *		0.01565	0.06108	0.256
Panel B (Average Return Model)									
1990	-60-30	21	-0.01683	0.03051	-0.551	7	-0.00807	0.04068	-0.198
	-30-0		0.00627	0.03186	0.196		0.01640	0.04124	0.397
	0-10		0.01690	0.01525	1.108		0.00774	0.01866	0.414
	0-20		0.03092	0.01955	1.581		-0.00294	0.02530	-0.116
	-60-20		0.03092	0.04772	0.647		-0.00294	0.06260	-0.046
1991	-60-30	21	0.15040	0.02714	5.541 **	7	0.15190	0.04027	3.772 **
	-30-0		0.28600	0.02960	9.662 **		0.12820	0.04061	3.156 **
	0-10		0.29150	0.01344	21.68 **		0.09812	0.02390	4.105 **
	0-20		0.29791	0.01672	17.81 **		0.08738	0.02794	3.127 *
	-60-20		0.29791	0.04292	6.941 **		0.08738	0.06242	1.399
Panel C (Raw Return Model)									
1990	-60-30	21	-0.04522	0.03178	-1.422	7	-0.02784	0.04250	-0.655
	-30-0		-0.01519	0.03271	-0.464		0.00278	0.04205	0.066
	0-10		-0.00424	0.01568	-0.270		0.00128	0.01974	0.064
	0-20		0.01228	0.02019	0.608		-0.01931	0.02669	-0.723
	-60-20		0.01228	0.04931	0.249		-0.01931	0.06473	-0.298
1991	-60-30	21	0.25905	0.02988	8.669 **	7	0.24486	0.04705	5.204 **
	-30-0		0.42653	0.03064	13.92 **		0.25546	0.04252	6.007 **
	0-10		0.43360	0.01398	31.01 **		0.22649	0.02466	9.184 **
	0-20		0.44268	0.01746	25.35 **		0.22065	0.02852	7.736 **
	-60-20		0.44268	0.04569	9.688 **		0.22065	0.06828	3.231 **

\* Significant at the 5 percent level \*\* Significant at the 1 percent level

CAR = Cumulative Average Abnormal Returns CSD = Cumulative Standard Deviation N = The sample size

Using the RRM, panel C in Table 8.8 reports same results as for ARM. Therefore, we can reject  $H_{07}$ , that for heavily traded firms investors earnings releases based on IAS do not have price reactions which differ to those from firms with earnings releases based on Jordanian accounting practices.

This results provide further evidence that the experimental group of 1991 are associated with higher information than the experimental group of 1990, suggesting that (for heavily traded firms investors) IAS-based earnings figures contain more information than JAR-based earnings figures.

#### 8.4.7 Small Size Firms' Share Price Reactions

This section reports the results of tests of  $H_{08}$  formulated in Chapter 6, Section 6.2.11 for small firms. The results [(AARs) and (CARs)] are presented in Appendix C Table C.7, Appendix D Table D.7 and Appendix E Table E.7, using the MM, ARM and RRM respectively. The CARs are plotted in Figure 8.7.

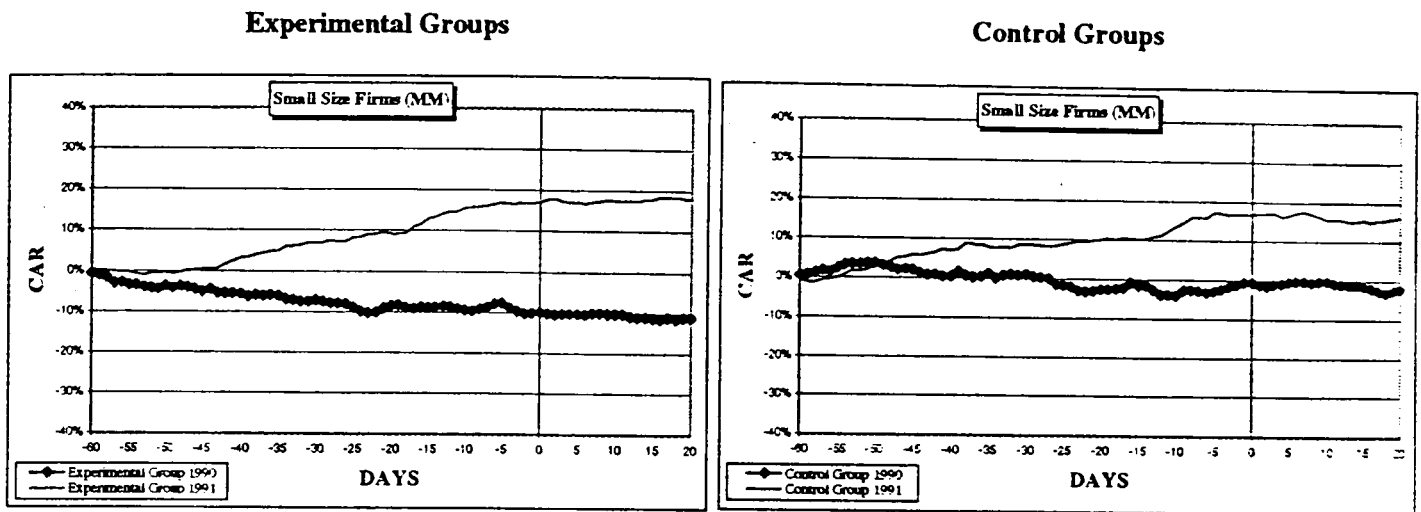
From Figure 8.7 panel A it can be seen that the experimental group of 1990 recorded negative CARs over the test period whilst the experimental group of 1991 reported positive CARs. In panel B (using ARM) the experimental group of 1991 records highly positive CARs whilst the 1990 experimental group records almost zero CARs. Using the RRM, panel C records the same results as ARM. As can be seen from the figure the control groups record almost the same results. However, the increase in CARs for the experimental groups is slightly higher than the increase in CARs for the control groups.

To test  $H_{08}$  (which states that, that for the small size firms earnings releases based on IAS in 1991 do not have price reactions which differ to those from firms with earnings releases based on Jordanian accounting rules in 1990) CAR t-tests were carried out over various intervals. The results are presented in Table 8.9.

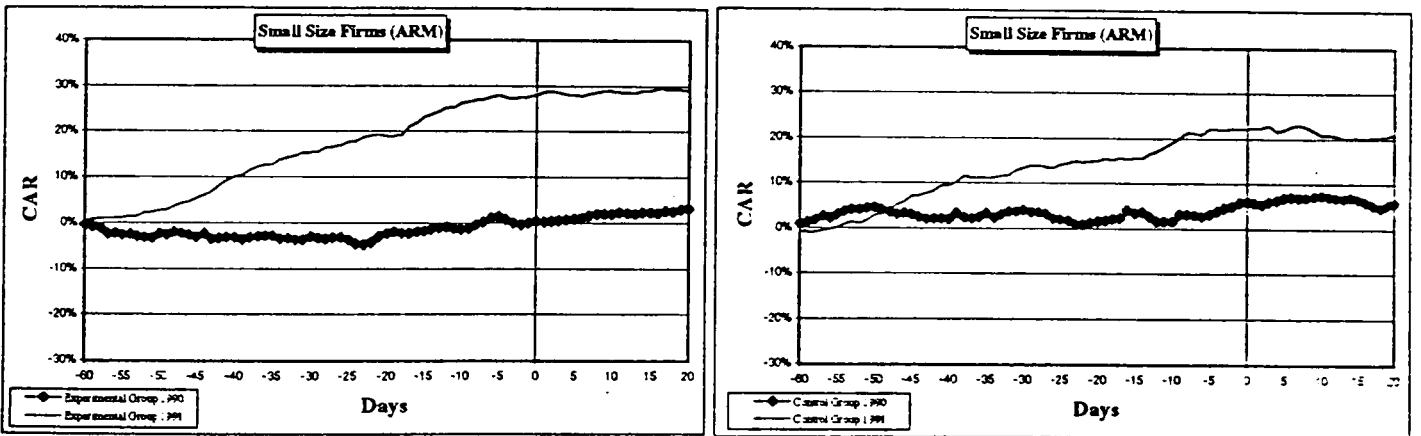
Panel A in Table 8.9 (MM results) shows that the experimental group of 1990 recorded significant negative CARs at the 1 percent level over all intervals whilst the experimental group of 1991 recorded significant positive CARs at the 1 percent level over all intervals. Panel B (using ARM) records significant positive CARs at the 1 percent level over all intervals for the experimental group of 1991 but no reaction for the experimental group of 1990 (except interval 0 to 20 which recorded significant positive CARs at the 5 percent level).

**Figure 8.7**  
**Cumulative Abnormal Returns (CARs) Around Earnings Announcements**  
**Small Size Firms**

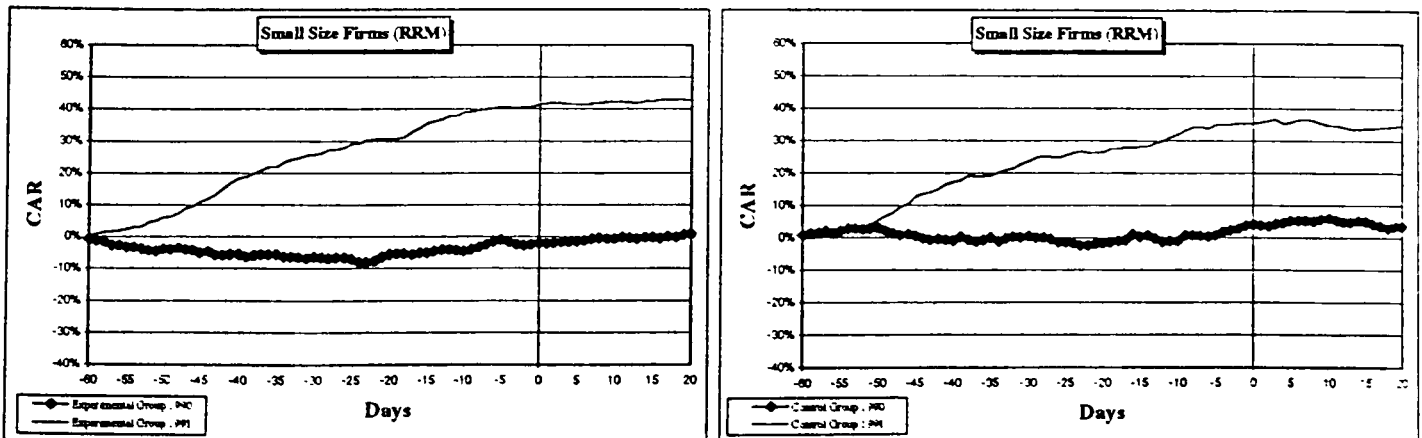
**Panel A (Market Model)**



**Panel B (Average Return Model)**



**Panel C (Raw Return Model)**



**Table 8.9: Cumulative Abnormal Returns (CARs) t-test Results, Small Size Firms**

Year	Interval	Experimental Groups				Control Groups			
		N	CAR	CSD	t-test	N	CAR	CSD	t-test
<b>Panel A (Market Model)</b>									
1990	-60-30	27	-0.07033	0.02622	-2.682 **	10	0.01030	0.04220	0.244
	-30-0		-0.09942	0.02698	-3.684 **		-0.00675	0.03753	-0.179
	0-10		-0.10333	0.01294	-7.985 **		-0.00267	0.01711	-0.156
	0-20		-0.11109	0.01665	-6.672 **		-0.01983	0.02269	-0.873
	-60-20		-0.11109	0.04069	-2.730 **		-0.01983	0.06025	-0.329
1991	-60-30	27	0.07092	0.02486	2.852 **	10	0.08740	0.03692	2.367 *
	-30-0		0.17297	0.02734	6.326 **		0.16918	0.04250	3.980 **
	0-10		0.17688	0.01192	14.83 **		0.15544	0.02341	6.639 **
	0-20		0.18125	0.01552	11.67 **		0.16423	0.02787	5.892 **
	-60-20		0.18125	0.03933	4.608 **		0.16423	0.06174	2.660 *
<b>Panel B (Average Return Model)</b>									
1990	-60-30	27	-0.03056	0.02664	-1.147	10	0.04037	0.04381	0.921
	-30-0		0.00375	0.02703	0.138		0.06039	0.03730	1.619
	0-10		0.01922	0.01245	1.543		0.07372	0.01703	4.328 **
	0-20		0.03219	0.01613	1.995 *		0.05857	0.02250	2.603 *
	-60-20		0.03219	0.04079	0.789		0.05857	0.06109	0.958
1991	-60-30	27	0.15485	0.02344	6.606 **	10	0.13373	0.03802	3.517 **
	-30-0		0.28222	0.02655	10.62 **		0.22277	0.04370	5.097 **
	0-10		0.28812	0.01170	24.62 **		0.20934	0.02408	8.693 **
	0-20		0.29217	0.01543	18.93 **		0.21239	0.02890	7.349 **
	-60-20		0.29217	0.03799	7.690 **		0.21239	0.06361	3.338 **
<b>Panel C (Raw Return Model)</b>									
1990	-60-30	27	-0.06245	0.02787	-2.240 *	10	0.00499	0.04584	0.108
	-30-0		-0.02069	0.02778	-0.744		0.03982	0.03831	1.039
	0-10		-0.00655	0.01279	-0.512		0.05908	0.01749	3.377 **
	0-20		0.00838	0.01658	0.505		0.03440	0.02332	1.475
	-60-20		0.00838	0.04223	0.198		0.03440	0.06336	0.542
1991	-60-30	27	0.25873	0.02556	10.12 **	10	0.23755	0.04193	5.665 **
	-30-0		0.41543	0.02717	15.29 **		0.35484	0.04590	7.730 **
	0-10		0.42337	0.01209	35.01 **		0.34680	0.02481	13.97 **
	0-20		0.42855	0.01600	26.78 **		0.34902	0.03014	11.57 **
	-60-20		0.42855	0.04002	10.70 **		0.34902	0.06797	5.134 **

\* Significant at the 5 percent level \*\* Significant at the 1 percent level

CAR = Cumulative Average Abnormal Returns CSD = Cumulative Standard Deviation N = The sample size

Using the RRM, Panel C in Table 8.9 shows that the experimental group of 1990 recorded significant negative CARs at the 5 percent level over the -60 to -30 interval and, over the rest intervals, no reaction occurs. The experimental group of 1991 records significant positive CARs at the 1 percent level over all intervals. The CARs t-tests for control groups show almost similar results. Therefore, we accept  $H_{08}$ , suggesting that (for small firms investors) IAS-based earnings figures releases do not contain statistically significant incremental information over earnings based on Jordanian accounting rules.

#### 8.4.8 Large Size Firms' Share Price Reactions

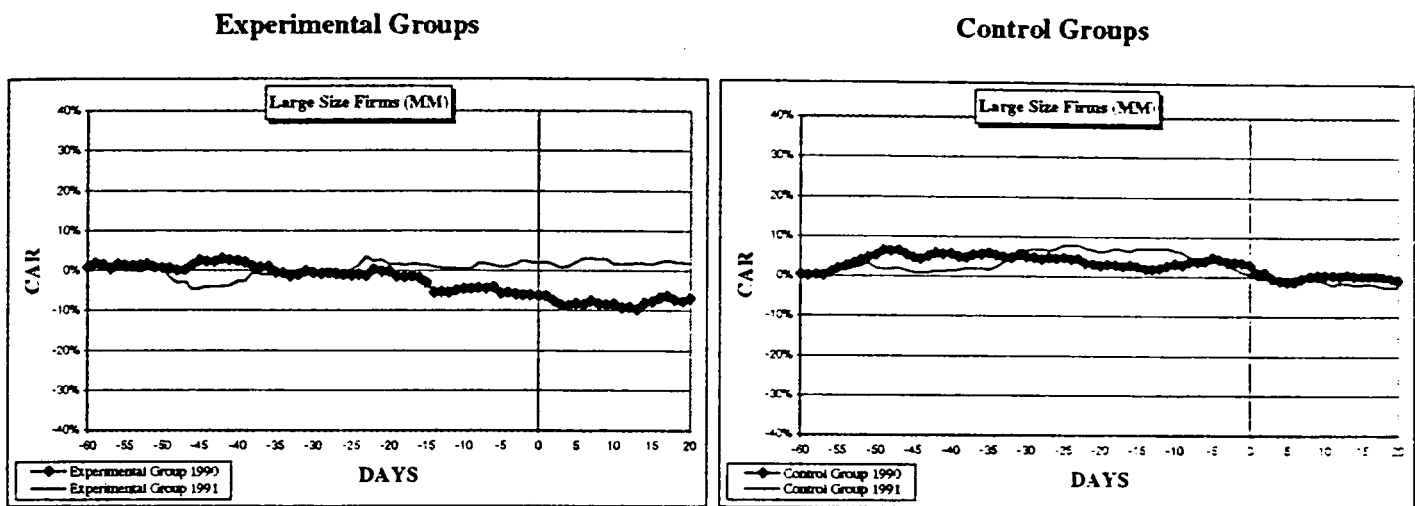
This section reports the tests of  $H_{09}$  formulated in Chapter 6, Section 6.2.11 for large size firms. The results [(AARs) and (CARs)] are presented in Appendix C Table C.8, Appendix D Table D.8 and Appendix E Table E.8. The CARs are plotted in Figure 8.8.

As can be seen from Figure 8.8, Panel A (MM results) the experimental group of 1990 recorded a slightly negative CARs trend and the experimental group of 1991 recorded no reaction. Using ARM (Panel B) similar results were recorded. Panel C (using RRM) shows that experimental group of 1990 recorded a slightly negative CARs trend whilst the experimental group of 1990 recorded a slightly positive CARs trend over the test period. The control groups recorded similar results to the experimental groups. The CAR t-tests in Table 8.10 confirm these results.

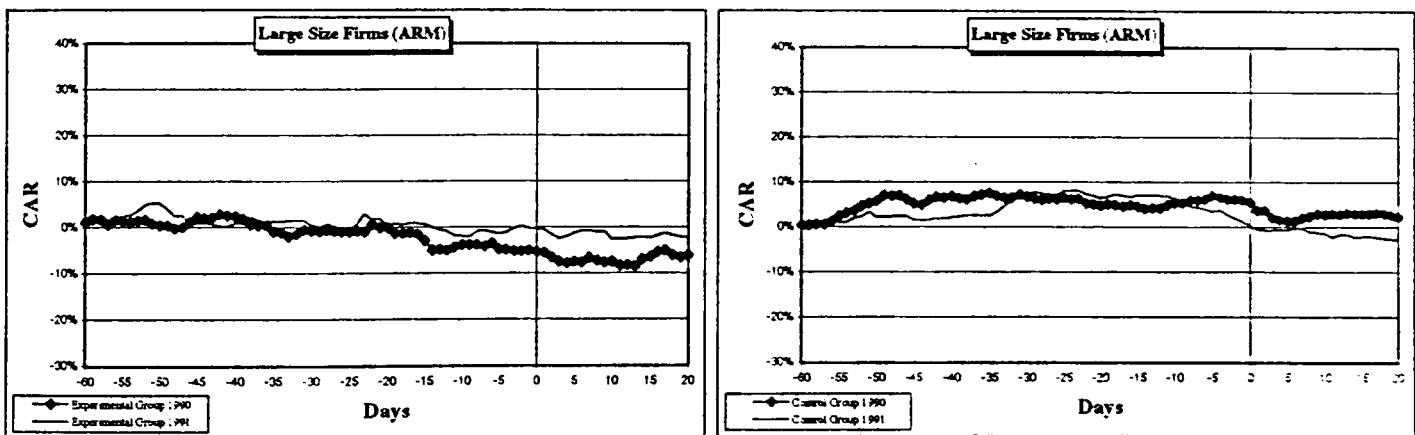
Accordingly, we accept  $H_{09}$ , that for large size firms earnings releases based on IAS do not have price reactions which differ to those from firms with earnings releases based on Jordanian accounting rules. A possible explanation is that large firms are used to providing more information than small firms. Therefore, introducing IAS apparently provides no additional information for investors in large firms.

**Figure 8.8**  
**Cumulative Abnormal Returns (CARs) Around Earnings Announcements**  
**Large Size Firms**

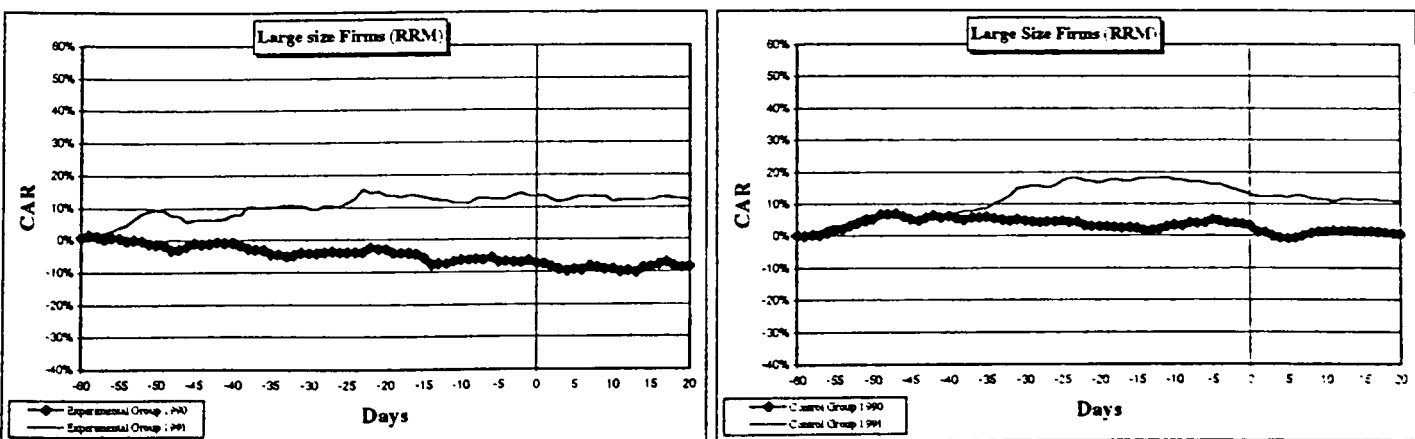
**Panel A (Market Model)**



**Panel B (Average Return Model)**



**Panel C (Raw Return Model)**



**Table 8.10: Cumulative Abnormal Returns (CARs) t-test Results, Large Size Firms**

Year	Interval	Experimental Groups				Control Groups			
		N	CAR	CSD	t-test	N	CAR	CSD	t-test
<b>Panel A (Market Model)</b>									
1990	-60-30	5	-0.00551	0.04042	-0.136	6	0.04940	0.03896	1.267
	-30-0		-0.06348	0.03168	-2.003		0.02893	0.04383	0.660
	0-10		-0.08413	0.02914	-2.887 *		0.00430	0.02259	0.190
	0-20		-0.07002	0.04077	-1.717		-0.00793	0.02789	-0.284
	-60-20		-0.07002	0.06492	-1.078		-0.00793	0.06454	-0.122
1991	-60-30	5	-0.00180	0.04200	-0.042	6	0.06579	0.04450	1.478
	-30-0		0.02190	0.04526	0.483		0.00340	0.04468	0.076
	0-10		0.01673	0.02410	0.694		-0.01158	0.02175	-0.532
	0-20		0.01981	0.02652	0.746		-0.02383	0.02558	-0.931
	-60-20		0.01981	0.06627	0.298		-0.02383	0.06738	-0.353
<b>Panel B (Average Return Model)</b>									
1990	-60-30	5	-0.00925	0.03991	-0.231	6	0.06548	0.03927	1.667
	-30-0		-0.05518	0.03147	-1.753		0.05428	0.04383	1.238
	0-10		-0.07548	0.02845	-2.653 *		0.02759	0.02266	1.217
	0-20		-0.0607	0.04072	-1.490		0.02220	0.02820	0.787
	-60-20		-0.0607	0.06443	-0.942		0.02220	0.06485	0.342
1991	-60-30	5	0.00596	0.04333	0.137	6	0.07530	0.04338	1.735
	-30-0		-0.00385	0.04200	-0.091		0.00248	0.04468	0.055
	0-10		-0.02615	0.02546	-1.027		-0.01453	0.02202	-0.659
	0-20		-0.02299	0.02736	-0.840		-0.02671	0.02582	-1.034
	-60-20		-0.02299	0.06514	-0.352		-0.02671	0.06663	-0.400
<b>Panel C (Raw Return Model)</b>									
1990	-60-30	5	-0.04209	0.03890	-1.082	6	0.04784	0.04133	1.157
	-30-0		-0.07394	0.03073	-2.406 *		0.03141	0.04393	0.715
	0-10		-0.09255	0.02770	-3.341 *		0.01296	0.02359	0.549
	0-20		-0.08513	0.04210	-2.022		0.00412	0.02885	0.142
	-60-20		-0.08513	0.06443	-1.321		0.00412	0.06643	0.062
1991	-60-30	5	0.09693	0.04662	2.079	6	0.15323	0.04806	3.188 *
	-30-0		0.13517	0.04488	3.011 *		0.12987	0.04457	2.912 *
	0-10		0.11614	0.02617	4.437 **		0.11411	0.02022	5.643 **
	0-20		0.12101	0.02819	4.292 **		0.10788	0.02413	4.470 **
	-60-20		0.12101	0.06950	1.741		0.10788	0.06924	1.558

\* Significant at the 5 percent level \*\* Significant at the 1 percent level

CAR = Cumulative Average Abnormal Returns CSD = Cumulative Standard Deviation N = The sample size

#### 8.4.9 Domestic-owned Firms' Share Price Reactions

This section reports the results of the tests of  $H_{010}$  formulated in Chapter 6, Section 6.2.11 for domestic ownership firms. A summary of the results [(AARs) and (CARs)] are presented in Appendix C Table C.9, Appendix D Table D.9 and Appendix E Table E.9, using the MM, ARM and RRM respectively. The CARs are plotted in Figure 8.9.



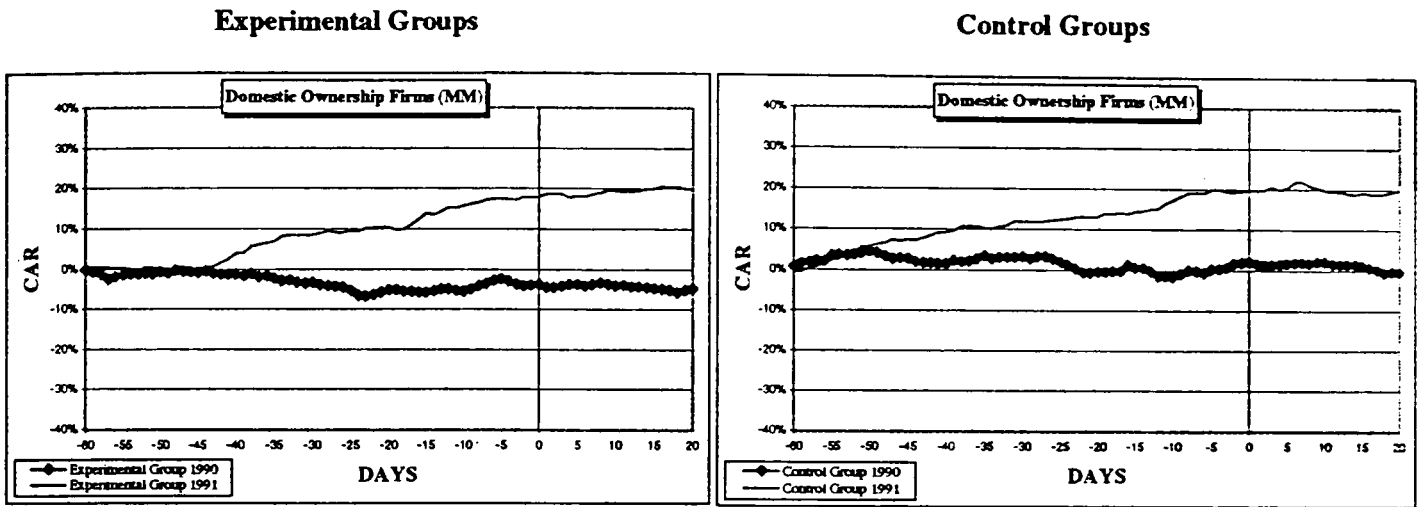
From Figure 8.9, Panel A (using the MM) it can be seen that the experimental group of 1990 recorded slightly negative CARs trend around earnings announcements whilst the experimental group of 1991 recorded a positive CARs trend. Using ARM (Panel B) it can be seen that the experimental group of 1990 recorded almost zero CARs, whilst the experimental group of 1991 recorded a positive CARs trend. Similar results were obtained by using RRM as can be seen in Panel C. The control groups recorded the same results as the experimental groups.

To test  $H_{010}$  CAR t-test were carried out over various intervals. The results are shown in Table 8.11. Panel A in Table 8.11 (MM results) shows that the experimental group of 1990 recorded significant negative CARs at a 1 percent level over the 0 to 10 and 0 to 20 intervals whilst the experimental group of 1991 recorded significant positive CARs at the 1 percent level over all intervals. Using ARM, Panel B shows that the experimental group of 1990 recorded significant positive CARs at the 5 percent level over the 0 to 10 and 0 to 20 intervals, whilst the experimental group of 1991 recorded significant positive CARs at the 1 percent level over all intervals. Panel C (RRM results) shows no reaction for the experimental group of 1990 but a significant positive reaction for the 1991 experimental group over all intervals. The CARs t-test for control groups in Table 8.11 show similar results to those from the experimental groups. Therefore, we accept  $H_{010}$ , that, for domestically-owned firms, earnings releases based on IAS do not have price reactions which differ to those from firms with earnings releases based on Jordanian accounting rules.

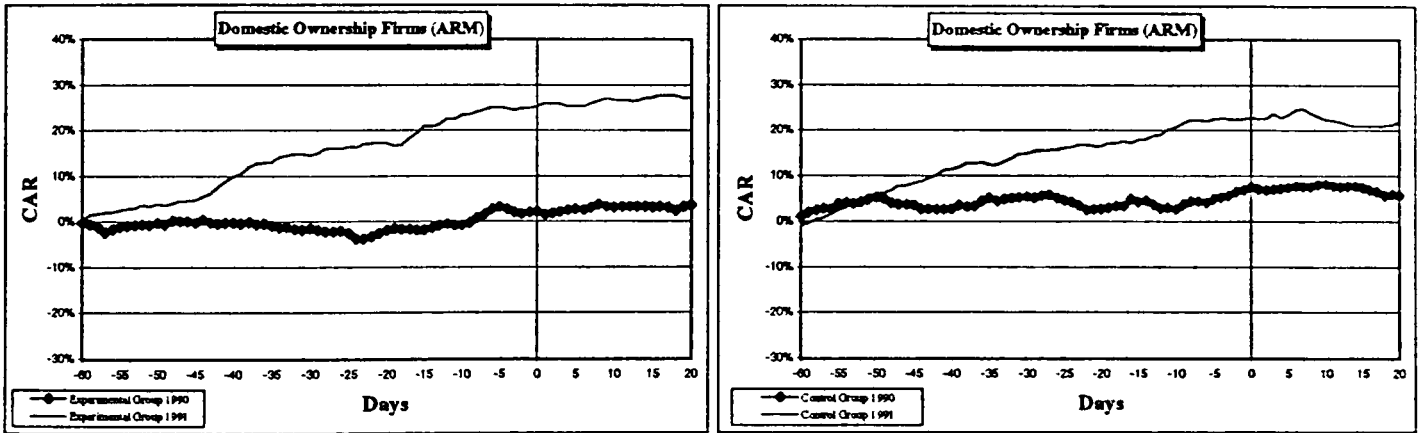
In summary, this result suggests that [for domestic (Jordanian) investors] IAS-based earnings figures releases do not contain statistically significant incremental information over earnings based on the Jordanian accounting rules.

**Figure 8.9**  
**Cumulative Abnormal Returns (CARs) Around Earnings Announcements**  
**Domestic Ownership Firms**

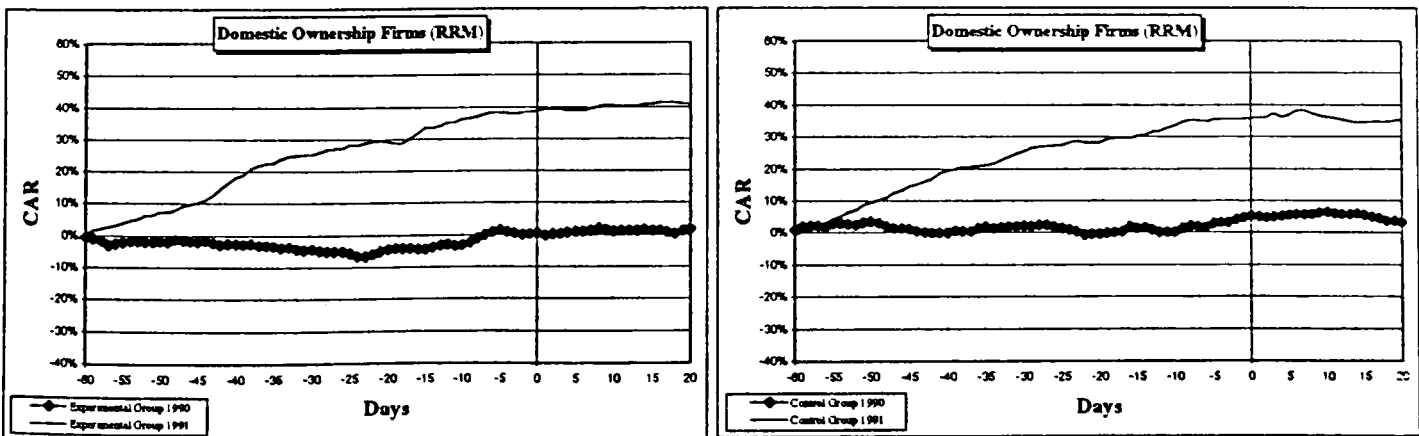
**Panel A (Market Model)**



**Panel B (Average Return Model)**



**Panel C (Raw Return Model)**



**Table 8.11: Cumulative Abnormal Returns (CARs) t-test Results, Domestic Ownership Firms**

Year	Interval	Experimental Groups				Control Groups			
		N	CAR	CSD	t-test	N	CAR	CSD	t-test
<b>Panel A (Market Model)</b>									
1990	-60-30	21	-0.03417	0.02891	-1.181	11	0.03215	0.03780	0.850
	-30-0		-0.03807	0.03081	-1.235		0.02141	0.03614	0.592
	0-10		-0.04089	0.01387	-2.948 **		0.02068	0.01587	1.303
	0-20		-0.04713	0.01781	-2.646 **		-0.00512	0.02166	-0.236
	-60-20		-0.04713	0.04526	-1.041		-0.00512	0.05616	-0.091
1991	-60-30	21	0.08611	0.02889	2.980 **	11	0.11916	0.03651	3.263 **
	-30-0		0.18009	0.03050	5.904 **		0.19844	0.03874	5.122 **
	0-10		0.19489	0.01447	13.46 **		0.19809	0.02134	9.282 **
	0-20		0.20142	0.01810	11.12 **		0.20015	0.02592	7.721 **
	-60-20		0.20142	0.04500	4.476 **		0.20015	0.05827	3.434 **
<b>Panel B (Average Return Model)</b>									
1990	-60-30	21	-0.01532	0.02923	-0.524	11	0.05471	0.03908	1.399
	-30-0		0.02146	0.03087	0.695		0.07479	0.03608	2.072 *
	0-10		0.03009	0.01310	2.296 *		0.08171	0.01566	5.217 **
	0-20		0.03670	0.01702	2.156 *		0.05692	0.02139	2.661 *
	-60-20		0.03670	0.04525	0.811		0.05692	0.05681	1.001
1991	-60-30	21	0.14596	0.02695	5.415 **	11	0.15041	0.03643	4.128 **
	-30-0		0.25266	0.02996	8.433 **		0.22822	0.03980	5.734 **
	0-10		0.26736	0.01438	18.59 **		0.22440	0.02206	10.17 **
	0-20		0.27243	0.01827	14.91 **		0.21824	0.02686	8.125 **
	-60-20		0.27243	0.04358	6.251 **		0.21824	0.05925	3.683 **
<b>Panel C (Raw Return Model)</b>									
1990	-60-30	21	-0.04321	0.03023	-1.429	11	0.02240	0.04114	0.544
	-30-0		0.00373	0.03158	0.118		0.05298	0.03688	1.436
	0-10		0.00926	0.01337	0.692		0.06458	0.01641	3.935 **
	0-20		0.01624	0.01739	0.933		0.03162	0.02228	1.419
	-60-20		0.01624	0.04646	0.349		0.03162	0.05899	0.536
1991	-60-30	21	0.25311	0.02887	8.767 **	11	0.25479	0.04029	6.323 **
	-30-0		0.38863	0.03069	12.66 **		0.35991	0.04167	8.637 **
	0-10		0.40451	0.01489	27.16 **		0.36060	0.02240	16.09 **
	0-20		0.40973	0.01909	21.46 **		0.35421	0.02762	12.82 **
	-60-20		0.40973	0.04569	8.96 **		0.35421	0.06320	5.604 **

\* Significant at the 5 percent level \*\* Significant at the 1 percent level

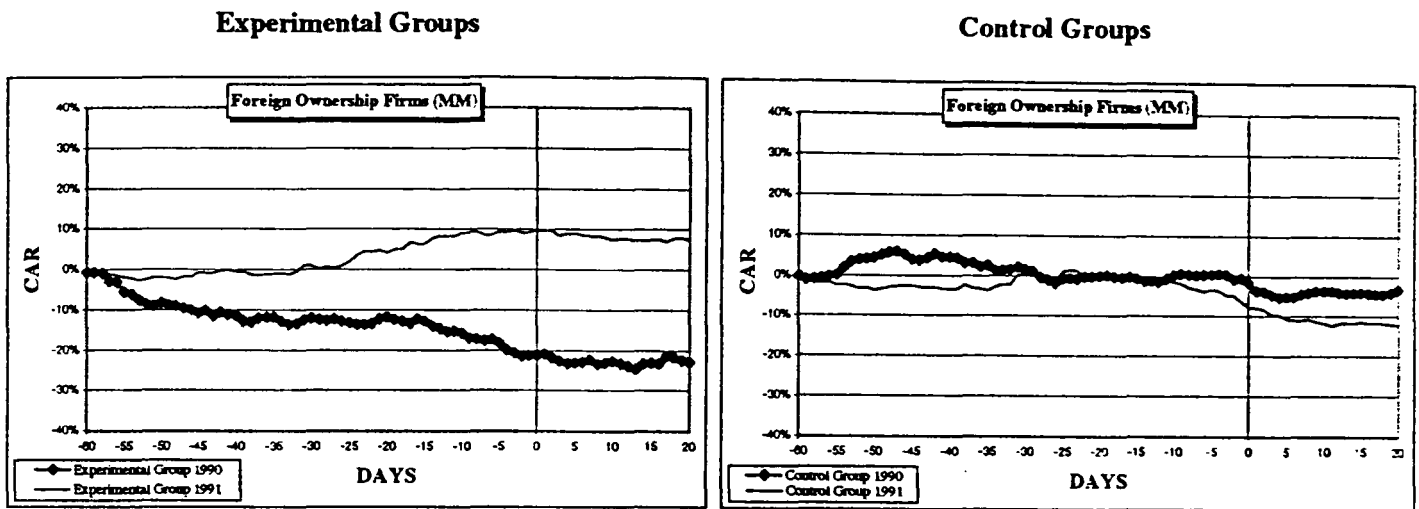
CAR = Cumulative Average Abnormal Returns CSD = Cumulative Standard Deviation N = The sample size

#### 8.4.10 Foreign-owned Firms' Share Price Reactions

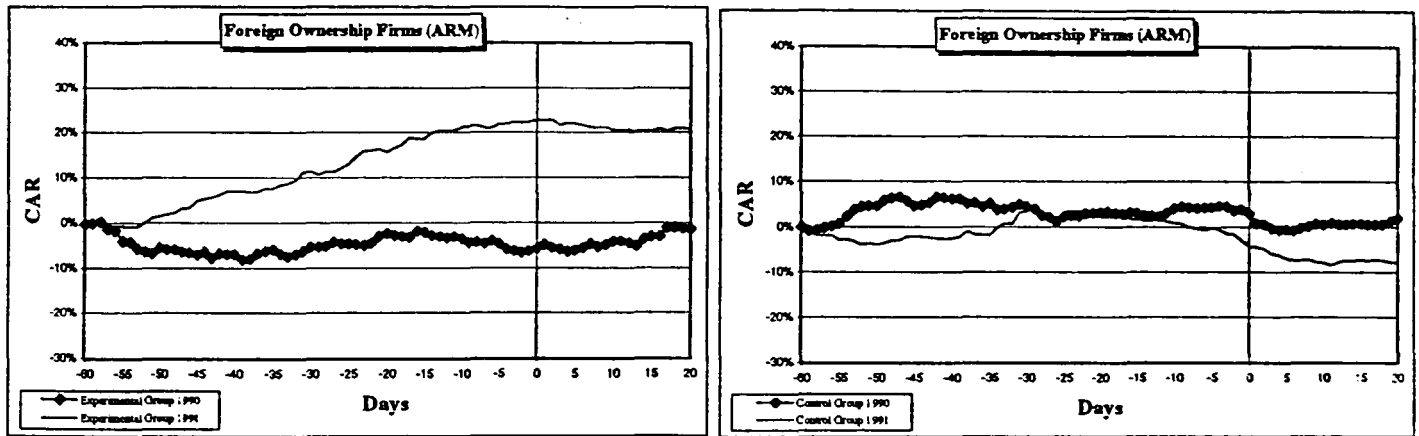
This section reports the results of the tests of  $H_{011}$  formulated in Chapter 6, Section 6.2.11 for foreign ownership firms. The results [(AARs) and (CARs)] are presented in Appendix C Table C.10, Appendix D Table D.10 and Appendix E Table E.10, for the MM, ARM and RRM respectively. The CARs are plotted in Figure 10.10.

**Figure 8.10**  
**Cumulative Abnormal Returns (CARs) Around Earnings Announcements**  
**Foreign Ownership Firms**

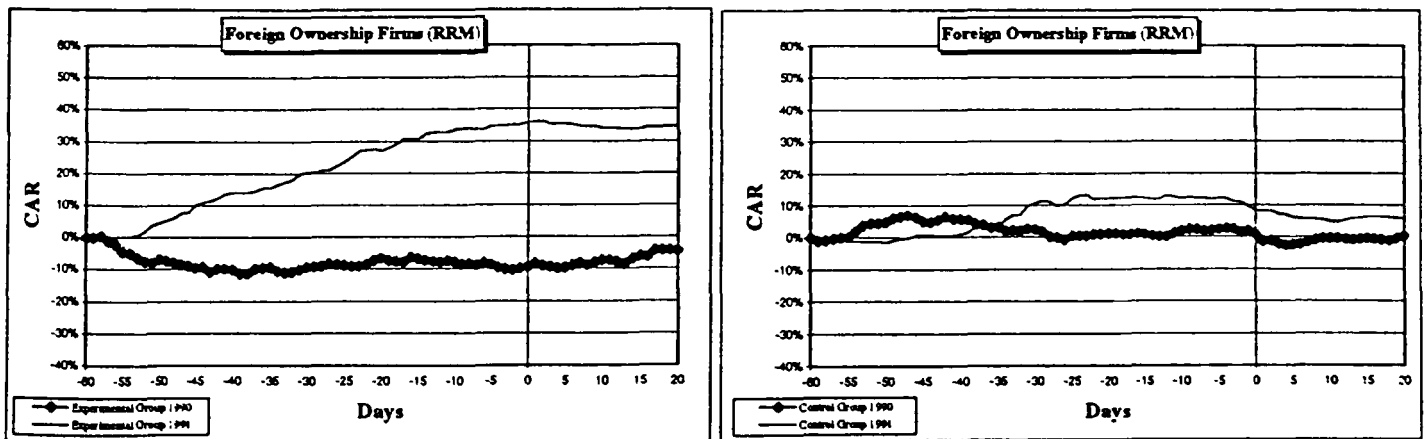
**Panel A (Market Model)**



**Panel B (Average Return Model)**



**Panel C (Raw Return Model)**



It can be seen from Figure 8.10 panel A (using the MM) that the experimental group of 1990 recorded negative CARs trend whilst the experimental group of 1991 recorded positive CARs trend. Using ARM (as can be seen from Panel B), the experimental group of 1990 recorded almost zero CARs whilst the experimental group of 1991 recorded highly positive CARs trend. Similar results were obtained by using RRM as can be seen from panel C. The control groups of 1990 recorded no reaction for all the three models, whilst the control groups of 1991 recorded slightly negative CARs (mainly after announcement date).

The CAR t-test results are presented in Table 8.12. Panel A in Table 8.12 (MM results) shows that the experimental group of 1990 recorded significant negative CARs at the 1 percent level over all intervals whilst the experimental group of 1991 recorded significant positive CARs at 5 percent level over the -30 to 0 interval and a significant positive CARs at the 1 percent level over the 0 to 10 and 0 to 20 intervals. Using ARM, it can be seen from panel B that no reaction is recorded for the experimental group of 1990 (except interval 0-10 which recorded significant negative CARs at the 5 percent level) whilst the experimental group of 1991 recorded significant positive CARs at the 1 percent level over all intervals. Panel C in Table 8.12 (RRM results) shows that the experimental group of 1990 recorded significant negative CARs at the 5 percent level over the -60 to -30 and -30 to 0 intervals and significant negative CARs at the 1 percent level over the 0 to 10 interval. The experimental group of 1991 recorded significant positive CARs at the 1 percent level over all intervals. The control groups of 1990 recorded no reaction for all three models whilst the control groups of 1991 recorded slightly negative CARs under MM and ARM and slightly positive CARs under RRM (mainly after announcement date). Therefore, we reject  $H_{011}$ , that for foreign ownership firms earnings releases based on IAS do not have price reactions which differ to those from firms with earnings releases based on Jordanian accounting rules.

This result suggests that IAS-based earnings figures contain higher information for foreign (non-Jordanian) investors than earnings figures based on traditional Jordanian accounting rules.

**Table 8.12: Cumulative Abnormal Returns (CARs) t-test Results, Foreign Ownership Firms**

Year	Interval	Experimental Groups				Control Groups			
		N	CAR	CSD	t-test	N	CAR	CSD	t-test
<b>Panel A (Market Model)</b>									
1990	-60-30	10	-0.12035	0.04183	-2.877 **	6	0.01585	0.04305	0.368
	-30-0		-0.21388	0.03854	-5.549 **		-0.01676	0.03979	-0.421
	0-10		-0.22676	0.02258	-10.04 **		-0.03736	0.02460	-1.518
	0-20		-0.22898	0.02939	-7.791 **		-0.03292	0.02843	-1.157
	-60-20		-0.22898	0.06358	-3.601 **		-0.03292	0.06457	-0.509
1991	-60-30	10	0.00991	0.03466	0.285	6	0.00397	0.03796	0.104
	-30-0		0.09759	0.04315	2.261 *		-0.07787	0.04763	-1.634
	0-10		0.07499	0.01477	5.077 **		-0.11760	0.01987	-5.918 **
	0-20		0.07432	0.02142	3.469 **		-0.12104	0.02294	-5.276 **
	-60-20		0.07432	0.05777	1.286		-0.12104	0.06448	-1.877
<b>Panel B (Average Return Model)</b>									
1990	-60-30	10	-0.05403	0.04294	-1.258	6	0.04337	0.04364	0.993
	-30-0		-0.05701	0.03886	-1.467		0.02687	0.03940	0.681
	0-10		-0.04148	0.02255	-1.839 *		0.00526	0.02483	0.211
	0-20		-0.01444	0.02942	-0.490		0.01917	0.02890	0.663
	-60-20		-0.01444	0.06437	-0.224		0.01917	0.06500	0.294
1991	-60-30	10	0.11397	0.03523	3.235 **	6	0.03498	0.03964	0.882
	-30-0		0.22986	0.04073	5.643 **		-0.04421	0.04815	-0.918
	0-10		0.20601	0.01458	14.12 **		-0.07946	0.02027	-3.920 **
	0-20		0.20756	0.02094	9.912 **		-0.07727	0.02333	-3.312 *
	-60-20		0.20756	0.05645	3.676 **		-0.07727	0.06595	-1.171
<b>Panel C (Raw Return Model)</b>									
1990	-60-30	10	-0.09470	0.04560	-2.076 *	6	0.02307	0.04491	0.513
	-30-0		-0.09329	0.04047	-2.305 *		0.00588	0.04038	0.145
	0-10		-0.07417	0.02292	-3.236 **		-0.0048	0.02527	-0.189
	0-20		-0.04551	0.03037	-1.498		0.00416	0.02893	0.143
	-60-20		-0.04551	0.06747	-0.674		0.00416	0.06637	0.062
1991	-60-30	10	0.20583	0.04034	5.102 **	6	0.10758	0.04395	2.447 *
	-30-0		0.35962	0.04198	8.566 **		0.0831	0.04805	1.729
	0-10		0.34008	0.01491	22.80 **		0.05004	0.01940	2.579 *
	0-20		0.34507	0.02111	16.34 **		0.05818	0.02220	2.620 *
	-60-20		0.34507	0.06067	5.687 **		0.05818	0.06829	0.851

\* Significant at the 5 percent level \*\* Significant at the 1 percent level

CAR = Cumulative Average Abnormal Returns CSD = Cumulative Standard Deviation N = The sample size

#### 8.4.11 Winner Firms' Share Price Reactions

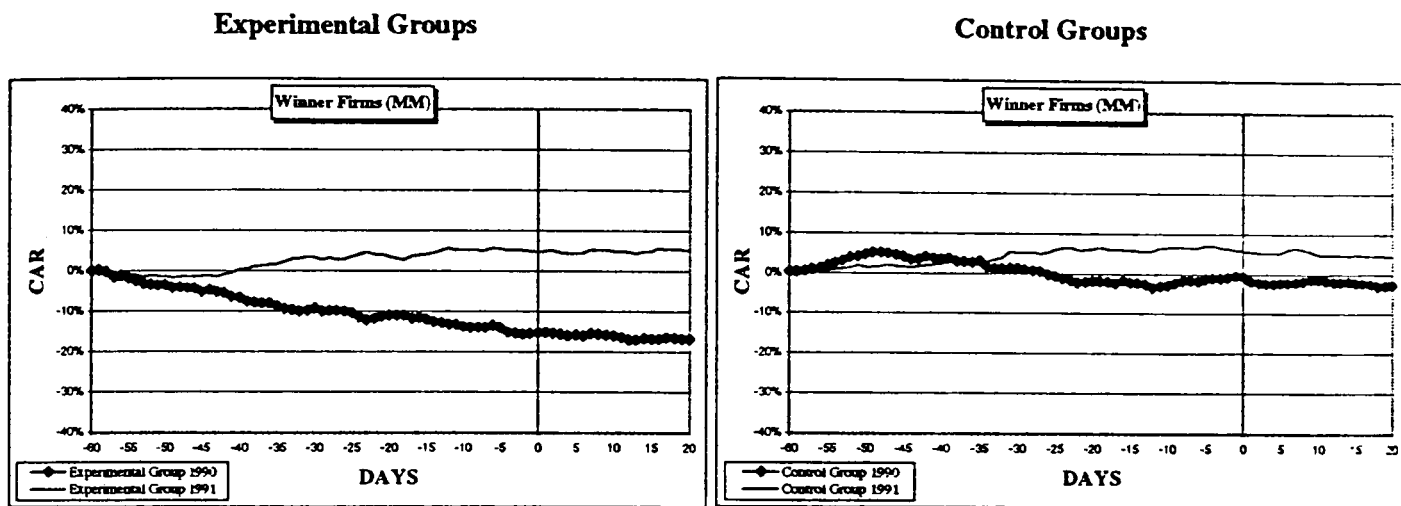
It is worth mentioning that tests on this sub-portfolio and the next one (loser firms) were carried out to augment the tests which recorded a positive CARs reaction for other experimental groups of 1991. Those results could have been due to the introduction of IASs rather than firm's performances (winners or losers). In other words it might be argued that firms with earnings results (winners) should automatically be accompanied with positive CARs trends whilst loser firms should be accompanied with negative CARs trends.

This section reports the results of the tests of  $H_{012}$  formulated in Chapter 6, Section 6.2.11 for Winner firms. The results [(AARs) and (CARs)] are presented in Appendix C Table C.11, Appendix D Table D.11 and Appendix E, Table E.11. The CARs are plotted in Figure 8.11. Panel A in Figure 8.11(MM results) shows that the experimental group of 1990 recorded a negative CARs trend whilst the experimental group of 1991 recorded a positive CARs trend. Using ARM it can be seen from Panel B that the experimental group of 1990 recorded almost zero CARs whilst the experimental group of 1991 recorded a positive CARs trend. Similar results were obtained by using RRM as can be seen in Panel C. The CAR t-test results are presented in Table 8.13.

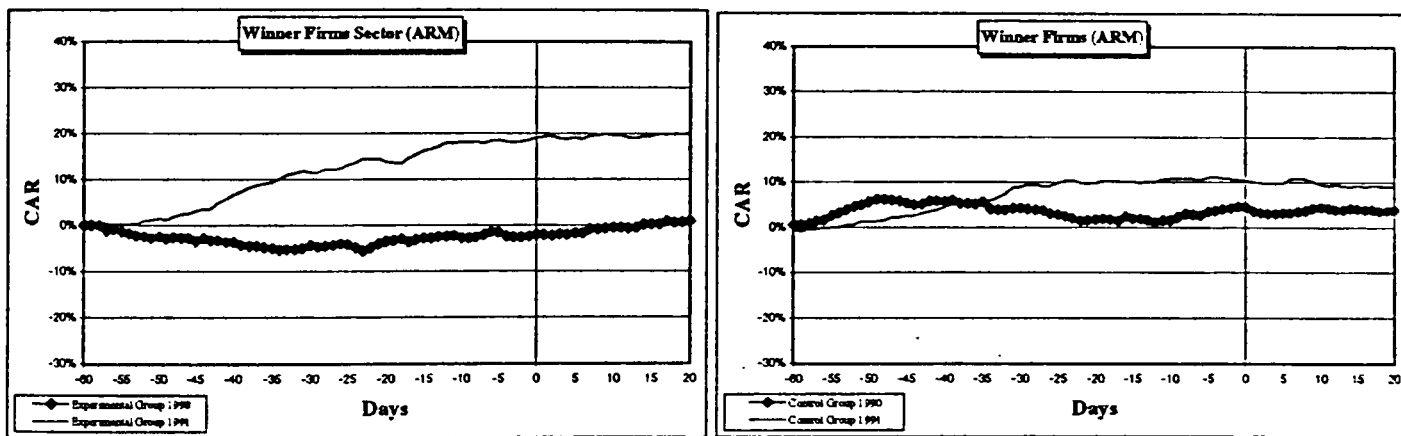
Panel A in Table 8.13 (MM results) shows that the experimental group of 1990 recorded significant negative CARs at the 1 percent level over all intervals whilst the experimental group of 1991 recorded significant positive CARs at the 5 percent level over -30 to 0 interval and a significant positive CARs at the 1 percent level over the 0 to 10 and 0 to 20 intervals. Using ARM it can be seen from panel B that no reaction is recorded for the experimental group of 1990 whilst the experimental group of 1991 recorded significant positive CARs at a 1 percent level over all intervals.

**Figure 8.11**  
**Cumulative Abnormal Returns (CARs) Around Earnings Announcements**  
**Winner Firms**

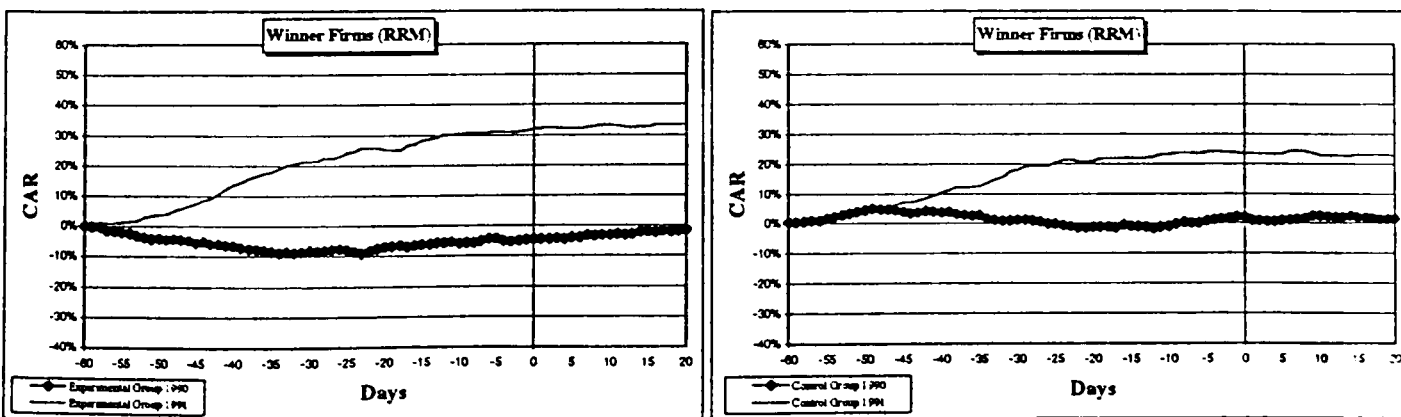
**Panel A (Market Model)**



**Panel B (Average Return Model)**



**Panel C (Raw Return Model)**





**Table 8.13: Cumulative Abnormal Returns (CARs) t-test Results, Winner Firms**

Year	Interval	Experimental Groups				Control Groups			
		N	CAR	CSD	t-test	N	CAR	CSD	t-test
<b>Panel A (Market Model)</b>									
1990	-60-30	24	-0.09263	0.02359	-3.926 **	15	0.01270	0.02832	0.448
	-30-0		-0.15105	0.02361	-6.397 **		-0.00719	0.02856	-0.251
	0-10		-0.16071	0.01249	-12.86 **		-0.01335	0.01430	-0.933
	0-20		-0.16795	0.01642	-10.22 **		-0.02692	0.01774	-1.517
	-60-20		-0.16795	0.03689	-4.552 **		-0.02692	0.04352	-0.618
1991	-60-30	24	0.03310	0.02185	1.514	15	0.05202	0.02605	1.996 *
	-30-0		0.04856	0.02557	1.899 *		0.05784	0.03040	1.902 *
	0-10		0.05032	0.01166	4.315 **		0.04887	0.01534	3.185 **
	0-20		0.05378	0.01530	3.515 **		0.04552	0.01844	2.468 *
	-60-20		0.05378	0.36392	0.147		0.04552	0.04351	1.046
<b>Panel B (Average Return Model)</b>									
1990	-60-30	24	-0.04384	0.02420	-1.811	15	0.04242	0.02880	1.472
	-30-0		-0.02044	0.02378	-0.859		0.04614	0.02852	1.617
	0-10		-0.00563	0.01236	-0.455		0.04358	0.01454	2.997 **
	0-20		0.00879	0.01599	0.549		0.03823	0.01786	2.140 *
	-60-20		0.00879	0.03716	0.236		0.03823	0.04380	0.872
1991	-60-30	24	0.11664	0.02132	5.471 **	15	0.08954	0.02679	3.342 **
	-30-0		0.19048	0.02542	7.493 **		0.10321	0.03103	3.326 **
	0-10		0.19687	0.01175	16.75 **		0.09449	0.01540	6.135 **
	0-20		0.19931	0.01536	12.97 **		0.09120	0.01871	4.874 **
	-60-20		0.19931	0.03589	5.553 **		0.09120	0.04446	2.051 *
<b>Panel C (Raw Return Model)</b>									
1990	-60-30	24	-0.07962	0.02559	-3.111 **	15	0.01300	0.03027	0.429
	-30-0		-0.04478	0.02441	-1.834 *		0.02133	0.02912	0.732
	0-10		-0.03137	0.01270	-2.470 *		0.02598	0.01512	1.718
	0-20		-0.01667	0.01643	-1.014		0.01443	0.01843	0.782
	-60-20		-0.01667	0.03859	-0.431		0.01443	0.04533	0.318
1991	-60-30	24	0.21513	0.02371	9.073 **	15	0.18054	0.03008	6.001 **
	-30-0		0.32114	0.02617	12.27 **		0.23514	0.03213	7.318 **
	0-10		0.33074	0.01214	27.24 **		0.22931	0.01520	15.08 **
	0-20		0.33377	0.01593	20.95 **		0.22872	0.01880	12.16 **
	-60-20		0.33377	0.03813	8.753 **		0.22872	0.04730	4.835 **

\* Significant at the 5 percent level \*\* Significant at the 1 percent level

CAR = Cumulative Average Abnormal Returns CSD = Cumulative Standard Deviation N = The sample size

Panel C in Table 8.13 (RRM results) shows that the experimental group of 1990 recorded significant negative CARs at the 5 percent level over the -30 to 0 and 0 to 10 intervals and significant negative CARs at a 1 percent level over -60 to -30 interval. The experimental group of 1991 recorded significant positive CARs at a 1 percent level over all intervals. Therefore, we accept  $H_{012}$ , that winner firms do not have positive abnormal returns in period  $t$  (1991) as well as period  $t-1$  (1990). The results indicate that, firms with positive earnings results (winners) generate negative abnormal returns.

#### 8.4.12 Loser Firms Share Price Reactions

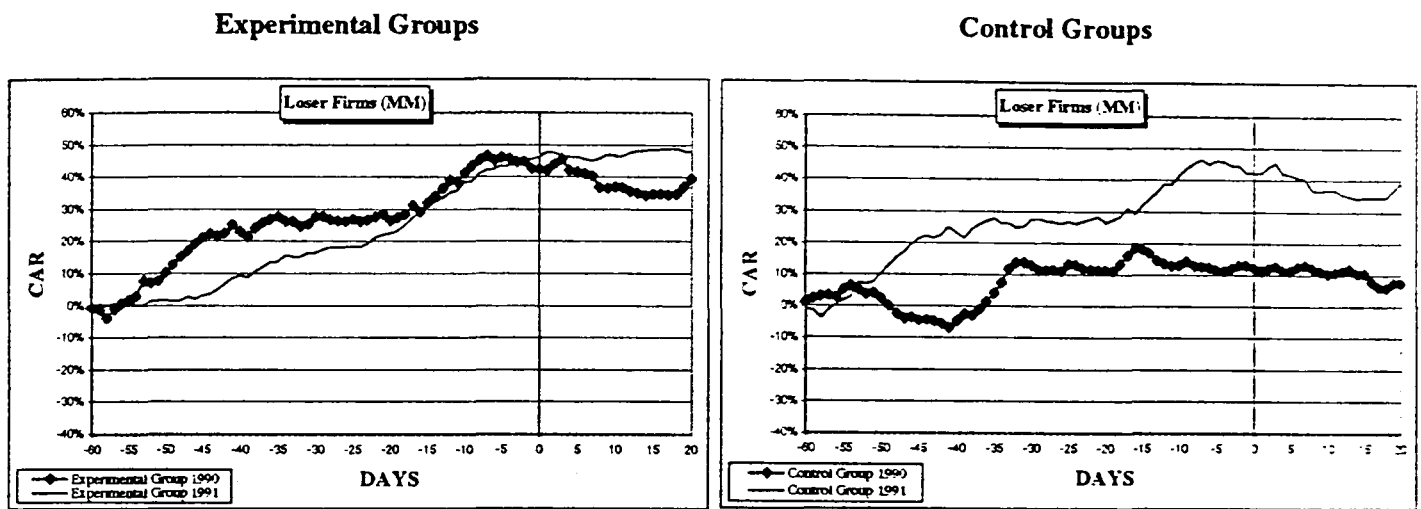
This section reports the results of the tests of  $H_{013}$  formulated in Chapter 6, Section 6.2.11 for loser firms. The results [(AARs) and (CARs)] are presented in Appendix C Table C.12, Appendix D Table D.12 and Appendix E Table E.12. The CARs are plotted in Figure 8.12.

Panel A in Figure 8.12 (MM results) shows that the experimental group of 1990 recorded positive CARs trend and so did the experimental group of 1991. Using ARM as can be seen from panel B that the experimental group of 1990 recorded slightly positive CARs trend whilst the experimental group of 1991 recorded a much stronger positive CARs trend. Similar results were obtained by using RRM as can be seen in panel C. The CAR t-test results for loser firms are presented in Table 10.14. The t-test results in Table 10.4 confirm these results. Accordingly, we accept  $H_{013}$ , that loser firms do not have negative abnormal returns during the test period. This result suggest that, even though firms have losses they still generate positive abnormal returns.

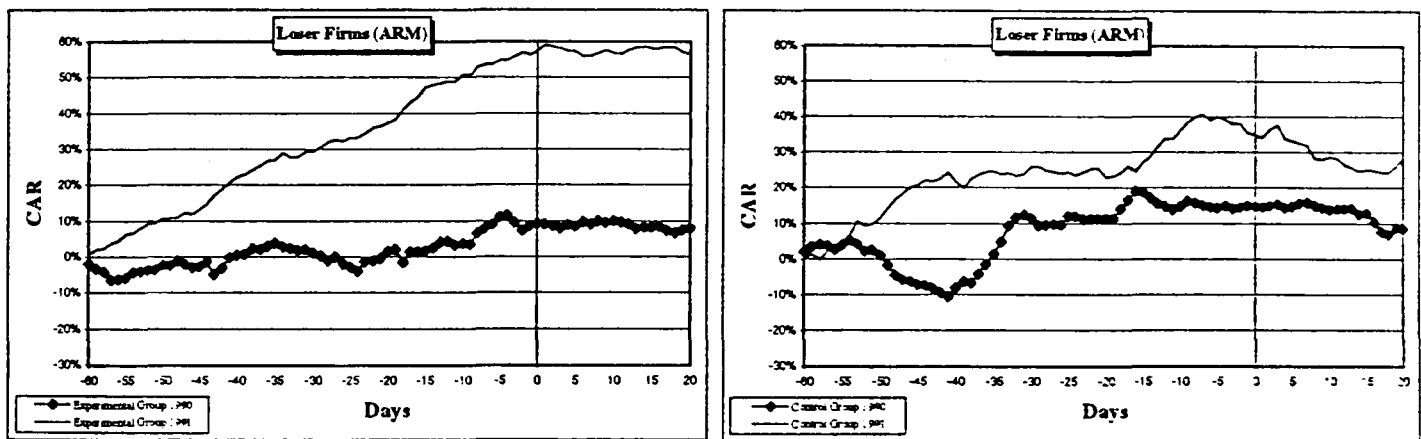
The results from this section should be considered in relation to those from previous tests, most of which recorded positive abnormal returns from IAS adopters. A question arises, did IAS adopters change to the new accounting standard to provide additional information only because such information was of a positive nature? By examining abnormal returns for winner and loser firms (both of which recorded positive CARs) we have some evidence (to augment the chi-square test results in Chapter 6) that corporate performance is not associated with IAS adoption. Also, the positive CARs observed in earlier tests are more associated with IAS adoption than with corporate performance.

**Figure 8.12**  
**Cumulative Abnormal Returns (CARs) Around Earnings Announcements**  
**Loser Firms**

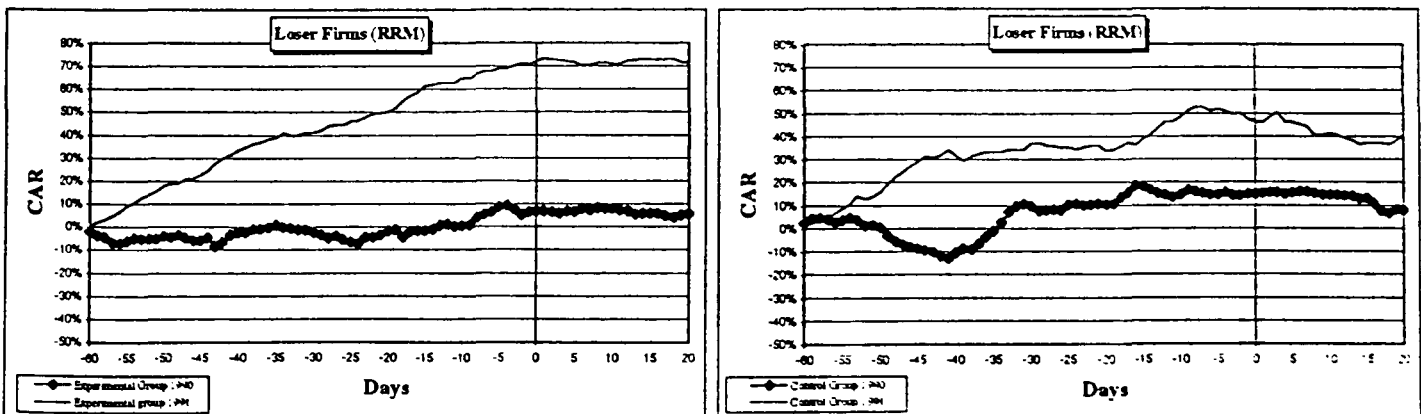
**Panel A (Market Model)**



**Panel B (Average Return Model)**



**Panel C (Raw Return Model)**



**Table 8.14: Cumulative Abnormal Returns (CARs) t-test Results, Loser Firms**

Year	Interval	Experimental Groups				Control Groups			
		N	CAR	CSD	t-test	N	CAR	CSD	t-test
<b>Panel A (Market Model)</b>									
1990	-60-30	7	0.01868	0.07209	0.259	2	0.12912	0.14393	0.897
	-30-0		0.03935	0.07259	0.542		0.12134	0.11652	1.041
	0-10		0.02071	0.03253	0.636		0.10188	0.02636	3.864
	0-20		0.01539	0.04220	0.364		0.07493	0.06181	1.212
	-60-20		0.01539	0.10905	0.141		0.07493	0.19494	0.384
1991	-60-30	7	0.16479	0.07344	2.243 *	2	0.27710	0.15250	1.817
	-30-0		0.46433	0.06858	6.770 **		0.42402	0.14760	2.872
	0-10		0.46625	0.02907	16.03 **		0.37010	0.09611	3.850
	0-20		0.47996	0.03514	13.65 **		0.39615	0.10882	3.640
	-60-20		0.47996	0.10420	4.606 **		0.39615	0.23132	1.712
<b>Panel B (Average Return Model)</b>									
1990	-60-30	7	0.00987	0.07369	0.133	2	0.11288	0.15393	0.733
	-30-0		0.09151	0.07405	1.235		0.14587	0.11160	1.307
	0-10		0.09829	0.02919	3.367 **		0.13835	0.01953	7.083 *
	0-20		0.07993	0.03938	2.029 *		0.08387	0.05849	1.433
	-60-20		0.07993	0.11019	0.725		0.08387	0.19844	0.422
1991	-60-30	7	0.29603	0.06705	4.415 **	2	0.26063	0.15479	1.683
	-30-0		0.57408	0.06623	8.667 **		0.34845	0.15106	2.306
	0-10		0.56940	0.02977	19.12 **		0.28714	0.10524	2.728
	0-20		0.56517	0.03632	15.56 **		0.28446	0.11922	2.386
	-60-20		0.56517	0.09927	5.693 **		0.28446	0.23822	1.194
<b>Panel C (Raw Return Model)</b>									
1990	-60-30	7	-0.02473	0.07520	-0.328	2	0.09491	0.16292	0.582
	-30-0		0.06815	0.07605	0.896		0.14908	0.11095	1.343
	0-10		0.07730	0.02896	2.669 *		0.14593	0.02049	7.122 *
	0-20		0.05689	0.04007	1.419		0.07816	0.06143	1.272
	-60-20		0.05689	0.11281	0.504		0.07816	0.20581	0.379
1991	-60-30	7	0.41261	0.07004	5.891 **	2	0.37004	0.16181	2.286
	-30-0		0.72065	0.06774	10.63 **		0.46520	0.15448	3.011
	0-10		0.71281	0.03065	23.25 **		0.41360	0.10857	3.809
	0-20		0.71370	0.03758	18.99 **		0.40726	0.12385	3.288
	-60-20		0.71370	0.10293	6.933 **		0.40726	0.24728	1.646

\* Significant at the 5 percent level \*\* Significant at the 1 percent level

CAR = Cumulative Average Abnormal Returns CSD = Cumulative Standard Deviation N = The sample size

## 8.5 SUMMARY

In this chapter, a number of different hypotheses formulated in Chapter 6 were tested by examining estimated values of abnormal returns and cumulative abnormal returns around the date of annual earnings announcements.

In order to test our hypotheses the stocks were divided into two major portfolios

(control and experimental group) depending on whether the firms adopted IASs or not. The experimental group comprises firms that adopted IASs in 1990. The control group comprises firms that did not adopt IAS in 1990. For further analysis the two major portfolios were divided into subportfolios according to economic sector, firm ownership, firm size, trading pattern and firm performance. The stock market reaction to these portfolios and subportfolios around earnings announcements were described and analysed in this chapter.

According to the stock market reaction we rejected  $H_{01}$  that, the change in accounting regimes has no effect on price movement. For  $H_{02}$  the evidence is mixed since the results from the three tests (MM, ARM and RRM) differ. For  $H_{02}$  the CARs for the experimental group-1990 show almost no reaction for the ARM and the RRM but a negative movement for the MM. For the 1991 experimental groups, all models show a positive drift. This would be consistent with the IASs providing more information of a positive reaction. The size of the reaction identified on the control group (whole sample) is much smaller (as can be seen from Figure 8.1) than for the experimental group.

For the financial and industrial sectors we rejected  $H_{03}$  and  $H_{05}$  suggesting that (for financial and industrial sectors investors) IAS-based earnings numbers releases contain higher information than earnings releases based on the Jordanian accounting rules (as shown in Figures 8.2 and 8.4). However, from the stock market reaction recorded for the service sector we can accept  $H_{04}$ , suggesting that (for service sector investors) IAS-based earnings numbers releases do not contain higher information than earnings releases based on Jordanian accounting rules (as shown in Figures 8.3).

For low traded firms we accept  $H_{06}$ , suggesting that (for low traded firms investors) IAS-based earnings numbers releases contain higher information than

earnings releases based on the Jordanian accounting rules. However, for the heavily traded firms we reject  $H_{07}$ , suggesting that (for investors in heavily traded firms) IAS-based earnings numbers releases contain more information than those based on Jordanian accounting rules (as shown in Figures 8.5 and 8.6).

For the small and large firms we accepted  $H_{08}$  and  $H_{09}$  suggesting that (for small and large firms investors) IAS-based earnings numbers releases do not contain higher information than earnings releases based on Jordanian accounting practices.

According to the stock market reaction we accepted  $H_{010}$  that for domestic ownership firms earnings releases based on IAS do not have price reactions which differ to those from firms with earnings releases based on a Jordanian accounting rules. However, we reject  $H_{011}$ , that foreign owned firms' earnings releases based on IAS do not have price reactions which differ to those from firms with earnings releases based on Jordanian accounting rules. This result suggests that IAS-based earnings numbers provide more information [for foreign (non-Jordanian) investors] than Jordanian accounting rules-based earnings numbers (as shown in Figures 8.10).

The formal results presented in this chapter are summarised and provided with further interpretation in the next chapter.

# CHAPTER NINE

## INTERPRETATION OF RESULTS

### 9.1 INTRODUCTION

This chapter continues the analysis of results which began in chapter eight. Firstly, findings are summarised and interpretations of individual results are offered. Next, an overview of the main findings is provided and followed by discussion. The discussion sets the results in context with

- ◆ previous studies on the Jordan exchange
- ◆ previous studies of IAS introduction in other countries
- ◆ implications of adoption of IAS
- ◆ market efficiency
- ◆ other questions asked at the outset.

### 9.2 SUMMARY OF RESULTS

The following procedure was undertaken in order to synthesise the many individual results from Chapter 8 into a more handleable form for interpretation. Firstly, results for experimental and control groups were divided between those from 1990 and those from 1991. These, in turn, were divided between reaction prior to earnings announcement and reaction after-wards. This procedure was followed for each method of calculation abnormal returns [i.e., market model (MM) method, average return model (ARM) method and raw return model (RRM) method]. This procedure produced three tables of results for each set of tests. Although generally similar, the results differed slightly between methods even though they all aimed at monitoring the same phenomenon. Consequently, there was a need for judgemental interpretation.

This was achieved by examining each of the three cells, measuring the same effect and summarising the effect in a fourth (judgemental) table. Although the procedure necessarily involved some judgment the intention was to be as objective as possible. For example, a strong positive signal on all three tables (MM, ARM, RRM) would obviously be recorded on the judgmental table as strong and positive. However, where results were recorded as strong and positive on MM and ARM but slightly positive on RRM the results would be recorded (in the judgemental table) as "strong positive" and so on. Full results are set out in Tables 9.1 to 9.12 so that the extent of subjectivity can be examined by readers of this text. The content of the "Panel Ds" (judgemental interpretation) in Tables 9.1 to 9.12 is the main material driving the commentary in Section 9.3. In interpreting results it is useful also to recall (from Chapter 4 Section 6.2.3) that the decision to adopt IAS appears not to be significantly associated with any of the subsample classifications.

**Table 9.1**  
**All Firms (Study Sample), Share Price Movements**

Year	Earnings Announcement	Experimental Group Price Reactions (CARs)	Control Group Price Reactions (CARs)
<b>Panel A (Market Model)</b>			
1990	Prior	Yes Negative	No
1991	Prior	Yes Positive	Slight Positive
1990	After	Slight Negative	No
1991	After	Slight Positive	No
<b>Panel B (Average Return Model)</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Slight Positive
1990	After	No	No
1991	After	No	Slight Negative
<b>Panel C (Raw Return Model)</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Yes Positive
1990	After	No	No
1991	After	No	Slight Negative
<b>Panel D JUDGEMENTAL INTERPRETATION</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Slight Positive
1990	After	No	No
1991	After	No	Slight Negative



**Table 9.2**  
**Financial Sector, Share Price Movements**

Year	Earnings Announcement	Experimental Group Price Reactions (CARs)	Control Group Price Reactions (CARs)
<b>Panel A (Market Model)</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Slight Positive
1990	After	Yes Negative	No (Slight Negative)
1991	After	Slight Positive	No (Slight Positive)
<b>Panel B (Average Return Model)</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Slight Positive
1990	After	Yes Negative	Slight Positive
1991	After	Slight Positive	Slight Negative
<b>Panel C (Raw Return Model)</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Slight Positive
1990	After	Slight Negative	No
1991	After	No	Slight Negative
<b>Panel D JUDGEMENTAL INTERPRETATION</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Slight Positive
1990	After	Yes Negative	No
1991	After	Slight Positive	No

**Table 9.3**  
**Services Sector, Share Price Movements**

Year	Earnings Announcement	Experimental Group Price Reactions (CARs)	Control Group Price Reactions (CARs)
<b>Panel A (Market Model)</b>			
1990	Prior	Yes Positive	No
1991	Prior	Yes Positive	Slight Positive
1990	After	Slight Positive	No
1991	After	Slight Positive	No
<b>Panel B (Average Return Model)</b>			
1990	Prior	Slight Positive	Slight Positive
1991	Prior	Yes Positive	Yes Positive
1990	After	Slight Positive	No
1991	After	No	No
<b>Panel C (Raw Return Model)</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Yes Positive
1990	After	No	No
1991	After	No	No
<b>Panel D JUDGEMENTAL INTERPRETATION</b>			
1990	Prior	Slight Positive	No
1991	Prior	Yes Positive	Yes Positive
1990	After	Slight Positive	No
1991	After	No	No

**Table 9.4**  
**Industrial Sector, Share Price Movements**

Year	Earnings Announcement	Experimental Group Price Reactions (CARs)	Control Group Price Reactions (CARs)
<b>Panel A (Market Model)</b>			
1990	Prior	Yes Negative	No
1991	Prior	Yes Positive	Slight Positive
1990	After	No	No
1991	After	No	Slight Negative
<b>Panel B (Average Return Model)</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Slight Positive
1990	After	No	No
1991	After	No	Slight Negative
<b>Panel C (Raw Return Model)</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Yes Positive
1990	After	No	No
1991	After	No	Slight Negative
<b>Panel D JUDGEMENTAL INTERPRETATION</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Slight Positive
1990	After	No	No
1991	After	No	Slight Negative

**Table 9.5**  
**Low Traded Firms, Share Price Movements**

Year	Earnings Announcement	Experimental Group Price Reactions (CARs)	Control Group Price Reactions (CARs)
<b>Panel A (Market Model)</b>			
1990	Prior	Yes Negative	No
1991	Prior	Yes Positive	Slight Positive
1990	After	No	No
1991	After	Slight Positive	No
<b>Panel B (Average Return Model)</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Slight Positive
1990	After	No	No
1991	After	No	No
<b>Panel C (Raw Return Model)</b>			
1990	Prior	Slight Negative	No
1991	Prior	Yes Positive	Yes Positive
1990	After	No	No
1991	After	No	No
<b>Panel D JUDGEMENTAL INTERPRETATION</b>			
1990	Prior	Slight Negative	No
1991	Prior	Yes Positive	Slight Positive
1990	After	No	No
1991	After	No	No

**Table 9.6**  
**Heavily Traded Firms, Share Price Movements**

Year	Earnings Announcement	Experimental Group Price Reactions (CARs)	Control Group Price Reactions (CARs)
<b>Panel A (Market Model)</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Slight Positive
1990	After	No	No
1991	After	No	Slight Negative
<b>Panel B (Average Return Model)</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Yes Positive
1990	After	No	No
1991	After	No	Slight Negative
<b>Panel C (Raw Return Model)</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Yes Positive
1990	After	No	No
1991	After	No	Slight Negative
<b>Panel D JUDGEMENTAL INTERPRETATION</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Yes Positive
1990	After	No	No
1991	After	No	Slight Negative

**Table 9.7**  
**Small Size Firms, Share Price Movements**

Year	Earnings Announcement	Experimental Group Price Reactions (CARs)	Control Group Price Reactions (CARs)
<b>Panel A (Market Model)</b>			
1990	Prior	Slight Negative	No
1991	Prior	Yes Positive	Yes Positive
1990	After	No	No
1991	After	No	No
<b>Panel B (Average Return Model)</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Yes Positive
1990	After	No	No
1991	After	No	No
<b>Panel C (Raw Return Model)</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Yes Positive
1990	After	No	No
1991	After	No	No
<b>Panel D JUDGEMENTAL INTERPRETATION</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Yes Positive
1990	After	No	No
1991	After	No	No

**Table 9.8**  
**Large Size Firms, Share Price Movements**

Year	Earnings Announcement	Experimental Group Price Reactions (CARs)	Control Group Price Reactions (CARs)
<b>Panel A (Market Model)</b>			
1990	Prior	Slight Negative	No
1991	Prior	No	No
1990	After	No	No
1991	After	No	No
<b>Panel B (Average Return Model)</b>			
1990	Prior	No	No
1991	Prior	No	No
1990	After	Slight Negative/ No	No
1991	After	No	No
<b>Panel C (Raw Return Model)</b>			
1990	Prior	Slight Negative	No
1991	Prior	Slight Positive	Slight Negative
1990	After	No	No
1991	After	No	No
<b>Panel D JUDGEMENTAL INTERPRETATION</b>			
1990	Prior	Slight Negative	No
1991	Prior	No	No
1990	After	No	No
1991	After	No	No

**Table 9.9**  
**Domestic Ownership Firms, Share Price Movements**

Year	Earnings Announcement	Experimental Group Price Reactions (CARs)	Control Group Price Reactions (CARs)
<b>Panel A (Market Model)</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Yes Positive
1990	After	No	No
1991	After	No	No
<b>Panel B (Average Return Model)</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Yes Positive
1990	After	No	No
1991	After	No	No
<b>Panel C (Raw Return Model)</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Yes Positive
1990	After	No	No
1991	After	No	No
<b>Panel D JUDGEMENTAL INTERPRETATION</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Yes Positive
1990	After	No	No
1991	After	No	No

**Table 9.10**  
**Foreign Ownership Firms, Share Price Movements**

Year	Earnings Announcement	Experimental Group Price Reactions (CARs)	Control Group Price Reactions (CARs)
<b>Panel A (Market Model)</b>			
1990	Prior	Yes Negative	No
1991	Prior	Yes Positive	Yes Positive
1990	After	No	No
1991	After	Slight Negative	Slight Negative
<b>Panel B (Average Return Model)</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	No
1990	After	Slight Positive	No
1991	After	Slight Negative	Yes Negative
<b>Panel C (Raw Return Model)</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Slight Positive
1990	After	Slight Positive	No
1991	After	No	Slight Negative
<b>Panel D JUDGEMENTAL INTERPRETATION</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	No
1990	After	Slight Positive	No
1991	After	Slight Negative	Slight Negative

**Table 9.11**  
**Winner Firms, Share Price Movements**

Year	Earnings Announcement	Experimental Group Price Reactions (CARs)	Control Group Price Reactions (CARs)
<b>Panel A (Market Model)</b>			
1990	Prior	Yes Negative	No
1991	Prior	Yes Positive	No
1990	After	No	No
1991	After	No	No
<b>Panel B (Average Return Model)</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Slight Positive
1990	After	No	No
1991	After	No	No
<b>Panel C (Raw Return Model)</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Yes Positive
1990	After	No	No
1991	After	No	No
<b>Panel D JUDGEMENTAL INTERPRETATION</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Slight Positive
1990	After	No	No
1991	After	No	No

**Table 9.12**  
**Loser Firms, Share Price Movements**

Year	Earnings Announcement	Experimental Group Price Reactions (CARs)	Control Group Price Reactions (CARs)
<b>Panel A (Market Model)</b>			
1990	Prior	Yes Positive	No
1991	Prior	Yes Positive	Yes Positive
1990	After	Yes Negative	No
1991	After	Slight Positive	Slight Negative
<b>Panel B (Average Return Model)</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Yes Positive
1990	After	No	No
1991	After	No	Yes Negative
<b>Panel C (Raw Return Model)</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Yes Positive
1990	After	No	No
1991	After	No	Slight Negative
<b>Panel D JUDGEMENTAL INTERPRETATION</b>			
1990	Prior	No	No
1991	Prior	Yes Positive	Yes Positive
1990	After	No	No
1991	After	No	Slight Negative

### 9.3 COMMENTARY ON RESULTS

This section contains the main observations from Tables 9.1 to 9.12.

Comparisons are made as follows.

- Experimental group vs. control group
- Effects by sector
- Effects by trading pattern (low traded vs. heavy traded)
- Effects by firm size (small vs. large)
- Effects by ownership (domestic vs. foreign)
- Effects by performance (winners vs. losers).

### **9.3.1 Interpretation of Individual Results**

#### **Experimental group**

##### **A) Abnormal returns prior to earnings announcement based on IASs**

Abnormal returns were recorded for all subsamples except the large firms. A possible interpretation is that adoption of IAS was, in general, a positive sign to investors and / or that the IAS adoption procedure led to information leakage (all of a positive nature). A possible reason for the large firms result (where no reaction was observed) is that large firms were already providing large amounts of information - so the effect was not found.

##### **B) Abnormal returns after earnings announcement based on IASs**

The majority of subsamples recorded no abnormal returns after the announcement date. The exceptions were the financial sector (slight positive) and the foreign owned firms (slight negative). The implication is that, for most firms, all IAS information was anticipated by (and / or leaked to) investors prior to announcement date.

#### **Control group**

##### **A) Abnormal returns prior to earnings announcement based on non-IASs**

Most groups recorded either positive or slightly positive abnormal returns. This implies that a certain amount of anticipation / leakage is "normal" for Jordanian firms. The size of the abnormal returns is however much larger for IAS adopting firms than for non-adopters. A possible interpretation is that Jordanian investors naturally

anticipate accounting information (or benefit from leaks) but that IAS adoption amplifies the effect.

## **B) Abnormal returns after earnings announcement based on non-IASs**

Most firms in this sample reported zero (or slightly negative) abnormal returns after accounts production. The implication is, as with the IAS adopters that most accounting information has already been anticipated (or leaked) prior to announcement date and possibly (for some subsamples) that the information in the accounts was not quite as good as anticipated.

### **9.3.2 Description of Effect by Sector**

#### **All firms**

The most noticeable observations are i) very positive abnormal returns for IAS adopters and ii) that these abnormal returns occur mainly prior to accounts publication. Similar effects are found for non adopters but the scale of the effect is much smaller than for IAS adopters.

#### **Financial sector**

Again, IAS adopters recorded high abnormal returns, largely prior to announcement date. For the control group it can be seen that no such effect occurs. A possible explanation is that financial sector firms which do not adopt IAS are not susceptible to "leakage".

The evidence is that segmental disclosure (alone) is not a key force causing the



effects. This observation is made on the basis that the financial sector had been legally required to provide segmental information prior to IAS adoption (see Chapter 4 Section 4.5.1) yet the financial subsample recorded strong positive abnormal returns. Something other than a change to segmental reporting must be causing the effect.

### **Services sector**

Both IAS adopters and non-adopters recorded positive abnormal returns prior to publication date. The IAS adopters also recorded slight positive returns after announcement date. A possible interpretation is that all firms are subject to information anticipation / leakage but that IAS adoption is a further positive signal to investors. For these firms it is as if it is the change in spectacles (IAS adoption) rather than what can be seen through (firm performance) that has influenced the return to investors.

### **Industrial sector**

Both IAS adopters and non-adopters recorded positive abnormal returns (mainly prior to accounts release) but the effect is much larger for IAS adopters. A slight negative trend is noticeable after announcement date for non-adopters.

### **Low traded firms**

Again, the prior announcement effect is noticeable on both control and experimental groups but the effect is greater for the experimental group (IAS adopters). Information anticipation and / or leakage, are similar across tests and there is little abnormal return noticeable after announcement date.

### **Heavily traded firms**

The results are similar to those of low traded firms, but non-adopters recorded falling abnormal returns after announcement date in 1991. Taken in conjunction with the previous results it would appear that volume of trading is not a significant influence on how investors react prior to accounts release (whether IAS or non-IAS) but that post-announcement effects may differ.

### **Small size firms**

The most noticeable effects are i) very positive abnormal returns for small firms which are IAS adopters and ii) that these returns occur mainly prior to accounts publication. Similar effects are found for non adopters but the scale of the effect is smaller than for IAS adopters.

### **Large size firms**

No reaction was recorded for either the control group or the experimental group. The results are similar to those from the financial sector except that financial sector IAS adopters recorded abnormal price movements prior to announcement date. The implication is that information anticipation and/or leakage for "large firms" IAS adopters is more restrictive/controlled than for "financial firms". If, indeed, IAS adoption can influence information leakage, the implication is that large firms leak less than financial firms. A possible interpretation of this "no effect" finding is that large firms are used to providing investors with much information so that accounts production, whether according to IAS or not provide investors with nothing "new".

### **Domestic ownership firms**

The most noticeable effects are i) very positive abnormal returns for IAS adopters and ii) that these returns occur mainly prior to accounts publication. Similar effects are found for non adopters but the scale of the effect is slightly smaller than for IAS adopters.

### **Foreign ownership firms**

Here there is a clear reaction for IAS adopters but not for non-IAS adopters. The evidence is that IAS adopters recorded positive abnormal returns mainly prior to announcement date. Foreign firms which did not adopt IASs did not record abnormal returns.

### **Winner firms**

The effect (positive abnormal returns prior to accounts publication) is most noticeable for IAS adopters.

### **Loser firms**

Although the results for loser firms are not as clear-cut as for "winners" it appears that IAS adopters recorded the highest abnormal returns. Non-adopters go on to record slightly negative abnormal returns after the announcement date. This may have been due to bad news provided in the accounts which was not anticipated. For IAS adopters, such news was already anticipated/leaked.

### **9.3.3 Interpretation of Findings in Relation to Expectations (From Chapter 6)**

#### **All firms**

The results are not quite as were anticipated. The expectation was for abnormal returns to be observed for the experimental group but not for the control group. Both groups actually recorded abnormal returns but the effect was much higher for IAS adopters. This finding is actually useful for interpreting the general results. i.e., it can be observed that IAS adoption influences the scale of 'normal' market reactions but does not lead to major differences in shareholders' reactions. The image is that IASs perform more like a magnifying glass than a different set of spectacles.

#### **Company size**

The results are consistent with the expectation. The expectation was for a higher level of disclosure by small firms after adoption IAS which would lead to higher share price reactions for the experimental group of 1991 than for the experimental group of 1990. Also, the results are consistent with the expectation for large firms, where similar share price reactions were recorded for both the experimental group of 1991 and the experimental group of 1990.

#### **Company ownership**

The expectation was that IAS adoption would lead to a higher level of disclosure for both a) companies in which domestic investors are the major shareholders [domestic ownership firms] and b) companies in which domestic and foreign investors are share owners [foreign ownership firms]. Accordingly, it was anticipated that both domestic and foreign ownership firms would record higher share

price reactions for the experimental groups in 1991 than in 1990.

The positive reaction for foreign firms was along the lines claimed for IAS adopters in the literature (see Chapter 6 Section 6.2.3). However, in Jordan at least, a similar effect was not noted for domestic firms in the first year of IAS adoption.

#### **9.3.4 Interpretation of Results in Relation to the Concept of Market Efficiency**

It has been suggested in the literature that adoption IAS will improve capital market informational efficiency. Thus, one of the minor objectives of this study is to test the semi-strong form of market efficiency on the AFM with respect to the release of companies annual reports (before and after IAS adoption). The test involves an examination of whether share prices react quickly and in an unbiased manner to the release of companies annual reports. If prices do react in this manner, the reaction is considered as an indication of the capital market's ability to correctly absorb economic events and that investors in the market cannot make substantial returns from already published accounting information.

Although interpretation of the abnormal returns recorded in this study are open to judgemental interpretation (as to whether they were indeed unbiased and correct) the results of this study are not inconsistent with this notion of market efficiency. The effects from IAS adoption are, however, more noticeable for foreign-owned firms than for domestic-owned firms. An interpretation is that, with or without accounts information, the Jordanian stock market is actually quite efficient (either through information anticipation or information leakage). When the international element is introduced the contribution of IAS to market efficiency is even more noticeable.

Also, with regard to market efficiency, it is important to direct attention to the

post-disclosure period. As shown in Figures 8.1 to 8.12, share prices for the experimental group of 1991 (adopter firms) settle down almost immediately after accounts publication with any further price reaction occurring on the first few trading days after the announcement day. The general implication is that introducing IASs has improved the efficiency of the Amman Financial Market.

### **9.3.5 Answers to Further Questions**

A number of further questions were posed near the begging of this thesis. This section aims to answer these questions in as straight-forward manner as the methodology and results allow.

**Question 1:** Are IASs "relevant" in a stock market context?

**Answer 1:** Yes, if "relevance" is defined as "having an effect" and "irrelevance" as the absence of an effect. The results from the financial sector sample, the industrial sector sample and the foreign-owned sample clearly show a difference in return associated with IAS adoption. Relevance thus defined is not so clear for the domestic firms sample.

**Question 2:** Has IAS adoption resulted in improved information for investors?

**Answer 2:** In order to answer this question "improvement" is defined as "increasing information content". The answer is yes - provided that the positive abnormal returns observed in this study were influenced by positive information. This assumption is not too unrealistic since, in comparison with 1990, 1991 (during which the effects were observed) was quite a good year for AFM-listed firms.

### **9.3.6 Results of This Study in Relation to Previous Studies on the Jordanian Stock Market.**

#### **i. The results in relation to Al-Hmoud (1987)**

Al-Hmoud (1987) studied Jordanian stock market efficiency. He concluded that neither semi-strong form tests nor weak-form tests support the efficiency of the Jordanian stock market. Al-Hmoud states that:

*"The findings suggest that the behaviour of stock market regarding tested information, does not conform to the semi strong form of efficient market hypothesis".*

Contrary to Al-Hmoud, the findings of this study provide reasonable evidence for the semi strong form of the efficient market hypothesis on the Amman stock exchange.

#### **ii. The results in relation to EL-Issa (1988b)**

EL-Issa (1988b) examined the usefulness of corporate financial disclosure to investors in the Jordanian stock market by measuring the share price movements surrounding release of Jordanian companies annual reports. The results of his study indicated that financial disclosure was viewed as unsatisfactory and that investors desired the disclosure of additional items such as related parties transactions, interim reports, true and timely disclosures and information about management. El-Issa concluded that the legal framework of disclosure in Jordan contains minimal information viewed by international accounting standards.

In this study (Figures 8.1 through 8.12) the CAR-curves for 1990 and 1991 for the experimental groups (IAS-adopters firms) are different but, for the control groups (non-adopters firms), the CAR-curves for 1990 and 1991 are very close, suggesting there are substantial differences in the information content of IAS-based earning figures

and Jordanian accounting practices-based earning figures. The implication is that introducing IAS has increased the standard of reporting (financial disclosure) in Jordan since El-Issa's investigation.

### **9.3.7 Results of This Study in Relation to Previous Studies of IAS Introduction in Other Countries**

Market-based accounting research (MBAR) on the information content of earnings figures based on the IAS and its association with stock returns is relatively scarce (as discussed in Chapter 5 Section 5.3.6). One study by Niskanen et al. (1994), examined whether IAS-based earnings figures convey significant incremental information over earnings figures based on Finnish accounting rules. Their results gave support to the notion that IASs increase information content. A second study by Auer (1995), examined the information content of 247 earnings announcements by Swiss quoted non-financial firms which had changed their accounting standards from "a lower-quality" Swiss-Standard to standards based on either IAS or EC-Directives. Auer's results suggested that IAS-based earnings releases in Switzerland did not possess statistically significant information content beyond information content of earnings releases based on the former Swiss-GAAP. The findings of this study are, in general, consistent with those of Niskanen et al. (1994) but inconsistent with those of Auer (1995), i.e., on the AFM it appears that IAS-based earnings figures convey incremental information over earnings figures based on 'old' Jordanian accounting practices.



## 9.4 SUMMARY

This chapter summarised the results from chapter 8 and offered interpretations and a commentary. The main points were

- The experimental groups of all subsamples (except large firms) recorded positive abnormal returns prior to earnings announcement based on IASs. The majority of subsamples recorded no abnormal returns after the announcement date. The exceptions were the financial sector (slight positive) and the foreign owned firms (slight negative).
- The Control groups for most subsamples recorded slightly positive abnormal returns prior to earnings announcement based on Jordanian accounting procedures.
- The size of the abnormal returns is much larger for IAS adopting firms than for non-adopters.
- For foreign-owned firms there is a clear reaction for IAS adopters but not for non-adopters. Foreign-owned IAS adopters recorded positive abnormal returns mainly prior to announcement date but foreign-owned non-adopters did not record abnormal returns.

# CHAPTER TEN

## SUMMARY AND CONCLUSIONS

This chapter is divided into four sections. Section 1 summarises the main findings of the research. Section 2 discusses problems encountered and limitations of the research. Section 3 suggests some areas for future research and finally, section 4 summarises the contribution for knowledge from this research.

### 10.1 SUMMARY AND CONCLUSIONS

This study is one of the first empirical studies on the information content of IAS-figures. The primary aim for conducting this study was to investigate the effects of introducing IASs on the Jordanian Stock Exchange. More specifically the research examined whether IAS-based earnings figures contain incremental information over earnings based on traditional Jordanian accounting practices. The results make a contribution to the discussion on the usefulness of IAS-based figures in developing countries.

The methodology employed in this study is similar to that of previous information content studies (event study methodology). The study differs from previous studies, however, in two important respects. Firstly, previous studies have been based on the market model. Such a procedure is sometimes criticized as being inappropriate, particularly for developing countries where markets are not necessarily efficient. Hence this study employed two further models using average returns and raw returns. A second difference between this study and previous research is that most

previous studies examine the influence of IASs on the share prices of a single portfolio of firms. This study employed the use of subsamples (financial sector, service sector, industrial sector, low traded firms, heavily traded firms, small firms, large firms, domestic owned firms, foreign owned firms, winner firms and loser firms) enabling a much more sensitive interpretation of results.

### **10.1.1 General Findings**

The general findings of this thesis are as follows:

1. There are large differences between traditional Jordanian accounting practices and those of the IASs. IASs require more information disclosure and are, in general, closer to the idea of "a true and fair view" than Jordanian accounting practices.
2. Adoption of IASs is either randomly determined or determined by some factors outside the scope of this study.
3. In general, firms reporting under IASs rules recorded higher abnormal returns prior to accounts publication than non-IAS reporting firms. In previous studies such an effect has been interpreted as suggesting that IASs have information content beyond that of traditional domestic accounts.
4. The size of abnormal return prior to announcements was larger for IAS adopters in financial and industrial sectors than for service sector.
5. The smallest reaction from a change to IASs was noted for the "large firms" sample. This is possibly due to extensive reporting by large firms even before IASs were introduced.

6. For small firms which adopted IASs, the abnormal returns prior to accounts release were higher than for firms which did not adopt.
7. A very clear result was recorded for domestic owned and foreign owned firms. The abnormal returns prior to announcement for foreign-owned (IASs adopters) firms were large. For domestic-owned (IASs adopters) firms the abnormal returns were negligible. This result runs contrary to claims that IASs adoption is equally beneficial to domestic and foreign owned firms.
8. In general, IASs adopting firms recorded negligible abnormal returns after accounts publication.
9. A similar effect was noted for non-adopters, although some subsamples (industrial sector and foreign-owned firms) recorded negative abnormal returns after accounts release.

### **10.1.2 Conclusions**

The findings of this research give support to the notion that IAS-based earnings figures contain incremental information to the Jordanian stock market. Most of the information is, however, anticipated or leaked to the market prior to accounts release. This is not unusual (see Ball and Brown page 165-6). This was indicated by the clear market responses observed around the IAS-based earnings figures' announcements. Noticeable exceptions to this general finding were large firms and the service sector (which may have already been providing large amounts of information).

The empirical results of this study provide additional evidence of the value of standardized accounting rules for the investing public and encourage further research

in international accounting harmonization. Such harmonization may prove useful especially in countries like Jordan, where accounting is less developed than in eg. UAS or UK. In such circumstances, accounting rules offered by international accounting standards can provide earnings figures which the users of financial reports find much more meaningful than earnings figures based on traditional accounting practices. In this study, however, the advantage of IASs adoption was found mainly for foreign-owned firms where large pre-announcement abnormal returns were recorded for IASs adopters but not for non-adopters. For domestic firms, IASs adoption made little difference to share price behaviour.

The finding that IASs are associated with higher abnormal returns for foreign owned firms but not domestically owned firms should not necessarily be taken as a criticism of IASs adoption. For Jordanian firms intending to attract overseas capital it provides a signal that such international activities are likely to lead to a lower cost of capital, which would not have been achieved if IASs were not adopted. The wider implication is that IASs adoption is indeed an advantage for internationally-owned firms operating within developing economies. Developing countries should thus seriously consider IASs adoption if the intention is to attract overseas capital.

### **10.3 LIMITATIONS AND DIFFICULTIES**

The following difficulties and limitations were faced in developing this thesis:

- i. Jordanian share prices are recorded by hand in Arabic numerals so data collection and computer analysis was time-consuming.
- ii. There has been little previous empirical work on the Jordanian stock exchange (probably for the reason suggested in 1 above).
- iii. A limitation of the methodology is that it is only suitable for analysing the general

effect of the accounting standards change. It is not suitable for a detailed assessment of the impact of accounting standards change for specific firms.

- iv. Some authors have criticised the use of the standard market model to analyse markets (such as Jordan) which may be less than efficient. Supplementary average return and raw return models were therefore used in this study. Despite Al-Hmoud (1987) observations about the Jordanian market, results from all three models drew very close and overall results suggested a degree of semi-strong efficiency for the AFM.

#### **10.4 AREAS FOR FUTURE RESEARCH**

The topic of disclosure is very broad and much research is needed. Results from this piece of work suggests the need for further studies in the following areas:

- I. This research only examined the first year of IASs adoption. It would be interesting to conduct further research on 1993 data by which date IASs adoption was required for all AFM firms.
- II. A trading volume study would also be useful to investigate whether IAS adoption increased trading activity.
- III. This study did not test for information transfer whereby accounting information provided by one firm may also have an effect on the share prices of similar firms which have not yet reported. It is possible that information transfer effects are more noticeable for IAS adopters than for non-adopters.

#### **10.5 CONTRIBUTION**

This thesis contributes to our understanding of accounting and financial markets

in the following ways.

1. It is the first empirical examination of the influence of IASs on the Jordanian financial market.
2. The traditional method for investigating abnormal returns using the market model is augmented by two further methods (average return and raw return) so that their results may be compared.
3. The methodology employs several subsamples to allow sensitivity analysis rather than one large sample as used by previous researchers.
4. Adoption of IASs was found to be either random or determined by some factors outside the scope of this study.
5. Actual effects on share prices associated with IASs introduction are compared with previous claims for IASs introduction.
6. Evidence was found against the claim that IASs adoption has similar effects for both domestic and foreign owned firms. More positive abnormal price reactions occurred for foreign-owned IASs adopters than for domestic IASs adopters.
7. Contrary to previous research, the results indicate that the Jordanian stock market is fairly informationally efficient in a semi-strong sense since accounting information (whether IAS or non-IAS) is reflected in share price movements before accounts publication.
8. The results (and methodology) may be useful and of interest to other researchers and to other developing countries considering IASs adoption.
9. The study provides further insights into the effects of IASs adoption and may be useful in further discussions over whether accounting systems should be universal or environmentally determined.

# Appendix A

## Differences Between Jordanian Accounting Rules and International Accounting Standards

The following information is summarized in Table 4.1 of the main text.

### IAS 1: Disclosure of accounting policies

IAS 1 standard deals with the disclosure of all significant accounting policies which have been adopted in the preparation and presentation of financial statements. According to this standard, financial statements should show corresponding figures for the preceding period. If a change in an accounting policy which has a material effect is made, it is necessary to disclose that a change has occurred and to quantify the effect. A change in an accounting policy which may not have a material effect in the current year should also be disclosed if it may have a material effect in subsequent years.

According to IAS 1, accounting policies cover the principles, bases, conventions, rules and procedures adopted by management in preparing and presenting financial statements. There are many different accounting policies in use even in relation to the same aspect of financial statements type of entry; judgment is required in selecting and applying the accounting policy which is best suited to present properly the firm's financial position and the results of its operations.

Three considerations should govern the selection of accounting policies and the preparation of financial statements:

- (a) Prudence
- (b) Substance Over Form
- (c) Materiality

Furthermore, there are three fundamental accounting assumptions underlie the preparation of financial statements, which are recognized by the International Accounting Standards Committee. These assumptions are:

- (a) Going Concern
- (b) Consistency
- (c) Accrual

Disclosure of these basic assumptions is not required. The onus to report lies in the opposite direction i.e. if a fundamental accounting assumption is not followed, that fact should be disclosed together with the reasons. Financial statements should include a brief but clear disclosure of all significant accounting policies which have been used, so that the financial statements may be properly understood.

In Jordan, article 168 of the Companies Act No.1 1989, states that, within three months of the end of the company's accounting year, the board of directors must prepare financial statements, including details of revenues and expenses. A copy of these statements, together with the auditors' report must be mailed to each shareholder with the notice calling the annual meeting. Copies of the financial statements, the report of the board of directors, and auditors report, must be sent in the case of a public shareholding company to the Amman Financial Market. According to the Companies



Act, books of accounts are to be kept audited, and a fair balance sheet is to be prepared, sent to shareholders and filed with the registrar of companies. The Act also requires a true and fair profit and loss account for the accounting year. However, there are no further requirements concerning the form and the contents of the financial statements beyond a requirement that companies should maintain proper accounting records in accordance with generally accepted accounting principles, which are not themselves defined by law. IAS 1, on the other hand, provides detailed disclosure guidelines, eg., it contains reserve accounting disclosures not included in article 168 of Jordanian Companies Act No.1 1989.

## **IAS 2: Valuation and Presentation of Inventories in the Context of the Historical Cost System**

This standard deals with the valuation and presentation of inventories in financial statements in the context of the historical cost system, which is the most widely adopted basis on which financial statements are presented. According to the standard, several different formulas with widely different effects are in current use for the purpose of assigning costs, including the following:

- (a) First-in, first-out (FIFO)
- (b) Weighted average cost
- (c) Last-in, first-out (LIFO)
- (d) Base stock
- (e) Specific identification
- (f) Next-in, first-out (NIFO)
- (g) Latest purchase price.

Weighted average cost, LIFO, base stock, and specific identification formulas use costs that have been incurred by the enterprise at one time or another. The NIFO and latest purchase price methods use costs that have not all been incurred and are therefore not based on historical cost.

According to the standard, inventories should be valued at the lower of historical cost and net realisable value. The historical cost of manufactured inventories should include a systematic allocation of those production overhead costs that relate to putting the inventories in their present location and condition. Allocation of fixed production overhead to the costs of conversion should be based on the capacity of the facilities. If a fixed production overhead has been entirely or substantially excluded from the valuation of inventories on the grounds that it does not directly relate to putting the inventories in their present location and condition, that fact should be disclosed.

Inventories should be sub-classified in balance sheets or in notes to the financial statements in a manner which is appropriate to the business and so as to indicate the amounts held in each of the main categories. The accounting policies adopted for the purpose of valuation of inventories, including the cost formula used, should be disclosed. A change in an accounting policy related to inventories that have a material effect in the current period or may have a material effect in subsequent periods should be disclosed together with the reasons. The effect of the change should, if material, also be disclosed and quantified.

In Jordan, the law contains no provisions regarding the valuation of

inventories. However, it is nevertheless current practice in Jordan for inventories to be valued at historical cost or market whichever is lower. No breakdown of the inventory by type is required by law. For taxation purposes, the tax authorities have traditionally accepted valuation at cost only, as determined by any recognized accounting methods.

### **IAS 3, Consolidated Financial Statements**

IAS 3 deals with the presentation of consolidated financial statements for a group of companies under the control of one parent company. It also establishes as an International Accounting Standard the use of the equity method of accounting for certain types of long-term investments in the consolidated financial statements. According to IAS 3, "control" is defined in terms of ownership of more than one half of the voting power.

In Jordan, the Companies Act No.1 1989 in article No. 236 states that each holding company should prepare and present consolidated financial statements. Moreover, it defines "control" in terms of ownership of more than one half of the voting power. Therefore, there are no major differences between Jordan accounting practices and IAS 27.

### **IAS 4, Depreciation Accounting**

IAS 4 deals with depreciation accounting and applies to all depreciable assets except:

- (a) forests and similar regenerative natural resources;
- (b) expenditures on the exploration of minerals, oil, natural gas and similar non-regenerative resources;
- (c) expenditures on research and development; and
- (d) goodwill.

According to the standard, the depreciable amount of a depreciable asset should be allocated in a systematic manner to each accounting period during the useful life of the asset. Moreover, the depreciation method selected should be applied consistently from period to period unless altered circumstances justify a change. In an accounting period in which the method is changed, the effect should be quantified and disclosed and the reason for the change should be stated. The useful lives of major depreciable assets and classes of depreciable assets should be reviewed periodically and depreciation rates adjusted for current and future periods if expectations are significantly different from previous estimates. The effect of the change should be disclosed in the accounting period in which the change takes place. The following should be disclosed for each major class of depreciable asset:

- (a) the depreciation methods used
- (b) the useful lives and the depreciation rates used
- (c) total depreciation allocated for the period
- (d) the gross amount of depreciable assets and the related accumulated depreciation.

In Jordan, the Companies Act does not provide or determine any regulations

or any rates for depreciation. Therefore, before introducing IAS most Jordanian companies adhered to regulations and rates of depreciation that complied with the income tax law. The income tax law prescribes the following main depreciation rates:

<u>Industrial buildings</u>	<u>Percent</u>
Stone	2%
Concrete	3-4%
Metal hangers	3-4%
Tower crane	8%
Industrial machinery	8-12%
Furniture and Fixtures	9%
Computers, Telecommunication equipment	12%
Vehicles, trucks, office machines	15%
Bulldozers, Loaders, Excavators grader, scrapers, road equipment	20%
Compactors	25%

Depreciation charged in excess of the rates prescribed by the regulations is generally not deductible for tax purposes. However, accelerated depreciation is allowed where a tax payer can prove that there is unusual depreciation due to additional shift working, provided that total depreciation does not exceed double the usual rates.

Neither the Companies Law nor the Income Tax Law has provisions relating to depreciation of intangibles such as goodwill.

## **IAS 5, Information to be Disclosed in Financial Statements**

IAS 5 deals with information to be disclosed in financial statements. A "set" of financial statements includes a balance sheet, an income statement, notes, and other statements and explanatory materials which are identified as part of the financial statements.

Under this standard there are three forms of disclosures:

### **1. General Disclosures**

IAS 5 standard, states that all material information should be disclosed that is necessary to make the financial statements clear and understandable. This includes, the name of the company, the country of incorporation, the period covered by the financial statements, and the balance sheet date. A brief description of the legal form of the company, the nature of the activities of the company, and the currency (in terms of which the financial statements are expressed) should also be given if they are not otherwise apparent.

IAS 5 also requires that financial statements should show corresponding figures for the preceding period.

### **2. Specific Disclosures-Balance Sheet General**

According to this standard, the following disclosures should be made:

- (a) Restrictions on title to assets
- (b) Security given in respect of liabilities
- (c) The methods of providing for pension and retirement plans
- (d) Contingent assets and contingent liabilities, quantified if possible
- (e) Amounts committed for future capital expenditure.

### **Long-term Assets**

In relation to disclosing property, plant and equipment, the following items should be

disclosed:

- (a) land and buildings
- (b) Plant and equipment
- (c) Other categories of assets, suitably identified
- (d) Accumulated depreciation.

Separate disclosure should be made of leaseholds and of assets being acquired on instalment purchase plans.

For other long-term assets, IAS 5 states that the following items should be disclosed separately (including, if applicable, the method and period of depreciation and any unusual write-offs during the period):

- (a) Long-term investments: Investments in subsidiaries, investments in associated companies, and other investments, stating the market value of listed investments, if different from the carrying amount in the financial statements.
- (b) Long-term receivables: accounts and notes receivable-trade, receivables from directors, intercompany receivables, and associated company receivables, and other.
- (c) Goodwill
- (d) Patents, trademarks, and similar assets
- (e) Expenditures carried forward, for example, preliminary expenses, reorganisation expenses, and deferred taxes.

#### **Current Assets**

The following items should be disclosed separately:

- (a) Cash, including cash on hand and current and other accounts with banks. Cash which is not immediately available for use, for example, balances frozen in foreign banks by exchange restrictions, should also be disclosed.
- (b) Marketable securities, other than long-term investments: the market value should be disclosed if different from the carrying amount in the financial statements.
- (c) Receivables: accounts and notes receivable-trade, receivables from directors, intercompany receivables, associated company receivables, and other receivables and prepaid expenses.
- (d) Inventories.

#### **Long-term Liabilities**

The following items should be disclosed separately, excluding the portion repayable within one year:

- (a) Secured loans
- (b) Unsecured loans
- (c) Intercompany loans
- (d) Loans from associated companies.

A summary of the interest rates, covenants, subordinations, repayment terms, conversion features and amounts of an unamortized premium should also be shown.

#### **Current Liabilities**

This standard states that, the following items should be disclosed separately:

- (a) Bank loans and overdrafts
- (b) Current portions of long-term liabilities
- (c) Payables: accounts and notes payable-trade, dividends payable, taxes on income, payables to directors, and other payables and accrued expenses.

### **Other Liabilities and Provisions**

According to the standard, significant items included in other liabilities and in provisions and accruals (for example deferred taxes, deferred income and provisions for pensions) should be separately disclosed.

### **Shareholders' Interests**

The following disclosures should be made separately:

(a) Share capital.

For each class of share capital:

The number or amount of shares authorised, issued and outstanding

Capital not yet paid in

The par or legal value per share

The movement in share capital accounts during the period

Rights, preferences, and restrictions with respect to the distribution of dividends and to the repayment of capital

Reacquired shares

Cumulative preferred dividends in arrears

Shares reserved for future issuance under options and sales contracts, including the terms and amounts.

(b) Other equity, indicating the movement for the period and any restrictions on distribution

Capital paid-in excess of par value ( share premiums)

Reserves

Revaluation surplus

Retained earnings.

### **3. Specific Disclosures-Income Statement**

The following information should be disclosed under IAS:

- (a) Sales or other operating revenues
- (b) Depreciation
- (c) Interest expense
- (d) Income from investments
- (e) Taxes on income
- (f) Interest income
- (g) Unusual changes
- (h) Unusual credits
- (i) Significant intercompany transactions
- (j) Net income.

The Jordanian companies tended to reports their balance sheet and profit and loss account, but they did not provide supplementary information concerning the basis for preparing their accounts.

### **IAS 6, Accounting treatment of changing prices**

Prices change over time as a result of various general or specific political, economic and social forces. Specific forces such as changes in supply and demand and technological changes may cause individual prices to increase or decrease significantly. These general forces also result in changes in the general level of prices and therefore in the general purchasing power of money.

According to International Accounting Standard No. 6, companies should present in their financial statements information that represents a systematic response to specific price change or to changes in the general level of prices..

The Jordanian companies used to prepared their financial statements on a historical cost basis of accounting without regard either to changes in the general level of prices or to the specific level of prices. It is worth mentioning that, before the introduction of IAS, changes in prices were not accounted for in Jordan.

### **IAS 7, Statement of Changes in Financial Position**

IAS 7 deals with the presentation of a statement which summarises for the period the resources made available to finance the activities of an enterprise and the uses to which such resources have been put. This statement in some countries it called ' Statement of Source and Application of Funds'.

According to the standard, several forms of presentation can be used for the statement of changes in financial position. For example, the statement may show the sources of funds as equal to the uses of funds. Another form is to show a difference between the sources and the uses of funds which represents the net increase or decrease either in cash and cash equivalents or in working capital. There is no particular form which is preferable for all companies, but each company selects the form of presentation considered most informative in the circumstances.

According to this standard, a statement of changes in financial position should be included as an essential part of the financial statements. The statement of changes in financial position should be presented for each period for which the income statement is presented.

In Jordan, before introducing IAS, there were no legal requirements for the preparation and presentation of the statements of changes in financial position for Jordanian companies.

### **IAS 8, Unusual and Prior Period Items and Changes in Accounting Policies**

Whereas International Accounting Standard 5 requires certain specific information to be disclosed in the income statement (including the identification of an amount described as net income for the period), IAS 8 deals with the accounting treatment in the income statement of unusual items, prior period items, and changes in accounting policies and estimates.

According to IAS 8, income from the ordinary activities of the company during the period should be disclosed in the income statement as part of net income. Unusual items should be included in net income; the nature and amount of each such item should be separately disclosed. If there is a change in an accounting estimate that has a material effect in the current period, (or may have a material effect in subsequent periods), the effect of the change should be disclosed and quantified.

In Jordan, before introducing the IAS, there were no legal requirements for providing information regarding the changes in accounting policies.

## **IAS 9, Accounting for Research and Development Activities**

IAS 9 deals with accounting treatment for research and development activities. A company may address a programme of creative work to increase the stock of its technical and scientific knowledge and to devise new applications which will contribute to the maintenance of its business and its competitive position. Therefore, the accounting treatment and disclosure of the costs of research and development activities are very important for users of financial statements.

According to IAS 9, research and development costs should include:

- (a) salaries, wages and other related costs of personal engaged in research and development activities
- (b) costs of materials and services consumed in research and development activities
- (c) depreciation of equipment and facilities to the extent that they are used for research and development activities
- (d) overhead costs related to research and development activities
- (e) other costs related to research and development activities, such as the amortisation of patents and licences.

The amount of research and development costs, described above should be charged as an expense of the period in which they are incurred except to the extent that development costs are deferred in accordance with the following paragraph.

Development costs of a project may be deferred to future periods if all the following criteria are satisfied:

- (a) the product or process is clearly defined and the costs attributable to the product or process can be separately identified;
- (b) the technical feasibility of the product or process has been demonstrated;
- (c) the management of the company has indicated its intention to produce and market, or use, the product or process;
- (d) there is a clear indication of a future market for the product or process or, if it is to be used internally rather than sold, its usefulness to the company can be demonstrated; and
- (e) adequate resources exist, or are reasonably expected to be available, to complete the project and market the product or process.

Jordan practice, before introduction of IAS, was that no such very detailed explanation and requirements about accounting treatment for research and development activities were disclosed.

## **IAS 10, Contingencies and Events Occurring After the Balance Sheet Date**

IAS 10, deals with the accounting treatment in financial statements of contingencies and events occurring after the balance sheet date. The standard states that, the amount of a contingent loss should be accrued by a charge in the income statement if:

- (a) it is probable that future events will confirm that, after taking into account any related probable inventory, an asset has been impaired or a liability incurred at the balance sheet date, and
- (b) a reasonable estimate of the amount of the resulting loss can be made.

The existence of a contingent loss should be disclosed in the financial statements if either of the above conditions is not met unless the possibility of a loss is remote. Contingent gains should not be accrued in financial statements. The existence of contingent gains should be disclosed if it is probable that the gain will be realised.

According to the standard, assets and liabilities should not be adjusted for, but disclosure should be made of, those events occurring after the balance sheet date that do not effect the condition of assets or liabilities at the balance sheet date, but are of such importance that non-disclosure would affect the ability of users of the financial statements to make proper evaluations and decision.

The following information should be provided:

- (a) the nature of the contingency
- (b) the uncertain factors that might affect the future outcome
- (c) an estimate of the financial effect, or a statement that such an estimate cannot be made.

In Jordan, before introducing IAS, there were no legal requirements or any accounting treatments for contingencies and events occurring after the balance sheet date.

### **IAS 11, Accounting for Construction Contracts**

This standard deals accounting treatment for construction contracts in the financial statements of contractors. The principal problem relating to accounting for construction contracts is the allocation of revenues and related costs to accounting periods over the duration of the contract.

For the purposes of IAS 11, a construction contract is a contract for the construction of an asset or a combination of assets which together constitute a single project. Examples of activities covered by such contracts include the construction of buildings, ships, dams, bridges and complex pieces of equipment. The feature which characterises a construction contract in IAS 11 is the fact that the date at which the contract activity is entered into and the date when the contract activity is completed fall into different accounting periods.

Two methods of accounting for contracts commonly followed by contractors are the '*percentage of completion*' method and the '*completed contract*' method. Under the first method, revenue is recognised as the contract activity progresses, moreover, the amount of revenue recognised is determined by reference to the stage of completion of the contract activity at the end of each accounting period. Under the second method, revenue is recognised only when the contract is completed or substantially completed; that is, when only minor work is expected other than warranty work.

According to IAS 11, in accounting for a construction contract in financial statements, either the percentage of completion method or the completed contract method should be used.

The following should be disclosed in the financial statements:

- (a) the amount of construction work in progress, and
- (b) cash received and receivable as progress payments, advances and retentions on account of contracts included in construction work in progress, and
- (c) the amount receivable under cost plus contracts not included in construction work in progress.



In Jordan, the Income Tax Law described the same two methods of accounting for contracts the 'percentage of completion' method and the 'completed contract' method. Therefore, there are no major differences between Jordan accounting practices and IAS 11.

### **IAS 12, Accounting for Taxes on Income**

This standard deals with the accounting treatment for taxes on income in financial statements. This includes the determination of the amount of expense or saving related to taxes on income in respect of an accounting period and the presentation of such an amount in the financial statements.

Under IAS 12, the provision for taxes payable is calculated in accordance with rules for determining taxable income established by taxation authorities. In many circumstances these rules differ from the accounting policies applied to determine accounting income. The effect of this difference is that the relationship between the provision for taxes payable and accounting income reported in financial statements may not be representative of the current level of tax rates. One reason for the difference between taxable income and accounting income is that certain items are considered to be appropriately included in one calculation but are required to be excluded from the other. Another reason for the difference is that certain items, considered in determining both amounts, are included in the calculation for different periods. These types of differences are described as "*timing differences*". Information on the nature and amount of these timing differences is often considered useful to users of financial statements. However, the method of reflecting the effect of timing differences varies. Sometimes the information is included in notes to the financial statements; sometimes the effect is reflected by the application of tax effect accounting methods.

According to IAS 12, the tax expense for the period should be included in the determination of net income of the company. Moreover, the taxes on income relating to an item that is charged or credited to shareholders' interests should be accounted for in the same manner as the relevant item and the amount should be disclosed. The tax expense for the period should be determined on the basis of Tax Effect Accounting, using either the deferral or the liability method. The method used should be disclosed.

In Jordan, the Jordanian legislative requirements for taxation are vague and subjective. Therefore, before introducing IAS all the Jordanian companies used to provide provisions for taxation without mentioning the method used for the determination of this provision. This is in contrast with IAS which provide for all the accounting treatments for taxes on income.

### **IAS 13, Presentation of Current Assets and Current Liabilities**

IAS 13, deals with the meaning and presentation of current assets and current liabilities in financial statements. According to the standard, among the items included in current assets should be:

(a) Cash in bank balances available for current operations. Cash or bank balances whose use for current operations is subject to restrictions should be included as a current asset only if the duration of the restrictions is limited to the term of an obligation that has been classified as a current liability or if the restrictions lapse within

one year.

(b) Securities not intended to be retained and capable of being readily realised.

(c) Trade and other receivables expected to be realised within one year of the balance sheet date.

(d) Inventories.

(e) Advance payments on the purchase of current assets.

(f) Expense prepayments expected to be used up within one year of the balance sheet date.

Among the items included in current liabilities should be obligations payable at the demand of the creditor and those parts of the following obligations whose liquidation is expected within one year of the balance sheet date:

(a) Bank and other loans.

(b) The current portion of long-term liabilities.

(c) Trade liabilities and accrued expenses.

(d) Provision for taxes payable.

(e) Dividends payable.

(f) Deferred revenues and advances from customers.

(g) Accruals for contingencies.

In Jordan, accounting treatment and requirements related to presentation of current assets and current liabilities in the balance sheet statement is fairly similar to International Accounting Standard 13 requirements but IAS 13 adds more new items to be disclosed under current assets (for example, advance payments on the purchase of current assets) and it adds more new items to be disclosed under current liabilities (for example, accruals for contingencies), also IAS 13 contains more detail descriptions of the differences between current and noncurrent items.

### **IAS 14, Reporting Financial Information by Segment**

This standard deals with reporting financial information by segments of an enterprise-specifically, the different industries and the different geographical areas in which it operates. According to the standard, the company should describe the activities of each reported industry segment and indicate the composition of each reported geographical area. For each reported industrial and geographical segment, the following financial information should be disclosed:

(a) sales or other operating revenues, distinguishing between revenue derived from customers outside the enterprise and revenue derived from other segments,

(b) segment result,

(c) segment assets employed, expressed either in money amounts or as percentages of the consolidated totals, and

(d) the basis of inter-segment pricing.

The company should also provide reconciliations between the sum of the information on individual segments and the aggregated information in the financial statements.

Changes in identification of segments and changes in accounting practices used in reporting segment information which have a material effect on the segment information should also be disclosed.

In Jordan, it is mandated and legally required for banks and insurance

companies to prepare and present segment financial information. Reporting of financial information by segment is not legally required, however, for the industrial and service companies.

### **IAS 15, Information Reflecting the Effects of Changing Prices**

This standard deals with information reflecting the effects of changing prices on the measurements used in the determination of an enterprise's results of operation and financial position. IAS 15 thus replaces IAS 6, Accounting Responses to Changing Prices. According to the standard, companies should present information disclosing the following items using an accounting method reflecting the effects of changing prices:

- (a) the amount of the adjustment to or the adjusted amount of depreciation of property, plant and equipment;
- (b) the amount of the adjustment to or the adjusted amount of cost of sales;
- (c) the adjustments relating to monetary items, the effect of borrowing, or equity interests when such adjustments have been taken into account in determining income under the accounting method adopted; and
- (d) the overall effect on results of the adjustments described in (a) and (b) and, where appropriate, (c), as well as any other items reflecting the effects of changing prices that are reported under the accounting method adopted.

In Jordan, before introducing the IAS, there were no such accounting treatments or legal requirements for changing prices.

### **IAS 16, Accounting for Property, Plant and equipment**

IAS 5, (Information to be disclosed in Financial Statements), requires certain information to be disclosed in the financial statements, including property, plant and equipment. In many companies these assets are grouped into various categories, such as equipment, machinery, land and buildings, fixtures and fittings, and vehicles. IAS 16, deals with the identification, revaluation and disposal of such property, plant and equipment. However, it does not deal with specialised aspects of accounting for property, plant and equipment that arise under a comprehensive system reflecting the effects of changing prices.

According to IAS 15, in addition to the disclosures required by International Accounting Standard 4, (Depreciation Accounting), and International Accounting Standard 5, (Information to be disclosed in Financial Statements), the following disclosures should be made:

- (a) the bases used for determining the gross carrying amounts of property, plant and equipment. When more than one basis has been used, the gross carrying amount for each basis in each category should be given; and
- (b) in cases where property, plant and equipment are stated at revalued amounts, the method adopted to compute these amounts should be disclosed, including the policy in regard to the frequency of revaluations. The nature of any indices used, the year of any appraisal made, and whether an external valuer was involved should also be disclosed.

In Jordan, before introducing IAS, companies used to present the value of

property, plant and equipments according to the historical cost without paying any attention to the changes in its value which may occur in the future, because of the change in the purchasing power of the currency due to general price level inflation, and the change in value of these costs in relation to other items. On the other hand International Accounting Standard 16 takes this into account, by allowing measurement of property, plant and equipment with values higher than the historical cost.

## **IAS 17, Accounting for Leases**

This standard deals with the accounting treatment of finance and operating leases in the financial statements of lessees and lessors. It does not deal with the following specialised types of leases:

- i) Leases agreements to explore for or use natural resources, such as oil, gas, timber, metals and other mineral rights.
- ii) Licensing agreements for such items as motion picture film video recordings, plays, manuscripts, patents and copyrights.

### **(a) Accounting for Leases in the Financial Statements of Lessees**

#### **1. Finance Leases**

According to the standard, a finance lease should be reflected in the balance sheet of a lessee by recording an asset and a liability at amounts equal at the inception of the lease to the fair value of the leased property net of grants and tax credits receivable by the lessor or, if lower, at the present value of the minimum lease payments. In calculating the present value of the minimum lease payments the discount factor is the interest rate implicit in the lease, if this is practicable to determine; if not, the lessee's incremental borrowing rate is used. Rental should be apportioned between the finance charge and the reduction of the outstanding liability. The finance charge should be allocated to periods during the lease term so as to produce a constant periodic rate of interest on the remaining balance of the liability for each period.

#### **2. Operating Leases**

According to IAS 17, under an operating lease the charge to income should be the rental expense for the accounting period, recognised on a systematic basis that is representative of the time pattern of the user's benefit.

### **(b) accounting for Leases in the Financial Statements of Lessors**

#### **i. Financial Leases**

According to IAS 17, under a finance lease an asset held should be recorded in the balance sheet not as property, plant and equipment but as a receivable, at an amount equal to the net investment in the lease.

#### **ii. Operating leases**

Assets held for operating leases should be recorded as property, plant and equipment in the balance sheet of lessors. Rental income should be recognised on a straight line basis over the lease term, unless another systematic basis is more representative of the time pattern of the earnings process contained in the lease.

### **(c) Disclosure**

#### **1. Disclosures in the Financial Statements of Lessees**

According to IAS 17, disclosure should be made of the amount of assets that are the subject of finance leases at each balance sheet date. Liabilities related to these leased assets should be shown separately from other liabilities, differentiating between the current and long-term portions. Disclosure should be made of significant financing restrictions, renewal or purchase options, contingent rentals and other contingencies arising from leases.

#### **2. Disclosures in the Financial Statement of Lessors**

According to IAS 17, disclosure should be made at each balance sheet date of the gross investment in leases reported as finance leases, and the related unearned finance income and unguaranteed residual values of leased assets. Disclosure should be made of the basis used for allocating income so as to produce a constant periodic rate of return, indicating whether the return relates to the net investment outstanding or the net cash investment outstanding in the lease. If more than one basis is used, the bases should be disclosed. Furthermore, when a significant part of the lessor's business comprises operating leases, the lessor should disclose the amount of assets by each major class of asset together with the related accumulated depreciation at each balance sheet date.

In Jordan, before introducing the IAS, there were no any accounting treatments or legal requirements for leases at all, and its left for accountants personal opinion and judgments. Lease accounting is limited in Jordan, it only exists in the Jordanian Royal Airline.

### **IAS 18, Revenue Recognition**

IAS 18 deals with the bases for recognition of revenue in the income statements of companies. It is concerned with the recognition of revenue arising in the course of the ordinary activities of the company from: the sale of goods, the rendering of services, and the use by others of company resources yielding interest, royalties and dividends. According to IAS 18, in a transaction involving the sale of goods, performance should be regarded as being achieved when the following conditions have been fulfilled:

(a) the seller of the goods has transferred to the buyer the significant risks and rewards of ownership, in that all significant acts have been completed and the seller retains no continuing managerial involvement in, or effective control of, the goods transferred to a degree usually associated with ownership; and

(b) no significant uncertainty exists regarding:

(i) the consideration that will be derived from the sale of the goods;

(ii) the associated costs incurred or to be incurred in producing or purchasing the goods;

(iii) the extent to which goods may be returned.

Moreover, in a transaction involving the rendering of services, performance should be measured either under the completed contract method or under the percentage of completion method, whichever relates the revenue to the work accomplished. In any case, such performance should be regarded as being achieved when no significant uncertainty exists regarding:

- (i) the consideration that will be derived from rendering the service, and
- (ii) the associated costs incurred or to be incurred in rendering the service.

Revenue from sales or service transactions should be recognised when the requirements as to performance set out in the above paragraphs are satisfied, provided that at the time of performance it is not unreasonable to expect ultimate collection. If at the time of sale or the rendering of the service it is unreasonable to expect ultimate collection, revenue recognition should be postponed.

Surveying Jordanian firms listed in AFM annual reports for 1989 and 1990, we found that there are no major differences between Jordan accounting practices and IAS 18.

### **IAS 19, Accounting for Retirement Benefits in the Financial Statements of Employers**

This standard deals with accounting for retirement benefits in the financial statements of employers. For accounting treatment of retirement benefits in the financial statements of employers IAS 19 state that, in a defined benefit plan

- i) the cost of retirement benefits should be determined, using appropriate and compatible assumptions, by consistently using an accrued benefit valuation method or a projected benefit valuation method. The pay-as-you-go and terminal funding methods should not be used in accounting for the cost of retirement benefits;
- ii) current service costs should be charged to income systematically over the expected remaining working lives of the employees covered by the retirement benefit plan; iii) past service costs, experience adjustments, and the effects of changes in actuarial assumptions on retirement benefit costs should be charged or credited to income as they arise or allocated systematically over a period not exceeding the expected remaining working lives of the participating employees; and
- iv) the effect of changes in actuarial method that affect the charge to income in the current period or may affect the charge in subsequent periods should be accounted for and disclosed in accordance with IAS 8, Unusual and Prior Period Items and Changes in Accounting Policies.

In Jordan, before introducing the IAS, there were no any accounting treatments or legal requirements for retirement benefits in the financial statements of employers. However, IAS 19 is not applicable to the present situation of Jordan since it is not the practice of employers to cater for their employees after leaving their employment. There is a national provident fund scheme similar to the national insurance scheme in the UK and employers have no obligation to create other schemes in addition to the national provident scheme.

### **IAS 20: Accounting for Government Grants and Disclosure of Government Assistance**

IAS 20, deals with accounting for the disclosure of government grants and with disclosure of other forms of government assistance.

Government assistance takes many forms varying both in the nature of the assistance given and in the conditions which are usually attached to it. The purpose of the assistance may be to encourage an enterprise to embark on a course of action which it would not normally have taken if the assistance was not provided.

For accounting treatment of government grants IAS 20 state that, government grants should be recognised in the income statement over the periods necessary to match them with the related costs which they are intended to compensate, on a systematic basis. Furthermore it state that, government grants related to assets, including non-monetary grants at fair value, should be presented in the balance sheet either by setting up the grant as deferred income or by deducting the grant in arriving at the carrying amount of the asset. Related to government grants disclosure IAS 20 state that, the following matters should be disclosed:

- (a) the accounting policy adopted for government grants, including the methods of presentation adopted in the financial statements;
- (b) the nature and extent of government grants recognised in the financial statements and an indication of other forms of government assistance from which the enterprise has directly benefited; and
- (c) unfulfilled conditions and other contingencies attaching to government assistance that has been recognised.

Surveying Jordanian firms listed in AFM annual reports for 1989 and 1990, we found that there are no major differences between Jordan accounting practices and IAS 20.

### **IAS 21, Accounting for the Effects of Changes in Foreign Exchange Rates**

IAS 21 deals with accounting for transactions in foreign currencies in the financial statements of an enterprise and with translation of the financial statements of foreign operations into a single reporting currency for the purpose of including them in the financial statements of the reporting enterprise.

A reporting enterprise may carry on foreign activity in two ways:

- (a) It may have transactions in foreign currencies. For example, it may purchase or sell goods for which payment is made in a foreign currency, or it may lend or borrow foreign currency. Transactions in foreign currencies must be expressed in the reporting currency of the entity in order to prepare its financial statements.
- (b) It may have foreign operations. In order to prepare the financial statements of the reporting enterprise in its reporting currency, foreign currency financial statements of such operations must be translated.

According to IAS 21, if exchange differences on long-term monetary items resulting from foreign currency transactions or from translating the financial statements of foreign operations that are integral to the operations of the parent are deferred, the cumulative deferred amount still to be credited or charged to income should be disclosed. Furthermore, if exchange differences arising on liabilities associated with the acquisition of assets have been included in the carrying amount of the related assets, the amount arising during the period should be disclosed.

In Jordan, before introducing the IAS, there were no any accounting treatments

or legal requirements for the Effects of Changes in Foreign Exchange Rates.

### **IAS 22, Accounting for Business Combinations**

This standard deals with accounting for business combinations and treatment of any resultant goodwill. It is directed principally to consolidated financial statements of incorporated enterprises although certain of its requirements apply to financial statements of individual enterprises. According to the standard, for all business combinations the following disclosures should be made in the financial statements immediately following the combination:

- (a) names and descriptions of the combining enterprises;
- (b) effective date of the combination for accounting purposes; and
- (c) the method of accounting used to reflect the combination.

Surveying Jordanian firms listed in AFM annual reports for 1989 and 1990, we found that there are no major differences between Jordan accounting practices and IAS 22.

### **IAS 23, Capitalisation of Borrowing Costs**

IAS 23 deals with the capitalisation of borrowing costs in the financial statements of enterprises as a part of the historical cost of acquiring certain assets. Views differ on the appropriate accounting treatment for borrowing costs. Some regard such costs as forming part of the cost of the asset with which they can be identified either directly or indirectly. Others regard them as costs which are charged to income regardless of how the borrowing is applied. The significant amounts of borrowing costs incurred by enterprises make the accounting treatment of borrowing costs an important consideration in the preparation of financial statements.

According to the standard, an enterprise that has incurred borrowing costs and incurred expenditures on assets that take a substantial period of time to get them ready for their intended use or sale should adopt a policy of either capitalising borrowing costs or not capitalising borrowing costs for those assets. The policy should be applied consistently in accordance with IAS 8, Unusual and Prior Period Items and Changes in Accounting Policy. Furthermore, IAS 23 state that, the financial statements should disclose the amount of borrowing costs that have been capitalised during the period.

Surveying Jordanian firms listed in AFM annual reports for 1989 and 1990, we found that there are no major differences between Jordan accounting practices and IAS 23.

### **IAS 24: Related Party Disclosures**

This standard deals with the disclosure of related parties and transactions between a reporting enterprise and its related parties. IAS 24 state that parties are considered to be related if one party has the ability to control the other party or exercise significant influence over the other party in making financial and operating decisions. According to the standard related party relationships where control exists should be disclosed irrespective of whether there have been transactions between the related



parties. Also, it state that, if there have been transactions between related parties, the reporting enterprise should disclose the nature of the related party relationships as well as the types of transactions and the elements of the transactions necessary for an understanding of the financial statements.

In Jordan, before introducing the IAS, there were no legal requirements for related party disclosures.

### **IAS 25, Accounting for Investments**

IAS 25 deals with accounting for investments in the financial statements of enterprises and with related disclosure requirements. IAS 25 state that, the following should be disclosed:

- (a) The accounting policies for:
  - (i) the determination of carrying amount of investments'
  - (ii) the treatment of changes in market value of current investments carried at market value, and
  - (iii) the treatment of a revaluation surplus on the sale of a revalued investment;
- (b) the significant amounts included in income for:
  - (i) interest, royalties, dividends and rentals on long-term and current investments, and
  - (ii) profits and losses on disposal of current investments, and changes in value of such investments;
- (c) the market value of marketable investments if they are not carried at market value;
- (d) the fair value of investment properties if they are accounted for as long-term investments and not carried at fair value;
- (e) significant restrictions on the realizability of investments or the remittance of income and proceeds of disposal;
- (f) for long-term investments stated at revalued amounts:
  - (i) the policy for the frequency of revaluations'
  - (ii) the date of the latest revaluation, and
  - (iii) the basis of revaluation and whether an external valuer was involved;
- (g) the movements for the period in revaluation surplus and the nature of such movements; and
- (h) for enterprises whose main business is the holding of investments an analysis of the portfolio of investments.

Surveying Jordanian firms listed in AFM annual reports for 1989 and 1990, we found that there are no major differences between Jordan accounting practices and IAS 25.

### **IAS 26, Accounting and Reporting by Retirement Benefit Plans**

IAS 26 deals with the contents of reports by retirement benefit plans where such reports are prepared. It regards a retirement benefit plan as a reporting entity separate from the employers of the participants in the plan. This standard deals with

accounting and reporting by the plan to all participants as a group. It does not deal with reports to individual participants about their retirement benefit rights.

According to IAS 26, the report of a defined benefit plan should contain either:

- (a) a statement that shows the net assets available for benefits, the actuarial present value of promised retirement benefits, distinguishing between vested benefits and non-vested benefits, and the resulting excess or deficit; or
- (b) a statement of net assets available for benefits including either a note disclosing the actuarial present value of promised retirement benefits, distinguishing between vested benefits and non-vested benefits, or a reference to this information in an accompanying actuarial report.

Furthermore, IAS 26 state that, the defined benefit plan report should explain the relationship between the actuarial present value of promised retirement benefits and the net assets available for benefits and the policy for the funding of promised benefits.

The report of a defined contribution plan should contain a statement of net assets available for benefits and a description of the funding policy.

The report of a retirement benefit plan, whether defined benefit or defined contribution, should also contain the following information:

- (a) a statement of changes in net assets available for benefits;
- (b) a summary of significant accounting polices; and
- (c) a description of the plan and the effect of any changes in the plan during the period.

As mentioned in earlier under (IAS 19), IAS 26 is also not applicable to the present situation of Jordan since it is not the practice of employers to cater for their employees after leaving their employment. There is a national provident fund scheme similar to the national insurance scheme in the UK and employers have no obligation to create other schemes in addition to the national provident scheme.

### **IAS 27: Consolidated Financial Statements and Accounting for Investments in Subsidiaries**

IAS 27 deals with the preparation and presentation of consolidated financial statements for a group of enterprises under the control of a parent. Consolidated financial statements have been developed to meet the need for information concerning the financial position, results of operations and changes in financial position of a group of enterprises. It also deals with accounting for investments in subsidiaries in a parent's separate financial statements. This standard replaces IAS 3, Consolidated Financial Statements, except in so far as that statement deals with accounting for investments in associates.

According to the standard, a parent that is a wholly owned subsidiary, or is virtually wholly owned need not present consolidated financial statements provided, in the case of one that is virtually wholly owned, the parent obtains the approval of the owners of the minority interest. Such a parent should disclose the reasons why consolidated financial statements have not been presented together with the bases on which subsidiaries are accounted for in its separate financial statements. The name and registered office of its parent that publishes consolidated financial statements should also be disclosed.

According to the standard the following disclosures should be made:

- (a) in consolidated financial statements a listing of significant subsidiaries including the name, country of incorporation or residence, proportion of ownership interest and, if different, proportion of voting power held;
- (b) in consolidated financial statements, where applicable:
  - (i) the reasons for not consolidating a subsidiary;
  - (ii) the nature of the relationship between the parent and a subsidiary of which the parent does not own, directly or indirectly through subsidiaries, more than one half of the voting power;
  - (iii) the name of a company in which more than one half of the voting power is owned, directly or indirectly through subsidiaries, but which, because of the absence of control, is not a subsidiary;
  - (iv) the effect of the acquisition and disposal of subsidiaries on the financial position at the reporting date, the results for the reporting period and on the corresponding amounts for the preceding period; and
- (c) in parent's separate financial statements, a description of the method used to account for subsidiaries.

As mentioned under IAS 3, the Jordanian Companies Act No.1 1989 in article No. 236 states that each holding company should prepare and present consolidated financial statements. Moreover, it defines "control" in terms of ownership of more than one half of the voting power. Surveying Jordanian firms listed in AFM annual reports for 1990, we found that there are no major differences between Jordan accounting practices and IAS 27.

### **IAS 28, Accounting for Investments in Associates**

This standard deals with accounting by an investor for investments in associates. The term "associate" is used to describe an enterprise in which an investor has significant influence and which is neither a subsidiary nor a joint venture of the investor. IAS 28 state that, an investment in an associate that is included in the financial statements of an investor that does not issue consolidated financial statements should be either:

- (a) accounted for using the equity method or the cost method whichever would be appropriate for the associate if the investor issued consolidated financial statements; or
- (b) carried at cost or revalued amounts under the accounting policy for long-term investments (see IAS 25, Accounting for Investments). If the equity method would be the appropriate accounting method for the associate if the investor issued consolidated financial statements, the investor should disclose what would have been the effect had the equity method been applied.

In addition, the following disclosures should be made:

- (a) an appropriate listing and description of significant associates including the proportion of ownership interest and, if different, the proportion of voting power held; and
- (b) the methods used to account for investments.

Surveying Jordanian firms listed in AFM annual reports for 1989 and 1990, we found that there are no major differences between Jordan accounting practices and IAS

**IAS 29, Financial Reporting in Hyperinflationary Economies**

This standard applies to the primary financial statements, including the consolidated financial statements, of any enterprise that reports in the currency of a hyperinflationary economy. According to the standard, the financial statements of a company that reports in the currency of a hyperinflationary economy, whether they are based on a historical cost approach or a current cost approach, should be stated in terms of the measuring unit current at the balance sheet date.

IAS 29 state that, the following disclosures should be made:

- (a) the fact that the financial statements and the corresponding figures for previous periods have been restated for the changes in the general purchasing power of the reporting currency and, as a result, are stated in terms of the measuring unit current at the balance sheet date;
- (b) whether the financial statements are based on a historical cost approach or a current cost approach; and
- (c) the identity and level of the price index at the balance sheet date and the movement in the index during the current and the previous reporting period.

In Jordan, before introducing IAS 29, there were no legal requirements related to financial reporting in hyperinflationary economies .

## APPENDIX B

**Table B.1: The sample firms (name of the company and the economic sector)**

Serial No.	Code No.	COMPANY'S NAME	Sector
1	000	Arab Finance Corporation/ (Jordan)	Banks & Financial
2	002	Jordan National Bank	Banks & Financial
3	004	Bank of Jordan	Banks & Financial
4	005	National Portfolio Securities	Banks & Financial
5	007	The Housing Bank	Banks & Financial
6	008	Jordan Kuwait Bank	Banks & Financial
7	011	Jordan Islamic Bank for Fin. & Inv.	Banks & Financial
8	014	Jordan Investment & Finance bank	Banks & Financial
9	018	Real Estate Investment AkARCO	Banks & Financial
10	019	Jordan Insurance	Insurance
11	025	Jordan French Insurance	Insurance
12	036	Jordan Electric Power	Services
13	040	Arab International Hotels	Services
14	041	Jordan National Shipping Lines	Services
15	042	Livestock and Poultry	Services
16	045	Jordan Gulf Real Estate Investment	Services
17	046	Petra Enterprises & Leasing Equipments	Services
18	048	Machinery Equipment Renting & Maint.	Services
19	051	The United Middle East & Commodore Hotels	Services
20	052	Darko for Investment & Housing	Services
21	055	Jordan Cement factories	Industrial
22	056	Jordan Phosphate Mines	Industrial
23	058	Jordan Petroleum Refinery	Industrial
24	061	The Industrial Commercial & Agricultural	Industrial
25	063	The Arab Pharmaceutical Manufacturing	Industrial
26	064	Jordan Ceramic Industries	Industrial
27	065	Jordan Dairy	Industrial
28	067	The Jordan Pipes Manufacturing	Industrial
29	070	The Arab Chemical Detergents Industries	Industrial
30	071	Jordan Spinning & Weaving	Industrial
31	073	Jordan Glass Industries	Industrial
32	074	Dar Al-Dawa Development & Investment	Industrial
33	075	Arab Investment & International Trade	Industrial
34	076	Arab Aluminum Industry / ARAL	Industrial
35	081	National Steel Industry	Industrial
36	082	National Industries	Industrial
37	083	Intermediate Petro-Chemical Industries	Industrial
38	084	Jordan Chemical Industries	Industrial
39	085	Jordan Rockwool Industries	Industrial
40	086	Universal Chemical Industries	Industrial
41	087	Aladdin Industries	Industrial
42	088	Jordan Industries & Match (JMCO)	Industrial
43	089	Jordan Precast Concrete Industry	Industrial
44	090	Jordan Wood Industries (JWICO)	Industrial
45	091	National Cable & Wire Manufacturing	Industrial
46	092	Jordan Sulpho Chemicals	Industrial
47	093	Arab Centre for Pharm. & Chemicals	Industrial
48	094	Jordan Kuwait Co. for Agr. & Food Prod.	Industrial

**Appendix B Table B.2: Adoption International Accounting Standards**

Serial No.	Code No.	COMPANY'S NAME	IAS 1989	IAS 1990
1	000	Arab Finance Corporation/ (Jordan)	NO	YES
2	002	Jordan National Bank	NO	NO
3	004	Bank of Jordan	NO	YES
4	005	National Portfolio Securities	NO	YES
5	007	The Housing Bank	NO	YES
6	008	Jordan Kuwait Bank	NO	YES
7	011	Jordan Islamic Bank for Fin. & Inv.	NO	NO
8	014	Jordan Investment & Finance bank	NO	NO
9	018	Real Estate Investment AkARCO	NO	YES
10	019	Jordan Insurance	NO	YES
11	025	Jordan French Insurance	NO	YES
12	036	Jordan Electric Power	NO	YES
13	040	Arab International Hotels	NO	YES
14	041	Jordan National Shipping Lines	NO	NO
15	042	Livesock and Poultry	NO	NO
16	045	Jordan Gulf Real Estate Investment	NO	YES
17	046	Petra Enterprises & Leasing Equipments	NO	YES
18	048	Machinery Equipment Renting & Maint.	NO	NO
19	051	The United Middle East & Commodore Hotels	NO	NO
20	052	Darko for Investment & Housing	NO	NO
21	055	Jordan Cement factories	NO	NO
22	056	Jordan Phosphate Mines	NO	NO
23	058	Jordan Petroleum Refinery	NO	NO
24	061	The Industrial Commercial & Agricultural	NO	YES
25	063	The Arab Pharmaceutical Manufacturing	NO	YES
26	064	Jordan Ceramic Industries	NO	YES
27	065	Jordan Dairy	NO	YES
28	067	The Jordan Pipes Manufacturing	NO	YES
29	070	The Arab Chemical Detergents Industries	NO	NO
30	071	Jordan Spinning & Weaving	NO	NO
31	073	Jordan Glass Industries	NO	NO
32	074	Dar Al-Dawa Development & Investment	NO	YES
33	075	Arab Investment & International Trade	NO	YES
34	076	Arab Aluminum Industry / ARAL	NO	YES
35	081	National Steel Industry	NO	NO
36	082	National Industries	NO	YES
37	083	Intermediate Petro-Chemical Industries	NO	YES
38	084	Jordan Chemical Industries	NO	YES
39	085	Jordan Rockwool Industries	NO	YES
40	086	Universal Chemical Industries	NO	YES
41	087	Aladdin Industries	NO	YES
42	088	Jordan Industries & Match (JMCO)	NO	YES
43	089	Jordan Precast Concrete Industry	NO	YES
44	090	Jordan Wood Industries (JWICO)	NO	NO
45	091	National Cable & Wire Manufacturing	NO	YES
46	092	Jordan Sulpho Chemicals	NO	YES
47	093	Arab Centre for Pharm. & Chemicals	NO	NO
48	094	Jordan Kuwait Co. for Agr. & Food Prod.	NO	YES

## Appendix B

### Classification of study sample [Control Group(C.G.) & Experimental Group (E. G.)]

The following are the classification of our study sample(Control Group & Experimental Group) for each subportfolios according to companies serial number.

1. Ecoomic sector;
  - (a) Financial sector: C.G. (2, 7, 8)  
E. G. (1, 3, 4, 5, 6, 9)
  - (b) Service secto: C.G. (14, 15, 18, 19, 20)  
E.G. (12, 13, 16, 17)
  - (c) Industrial sector: C. G. (21, 22, 23, 29, 30, 31, 35, 44, 47)  
E. G. (24, 25, 26, 27, 28, 32, 33, 34, 36, 45, 46, 48)
2. All sectors: C. G. (2, 7, 8, 14, 15, 18, 19, 20, 21, 22, 23, 29, 30, 31, 35, 44,47)  
E. G. (1, 3, 4, 5, 6, 9, 12, 13, 16, 17, 24, 25, 26, 27, 28, 32, 33,34, 36, 37, 38, 39, 40, 41, 42, 43, 45, 46, 48)
3. Trading ferquency:
  - (a) Law trading: C. G. (7, 8, 14, 15, 18, 19, 20, 22, 29, 44)  
E. G. (1, 3, 5, 10, 11, 26, 28, 36, 38, 48)
  - (b) Heavily trading: C. G. (2, 21, 23, 30, 31, 35, 47)  
E. G. (4, 6, 9, 12, 13, 16, 17, 24, 25, 27, 32, 33, 34, 37, 38, 39, 40, 41, 42, 43, 45, 46)
4. Company Size:
  - (a) Small: C. G. (14, 15, 18, 19, 20, 29, 30, 31, 35, 44, 47)  
E. G. (1, 4, 9, 10, 11, 13, 16, 17, 24, 25, 26, 27, 28, 32, 33, 34, 36, 37, 38, 39, 40, 41, 42, 43, 45, 46, 48)
  - (b) Large: C. G. (2, 7, 8, 21, 22, 23)  
E. G. ( 3, 5, 6, 12)
5. Compny Ownership
  - (a) Domestic ownership: C. G. (8, 14, 15, 18, 19, 20, 21, 29, 30, 31, 35)  
E. G. (1, 3, 4, 10, 12, 13, 16, 17, 24, 26, 27, 28, 32, 33, 34, 36, 37, 38, 42, 43, 46)
  - (b) Foreign ownership: C. G. (2, 7, 22, 23, 44, 47)  
E. G. (5, 6, 9, 11, 25, 39, 40, 41, 45, 48)
6. Company Performance:
  - (a) Winner companies (1990): C. G. (2, 7, 8, 14, 15, 19, 20, 21, 22, 23, 29, 30, 35, 44,47)  
E. G. (1, 3, 5, 6, 10, 11, 13, 24, 25, 26, 27, 28, 32, 33, 34, 36, 37, 38, 39, 40, 41, 42, 45, 46, 48)
  - (b) Losser companies (1990): C. G. (18, 31)  
E. G. (4, 9, 12, 16, 17, 33, 43)

**Appendix B Table B.3: Trading Profile for all Jordanian Listed Stocks  
(from 1/1/1990 to 31/12/1991)**

<b>Banks &amp; Financial Institutions</b>		<b>Insurance Companies</b>		<b>Service Companies</b>		<b>Industrial Companies</b>	
<b>Stock Code</b>	<b>Trading Days</b>	<b>Stock Code</b>	<b>Trading Days</b>	<b>Stock Code</b>	<b>Trading Days</b>	<b>Stock Code</b>	<b>Trading Days</b>
000	364	019	381	036	455	053	053
001	480	020	012	037	062	054	013
002	355	021	042	038	028	055	468
003	082	022	076	039	044	056	361
004	351	023	052	040	451	057	016
005	422	024	162	041	369	058	467
006	060	025	393	042	396	059	091
007	344	026	132	043	019	060	138
008	439	027	088	044	009	061	461
009	086	028	126	045	451	062	117
010	092	029	098	046	426	063	462
011	371	030	153	047	219	064	347
012	071	031	098	048	362	065	418
013	046	032	040	049	076	066	031
014	363	033	060	050	054	067	376
015	213	034	006	051	425	068	172
016	245	035	128	052	377	069	079
017	261					070	388
018	458					071	452
						072	203
						073	451
						074	429
						075	456
						076	476
						077	011
						078	022
						079	190
						080	010
						081	426
						082	391
						083	472
						084	346
						085	447
						086	439
						087	423
						088	433
						089	446
						090	339
						091	463
						092	457
						093	432
						094	391
						095	154
						096	104
						097	057
						098	041
						099	110
						100	030
						101	073
						102	068
						103	076



**Appendix B Table B.4: Study Sample Trading Profile**

Serial No.	Code No.	COMPANY'S NAME	Trading Days 1990	Trading Days 1991	Trading Days (90&91)
1	000	Arab Finance Corporation/ (Jordan)	189	175	364
2	002	Jordan National Bank	185	170	355
3	004	Bank of Jordan	173	178	351
4	005	National Portfolio Securities	198	224	422
5	007	The Housing Bank	169	175	344
6	008	Jordan Kuwait Bank	225	214	439
7	011	Jordan Islamic Bank for Fin. & Inv.	197	174	371
8	014	Jordan Investment & Finance bank	174	189	363
9	018	Real Estate Investment AkARCO	244	214	458
10	019	Jordan Insurance	169	212	381
11	025	Jordan French Insurance	201	192	393
12	036	Jordan Electric Power	219	236	455
13	040	Arab International Hotels	236	215	451
14	041	Jordan National Shipping Lines	179	190	369
15	042	Livesock and Poultry	199	197	396
16	045	Jordan Gulf Real Estate Investment	230	221	451
17	046	Petra Enterprises & Leasing Equipments	216	210	426
18	048	Machinery Equipment Renting & Maint.	171	191	362
19	051	The United Middle East & Commodore Hotels	229	196	425
20	052	Darko for Investment & Housing	183	194	377
21	055	Jordan Cement factories	240	228	468
22	056	Jordan Phosphate Mines	198	193	361
23	058	Jordan Petroleum Refinery	228	239	467
24	061	The Industrial Commercial & Agricultural	225	236	461
25	063	The Arab Pharmaceutical Manufacturing	229	213	442
26	064	Jordan Ceramic Industries	149	198	347
27	065	Jordan Dairy	204	214	418
28	067	The Jordan Pipes Manufacturing	173	203	376
29	070	The Arab Chemical Detergents Industries	181	207	388
30	071	Jordan Spinning & Weaving	233	219	452
31	073	Jordan Glass Industries	234	217	451
32	074	Dar Al-Dawa Development & Investment	209	220	429
33	075	Arab Investment & International Trade	238	218	456
34	076	Arab Aluminum Industry / ARAL	229	237	466
35	081	National Steel Industry	195	231	426
36	082	National Industries	197	194	391
37	083	Intermediate Petro-Chemical Industries	231	221	452
38	084	Jordan Chemical Industries	168	178	346
39	085	Jordan Rockwool Industries	229	218	447
40	086	Universal Chemical Industries	214	225	439
41	087	Aladdin Industries	199	224	423
42	088	Jordan Industries & Match (JMCO)	217	216	433
43	089	Jordan Precast Concrete Industry	237	209	446
44	090	Jordan Wood Industries (JWICO)	161	178	339
45	091	National Cable & Wire Manufacturing	234	229	463
46	092	Jordan Sulpho Chemicals	242	215	457
47	093	Arab Centre for Pharm. & Chemicals	222	210	432
48	094	Jordan Kuwait Co. for Agr. & Food Prod.	203	188	391

**Appendix B Table B.5: Company's Name, Performance(earnings, losses), Size (1990)**

Ser. No.	Code No.	COMPANY'S NAME	Earnings (Losses)	Size (Total Assets)
1	000	Arab Finance Corporation/ (Jordan)	0	71,170,874
2	002	Jordan National Bank	948,724	198,842,797
3	004	Bank of Jordan	295,180	171,612,290
4	005	National Portfolio Securities	(22,250)	3,025,737
5	007	The Housing Bank	3,281,297	607,239,077
6	008	Jordan Kuwait Bank	256,171	134,480,822
7	011	Jordan Islamic Bank for Fin. & Inv.	1,774,047	244,830,709
8	014	Jordan Investment & Finance bank	1,060,983	83,155,513
9	018	Real Estate Investment AkARCO	(45,377)	3,515,327
10	019	Jordan Insurance	700,378	14,355,766
11	025	Jordan French Insurance	329,893	8,646,506
12	036	Jordan Electric Power	(2,259,490)	79,999,996
13	040	Arab International Hotels	2,064,462	11,977,650
14	041	Jordan National Shipping Lines	527,054	13,960,750
15	042	Livesock and Poultry	43,376	2,039,445
16	045	Jordan Gulf Real Estate Investment	(166,387)	3,728,788
17	046	Petra Enterprises & Leasing Equipments	(123,324)	953,170
18	048	Machinery Equipment Renting & Maintenance	(32,227)	1,086,304
19	051	The United Middle East & Commodore Hotels	66,398	5,352,996
20	052	Darko for Investment & Housing	161,601	2,471,744
21	055	Jordan Cement factories	3,896,903	200,192,732
22	056	Jordan Phosphate Mines	20,535,144	267,089,361
23	058	Jordan Petroleum Refinery	4,329,816	191,485,946
24	061	The Industrial Commercial & Agricultural	1,430,247	12,377,422
25	063	The Arab Pharmaceutical Manufacturing	3,433,010	37,695,961
26	064	Jordan Ceramic Industries	698,535	6,988,190
27	065	Jordan Dairy	190,637	2,859,750
28	067	The Jordan Pipes Manufacturing	529,781	6,635,620
29	070	The Arab Chemical Detergents Industries	1,541,119	4,411,272
30	071	Jordan Spinning & Weaving	1,358,342	25,744,806
31	073	Jordan Glass Industries	(1,829,068)	18,024,727
32	074	Dar Al-Dawa Development & Investment	1,478,188	11,611,897
33	075	Arab Investment & International Trade	(130,627)	3,131,047
34	076	Arab Aluminum Industry / ARAL	2,705,804	9,231,714
35	081	National Steel Industry	1,194,591	10,307,555
36	082	National Industries	45,813	4,839,317
37	083	Intermediate Petro-Chemical Industries	1,945,186	13,050,378
38	084	Jordan Chemical Industries	135,405	2,632,767
39	085	Jordan Rockwool Industries	241,838	3,433,678
40	086	Universal Chemical Industries	1,393,279	3,999,342
41	087	Aladdin Industries	246,270	2,504,388
42	088	Jordan Industries & Match (JMCO)	40,643	3,977,120
43	089	Jordan Precast Concrete Industry	(298,023)	4,584,980
44	090	Jordan Wood Industries (JWICO)	331,964	4,458,003
45	091	National Cable & Wire Manufacturing	4,730,423	12,008,513
46	092	Jordan Sulpho Chemicals	1,113,369	7,032,190
47	093	Arab Centre for Pharm. & Chemicals	104,741	7,098,413
48	094	Jordan Kuwait Co. for Agr. & Food Prod.	9,292	2,688,817

**Appendix B Table B.6: Company's Name, Performance (earnings, losses), Size (1991)**

Ser. No.	Code No.	COMPANY'S NAME	Earnings (Losses)	Size (Total Assets)
1	000	Arab Finance Corporation/ (Jordan)	1,568,000	89,021,582
2	002	Jordan National Bank	1,690,729	250,595,871
3	004	Bank of Jordan	0	222,864,749
4	005	National Portfolio Securities	640,999	3,545,459
5	007	The Housing Bank	3,483,936	821,849,690
6	008	Jordan Kuwait Bank	286,095	225,358,329
7	011	Jordan Islamic Bank for Fin. & Inv.	1,591,489	356,751,185
8	014	Jordan Investment & Finance bank	1,135,489	122,562,562
9	018	Real Estate Investment AkARCO	(791)	3,974,500
10	019	Jordan Insurance	618,766	16,527,352
11	025	Jordan French Insurance	422,034	7,554,811
12	036	Jordan Electric Power	531,789	96,377,279
13	040	Arab International Hotels	1,607,941	12,749,519
14	041	Jordan National Shipping Lines	768,043	13,960,478
15	042	Livesock and Poultry	(90,914)	2,161,041
16	045	Jordan Gulf Real Estate Investment	(154,716)	3,522,011
17	046	Petra Enterprises & Leasing Equipments	20,673	1,005,786
18	048	Machinery Equipment Renting & Maintenance	14,230	1,130,021
19	051	The United Middle East & Commodore Hotels	123,874	5,224,020
20	052	Darko for Investment & Housing	175,650	2,561,755
21	055	Jordan Cement factories	2,857,678	198,671,550
22	056	Jordan Phosphate Mines	15,688,804	286,122,450
23	058	Jordan Petroleum Refinery	2,015,730	206,870,262
24	061	The Industrial Commercial & Agricultural	1,715,504	17,075,273
25	063	The Arab Pharmaceutical Manufacturing	1,817,154	38,616,149
26	064	Jordan Ceramic Industries	906,056	7,259,235
27	065	Jordan Dairy	319,682	3,123,459
28	067	The Jordan Pipes Manufacturing	324,425	5,639,549
29	070	The Arab Chemical Detergents Industries	1,316,215	5,128,753
30	071	Jordan Spinning & Weaving	1,983,629	24,836,885
31	073	Jordan Glass Industries	(3,510,266)	15,589,829
32	074	Dar Al-Dawa Development & Investment	1,135,992	12,794,443
33	075	Arab Investment & International Trade	31,767	4,286,525
34	076	Arab Aluminum Industry / ARAL	2,453,766	11,591,414
35	081	National Steel Industry	948,502	9,935,890
36	082	National Industries	(23,415)	4,828,178
37	083	Intermediate Petro-Chemical Industries	774,505	9,696,065
38	084	Jordan Chemical Industries	251,068	2,565,079
39	085	Jordan Rockwool Industries	(269,771)	3,124,633
40	086	Universal Chemical Industries	1,249,161	4,122,677
41	087	Aladdin Industries	205,148	2,244,406
42	088	Jordan Industries & Match (JMCO)	(39,087)	3,379,235
43	089	Jordan Precast Concrete Industry	(698,093)	4,154,250
44	090	Jordan Wood Industries (JWICO)	357,266	3,348,010
45	091	National Cable & Wire Manufacturing	2,175,491	11,184,556
46	092	Jordan Sulpho Chemicals	627,308	6,088,602
47	093	Arab Centre for Pharm. & Chemicals	456,392	10,076,011
48	094	Jordan Kuwait Co. for Agr. & Food Prod.	(198,382)	2,610,483

**Appendix B Table B.7: Companies Ownership Percentage**

Serial No.	Code No.	COMPANY'S NAME	Domestic Ownership %	Foreign Ownership %
1	000	Arab Finance Corporation/ (Jordan)	96.05	03.95
2	002	Jordan National Bank	60.44	39.56
3	004	Bank of Jordan	99.60	00.40
4	005	National Portfolio Securities	99.05	00.95
5	007	The Housing Bank	35.90	64.10
6	008	Jordan Kuwait Bank	67.27	32.73
7	011	Jordan Islamic Bank for Fin. & Inv.	50.97	49.03
8	014	Jordan Investment & Finance bank	91.34	08.66
9	018	Real Estate Investment AkARCO	67.95	32.05
10	019	Jordan Insurance	93.01	06.99
11	025	Jordan French Insurance	68.66	31.34
12	036	Jordan Electric Power	96.90	03.10
13	040	Arab International Hotels	91.79	08.21
14	041	Jordan National Shipping Lines	99.60	00.40
15	042	Livesock and Poultry	91.85	08.15
16	045	Jordan Gulf Real Estate Investment	95.96	04.04
17	046	Petra Enterprises & Leasing Equipments	99.49	00.51
18	048	Machinery Equipment Renting & Maintenance	99.89	00.11
19	051	The United Middle East & Commodore Hotels	99.52	00.48
20	052	Darko for Investment & Housing	99.78	00.22
21	055	Jordan Cement factories	96.00	04.00
22	056	Jordan Phosphate Mines	74.53	25.47
23	058	Jordan Petroleum Refinery	72.45	27.55
24	061	The Industrial Commercial & Agricultural	90.41	09.59
25	063	The Arab Pharmaceutical Manufacturing	67.70	32.30
26	064	Jordan Ceramic Industries	90.82	09.18
27	065	Jordan Dairy	97.94	02.06
28	067	The Jordan Pipes Manufacturing	97.01	02.99
29	070	The Arab Chemical Detergents Industries	97.46	02.54
30	071	Jordan Spinning & Weaving	94.69	05.31
31	073	Jordan Glass Industries	95.33	04.67
32	074	Dar Al-Dawa Development & Investment	98.53	01.47
33	075	Arab Investment & International Trade	91.58	08.42
34	076	Arab Aluminum Industry / ARAL	93.23	06.77
35	081	National Steel Industry	98.06	01.94
36	082	National Industries	98.65	01.35
37	083	Intermediate Petro-Chemical Industries	95.25	04.75
38	084	Jordan Chemical Industries	99.42	00.58
39	085	Jordan Rockwool Industries	51.53	48.47
40	086	Universal Chemical Industries	44.56	55.44
41	087	Aladdin Industries	53.92	46.08
42	088	Jordan Industries & Match (JMCO)	100	00
43	089	Jordan Precast Concrete Industry	94.25	05.75
44	090	Jordan Wood Industries (JWICO)	64.99	35.01
45	091	National Cable & Wire Manufacturing	52.26	47.74
46	092	Jordan Sulpho Chemicals	94.72	05.28
47	093	Arab Centre for Pharm. & Chemicals	66.12	33.88
48	094	Jordan Kuwait Co. for Agr. & Food Prod.	47.72	52.28

**Appendix B Table B.8: Announcement Dates of The Sample Firms**

Serial No.	Code No.	COMPANY'S NAME	1990	1991
1	000	Arab Finance Corporation/ (Jordan)	6.5.90	8.5.91
2	002	Jordan National Bank	26.3.90	25.3.91
3	004	Bank of Jordan	21.5.90	6.5.91
4	005	National Portfolio Securities	11.3.90	12.5.91
5	007	The Housing Bank	14.4.90	13.4.91
6	008	Jordan Kuwait Bank	15.5.90	28.5.91
7	011	Jordan Islamic Bank for Fin. & Inv.	24.3.90	29.4.91
8	014	Jordan Investment & Finance bank	17.4.90	30.4.91
9	018	Real Estate Investment AkARCO	30.5.90	24.5.91
10	019	Jordan Insurance	25.7.90	29.7.91
11	025	Jordan French Insurance	24.4.90	9.5.91
12	036	Jordan Electric Power	29.5.90	22.5.91
13	040	Arab International Hotels	20.5.90	5.5.91
14	041	Jordan National Shipping Lines	28.6.90	5.6.91
15	042	Livesock and Poultry	15.4.90	8.5.91
16	045	Jordan Gulf Real Estate Investment	8.5.90	25.5.91
17	046	Petra Enterprises & Leasing Equipments	14.4.90	13.5.91
18	048	Machinery Equipment Renting & Maint.	13.5.90	18.5.91
19	051	The United Middle East & Commodore Hotels	29.4.90	22.4.91
20	052	Darko for Investment & Housing	21.5.90	30.5.91
21	055	Jordan Cement factories	17.6.90	26.5.91
22	056	Jordan Phosphate Mines	23.4.90	14.4.91
23	058	Jordan Petroleum Refinery	26.5.90	3.6.91
24	061	The Industrial Commercial & Agricultural	9.5.90	4.5.91
25	063	The Arab Pharmaceutical Manufacturing	6.5.90	15.5.91
26	064	Jordan Ceramic Industries	28.4.90	28.4.91
27	065	Jordan Dairy	9.5.90	18.5.91
28	067	The Jordan Pipes Manufacturing	5.5.90	23.5.91
29	070	The Arab Chemical Detergents Industries	6.5.90	21.4.91
30	071	Jordan Spinning & Weaving	15.5.90	15.5.91
31	073	Jordan Glass Industries	25.5.90	5.6.91
32	074	Dar Al-Dawa Development & Investment	14.6.90	25.5.91
33	075	Arab Investment & International Trade	18.5.90	14.5.91
34	076	Arab Aluminum Industry / ARAL	14.6.90	4.6.91
35	081	National Steel Industry	19.4.90	17.5.91
36	082	National Industries	29.4.90	20.6.91
37	083	Intermediate Petro-Chemical Industries	10.5.90	12.5.91
38	084	Jordan Chemical Industries	21.4.90	28.4.91
39	085	Jordan Rockwool Industries	7.4.90	29.4.91
40	086	Universal Chemical Industries	14.4.90	20.5.91
41	087	Aladdin Industries	23.10.90	26.10.91
42	088	Jordan Industries & Match (JMCO)	7.5.90	9.5.91
43	089	Jordan Precast Concrete Industry	14.4.90	29.5.91
44	090	Jordan Wood Industries (JWICO)	15.5.90	28.5.91
45	091	National Cable & Wire Manufacturing	26.3.90	20.4.91
46	092	Jordan Sulpho Chemicals	7.5.90	20.4.91
47	093	Arab Centre for Pharm. & Chemicals	5.5.90	30.4.91
48	094	Jordan Kuwait Co. for Agr. & Food Prod.	12.5.90	18.5.91

**Appendix B Table B.9: Time lag between financial year end and firm reports release**

Stock Code	Stock No.	Fiscal year end	Release date	No. of Days	Fiscal year end	Release date	No. of Days
000	1	31.12.89	6.5.90	126	31.12.90	8.5.91	128
002	2	31.12.89	26.3.90	85	31.12.90	25.3.91	84
004	3	31.12.89	21.5.90	141	31.12.90	6.5.91	126
005	4	31.12.89	11.3.90	70	31.12.90	12.5.91	132
007	5	31.12.89	14.4.90	104	31.12.90	13.4.91	103
008	6	31.12.89	15.5.90	135	31.12.90	28.5.91	148
011	7	31.12.89	24.3.90	83	31.12.90	29.4.91	119
014	8	31.12.89	17.4.90	107	31.12.90	30.4.91	120
018	9	31.12.89	30.5.90	150	31.12.90	24.5.91	144
019	10	31.3.90	25.7.90	110	31.3.91	29.7.91	120
025	11	31.12.89	24.4.90	91	31.12.90	9.5.91	129
036	12	31.12.89	29.5.90	149	31.12.90	22.5.91	142
040	13	31.12.89	20.5.90	140	31.12.90	5.5.91	125
041	14	31.12.89	28.6.90	179	31.12.90	5.6.91	156
042	15	31.12.89	15.4.90	105	31.12.90	8.5.91	128
045	16	31.12.89	8.5.90	128	31.12.90	25.5.91	145
046	17	31.12.89	14.4.90	104	31.12.90	13.5.91	133
048	18	31.12.89	13.5.90	133	31.12.90	18.5.91	138
051	19	31.12.89	29.4.90	119	31.12.90	22.4.91	112
052	20	31.12.89	21.5.90	141	31.12.90	30.5.91	150
055	21	31.12.89	17.6.90	168	31.12.90	26.5.91	146
056	22	31.12.89	23.4.90	113	31.12.90	14.4.91	104
058	23	31.12.89	26.5.90	146	31.12.90	3.6.91	154
061	24	31.12.89	9.5.90	129	31.12.90	4.5.91	124
063	25	31.12.89	6.5.90	126	31.12.90	15.5.91	135
064	26	31.12.89	28.4.90	118	31.12.90	28.4.91	118
065	27	31.12.89	9.5.90	129	31.12.90	18.5.91	138
067	28	31.12.89	5.5.90	125	31.12.90	23.5.91	143
070	29	31.12.89	6.5.90	126	31.12.90	21.4.91	111
071	30	31.12.89	15.5.90	135	31.12.90	15.5.91	135
073	31	31.12.89	25.5.90	145	31.12.90	5.6.91	156
074	32	31.12.89	14.6.90	165	31.12.90	25.5.91	145
075	33	31.12.89	18.5.90	138	31.12.90	14.5.91	134
076	34	31.12.89	14.6.90	165	31.12.90	4.6.91	155
081	35	31.12.89	19.4.90	109	31.12.90	17.5.91	137
082	36	31.12.89	29.4.90	119	31.12.90	20.6.91	171
083	37	31.12.89	10.5.90	130	31.12.90	12.5.91	132
084	38	31.12.89	21.4.90	111	31.12.90	28.4.91	118
085	39	31.12.89	7.4.90	97	31.12.90	29.4.91	119
086	40	31.12.89	14.4.90	104	31.12.90	20.5.91	140
087	41	30.4.90	23.10.90	176	30.4.91	26.10.91	179
088	42	31.12.89	7.5.90	127	31.12.90	9.5.91	129
089	43	31.12.89	14.4.90	104	31.12.90	29.5.91	149
090	44	31.12.89	15.5.90	135	31.12.90	28.5.91	148
091	45	31.12.89	26.3.90	85	31.12.90	20.4.91	110
092	46	31.12.89	7.5.90	127	31.12.90	20.4.91	110
093	47	31.12.89	5.5.90	125	31.12.90	30.4.91	120
094	48	31.12.89	12.5.90	132	31.12.90	18.5.91	138

# APPENDIX C

**Table C.1**  
**Market Model (MM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Study Sample (All Sectors)**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	0.0036370	0.0036370	-0.0038311	-0.003831	-0.0054131	-0.005413	0.0013386	0.001339
-59	0.0014296	0.0050666	-0.0013363	-0.005167	-0.0020604	-0.007474	0.0026483	0.003987
-58	0.0033273	0.0083939	-0.0056527	-0.010820	0.0031573	-0.004316	-0.0032209	0.000766
-57	0.0039901	0.0123840	-0.0155356	-0.026356	0.0028874	-0.001429	-0.0004241	0.000342
-56	0.0001050	0.0124890	0.0036491	-0.022707	0.0053030	0.003874	-0.0015236	-0.001182
-55	0.0099985	0.0224874	-0.0037532	-0.026460	0.0023943	0.006269	-0.0008939	-0.002076
-54	0.0078759	0.0303633	-0.0018990	-0.028359	0.0046524	0.010921	-0.0043313	-0.006407
-53	0.0035314	0.0338947	-0.0042027	-0.032562	0.0084302	0.019351	-0.0037785	-0.010185
-52	0.0039451	0.0378398	-0.0009120	-0.033474	-0.0002203	0.019131	0.0055826	-0.004603
-51	0.0035139	0.0413537	-0.0022621	-0.035736	0.0062944	0.025425	0.0001681	-0.004435
-50	0.0024736	0.0438273	0.0050857	-0.030650	0.0002393	0.025664	0.0006796	-0.003755
-49	0.0015910	0.0454183	-0.0049463	-0.035596	0.0031697	0.028834	-0.0052123	-0.008967
-48	-0.0037888	0.0416295	0.0050364	-0.030560	0.0040348	0.032869	0.0017143	-0.007253
-47	-0.0031644	0.0384652	-0.0037905	-0.034350	0.0053554	0.038224	0.0049957	-0.002257
-46	-0.0023003	0.0361648	-0.0022274	-0.036578	-0.0012287	0.036996	-0.0032175	-0.005475
-45	-0.0055061	0.0306588	-0.0043498	-0.040928	0.0020776	0.039073	0.0040302	-0.001445
-44	-0.0057609	0.0248979	0.0052755	-0.035652	-0.0017281	0.037345	0.0019223	0.000478
-43	0.0006006	0.0254985	-0.0112726	-0.046925	0.0035409	0.040886	0.0006808	0.001158
-42	0.0038072	0.0293057	0.0007323	-0.046193	0.0032414	0.044128	0.0088511	0.010009
-41	-0.0039494	0.0253563	-0.0017509	-0.047943	0.0043966	0.048524	0.0079080	0.017917
-40	0.0001164	0.0254727	-0.0011453	-0.049089	-0.0006832	0.047841	0.0082375	0.026155
-39	0.0049224	0.0303951	-0.0074031	-0.056492	0.0025084	0.050349	-0.0001072	0.026048
-38	-0.0074493	0.0229458	0.0029425	-0.053549	0.0111320	0.061481	0.0096531	0.035701
-37	0.0010429	0.0239887	-0.0018755	-0.055425	-0.0024774	0.059004	0.0035841	0.039285
-36	0.0012406	0.0252293	0.0021134	-0.053311	-0.0005122	0.058492	0.0046893	0.043974
-35	0.0062419	0.0314712	-0.0043499	-0.057661	-0.0044974	0.053994	0.0022306	0.045205
-34	-0.0099452	0.0215260	-0.0072409	-0.064902	0.0018823	0.055877	0.0102616	0.056466
-33	0.0027191	0.0242450	-0.0018409	-0.066743	0.0053840	0.061261	0.0028198	0.059286
-32	0.0012677	0.0255127	-0.0030758	-0.069819	0.0028515	0.064112	0.0018630	0.061149
-31	0.0019611	0.0274739	0.0008862	-0.068933	0.0143922	0.078504	0.0056809	0.066830
-30	-0.0010700	0.0264039	0.0031686	-0.065764	0.0000022	0.078507	-0.0019350	0.064895
-29	-0.0048902	0.0215136	-0.0056676	-0.071432	0.0010981	0.079605	-0.0013365	0.063558
-28	-0.0019826	0.0195310	-0.0026762	-0.074108	-0.0013907	0.078214	0.0056862	0.069245
-27	-0.0012248	0.0183062	0.0005938	-0.073514	-0.0031813	0.075033	-0.0044975	0.064747
-26	-0.0083537	0.0099525	-0.0031977	-0.076712	0.0022640	0.077297	0.0012724	0.066020
-25	-0.0005736	0.0093789	-0.0067092	-0.083421	0.0072931	0.084590	0.0059152	0.071935
-24	-0.0045145	0.0048644	-0.0108018	-0.094223	0.0022052	0.086795	0.0036680	0.075603
-23	-0.0052983	-0.0004340	-0.0015660	-0.095789	0.0024418	0.089237	0.0080622	0.083665
-22	-0.0055751	-0.0060091	0.0033682	-0.092421	-0.0048428	0.084394	-0.0001627	0.083502
-21	0.0003408	-0.0056683	0.0066249	-0.085796	0.0005864	0.084980	0.0020787	0.085581
-20	0.0015601	-0.0041082	0.0053795	-0.080416	-0.0006484	0.084332	-0.0044419	0.081139
-19	0.0008016	-0.0033066	0.0000997	-0.080317	0.0047278	0.089060	-0.0009047	0.080234
-18	0.0004573	-0.0028493	-0.0063762	-0.086693	-0.0010141	0.088046	0.0018173	0.082052
-17	-0.0008366	-0.0036859	-0.0013429	-0.088036	0.0017032	0.089749	0.0129045	0.094956
-16	0.0106978	0.0070119	0.0012199	-0.086816	-0.0028134	0.086935	0.0053112	0.100268
-15	-0.0061069	0.0009050	-0.0029736	-0.089789	0.0037148	0.090650	0.0097243	0.109992



Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-14	0.0016103	-0.0007053	-0.0023205	-0.092110	-0.0010551	0.089595	0.0036889	0.113681
-13	-0.0066620	-0.0073672	-0.0004357	-0.092546	0.0035527	0.093148	0.0079841	0.121665
-12	-0.0073286	-0.0146959	-0.0034359	-0.095982	0.0033847	0.096532	0.0066916	0.128356
-11	0.0028820	-0.0118138	-0.0026293	-0.098611	0.0056604	0.102193	-0.0018534	0.126503
-10	0.0008939	-0.0109199	-0.0032700	-0.101881	0.0037241	0.105917	0.0070243	0.133527
-9	0.0076155	-0.0033044	-0.0008990	-0.102780	0.0045807	0.110498	0.0018423	0.135370
-8	0.0036700	0.0003656	0.0066010	-0.096179	0.0021196	0.112617	0.0045054	0.139875
-7	-0.0014822	-0.0011166	0.0030479	-0.093131	0.0002858	0.112903	0.0020772	0.141952
-6	-0.0022177	-0.0033344	0.0071848	-0.085946	-0.0028003	0.110103	0.0044315	0.146384
-5	0.0058255	0.0024911	-0.0016841	-0.087630	0.0069258	0.117029	0.0021994	0.148583
-4	0.0009745	0.0034656	-0.0098921	-0.097522	-0.0009410	0.116088	-0.0033802	0.145203
-3	0.0017113	0.0051769	-0.0064136	-0.103936	-0.0064315	0.109656	0.0011573	0.146360
-2	0.0026040	0.0077809	-0.0059387	-0.109875	-0.0018367	0.107819	0.0027405	0.149101
-1	0.0029832	0.0107641	0.0026795	-0.107195	-0.0047803	0.103039	-0.0017969	0.147304
0	-0.0028229	0.0079412	0.0020994	-0.105096	-0.0021149	0.100924	0.0016213	0.148925
1	-0.0110723	-0.0031311	-0.0037420	-0.108838	-0.0018937	0.099031	0.0048869	0.153812
2	-0.0027151	-0.0058463	-0.0028651	-0.111703	-0.0000601	0.098970	0.0005136	0.154326
3	-0.0021125	-0.0079588	-0.0019258	-0.113629	0.0014780	0.100449	-0.0060655	0.148260
4	-0.0005333	-0.0084921	0.0003307	-0.113298	-0.0063782	0.094070	-0.0029861	0.145274
5	0.0015998	-0.0068924	0.0012108	-0.112087	0.0018106	0.095881	0.0014670	0.146741
6	0.0013406	-0.0055517	-0.0017701	-0.113857	0.0065886	0.102470	-0.0022969	0.144444
7	0.0021913	-0.0033604	0.0030592	-0.110798	0.0015329	0.104002	0.0047811	0.149225
8	0.0000663	-0.0032942	0.0000288	-0.110769	-0.0059432	0.098059	0.0022212	0.151446
9	0.0041688	0.0008746	-0.0031865	-0.113956	-0.0057003	0.092359	0.0028453	0.154292
10	-0.0006740	0.0002007	-0.0029688	-0.116924	-0.0056888	0.086670	-0.0035690	0.150723
11	-0.0031132	-0.0029125	-0.0024521	-0.119376	-0.0025959	0.084074	0.0001321	0.150855
12	-0.0025219	-0.0054344	-0.0045298	-0.123906	0.0013281	0.085402	0.0011410	0.151996
13	0.0004184	-0.0050160	-0.0036656	-0.127572	-0.0019281	0.083474	-0.0015695	0.150426
14	0.0002222	-0.0047939	0.0032735	-0.124298	-0.0027173	0.080757	0.0048625	0.155289
15	-0.0026826	-0.0074764	-0.0007085	-0.125007	0.0033609	0.084118	0.0001192	0.155408
16	-0.0042158	-0.0116923	-0.0007319	-0.125739	-0.0023458	0.081772	0.0055806	0.160989
17	-0.0039448	-0.0156370	0.0029417	-0.122797	0.0008748	0.082647	-0.0015869	0.159402
18	-0.0045370	-0.0201740	-0.0051482	-0.127945	-0.0002882	0.082359	0.0005996	0.160001
19	0.0042631	-0.0159109	0.0028539	-0.125091	0.0017131	0.084072	-0.0025017	0.157500
20	0.0009726	-0.0149383	0.0013932	-0.123698	0.0027195	0.086791	-0.0008461	0.156654

Cg = Control Group

Eg = Experimental Group



**Appendix C**  
**Table C.2**  
**Market Model (MM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Financial Sector**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	-0.0023101	-0.002310	-0.0003578	-0.000358	-0.0038956	-0.003896	0.0019966	0.001997
-59	0.0016708	-0.000639	-0.0031112	-0.003469	0.0074459	0.003550	-0.0033354	-0.001339
-58	0.0029193	0.002280	0.0014610	-0.002008	0.0013664	0.004917	0.0002892	-0.001050
-57	-0.0096847	-0.007405	-0.0178894	-0.019897	-0.0051673	-0.000251	-0.0037014	-0.004751
-56	0.0214286	0.014024	0.0034005	-0.016497	0.0002849	0.000034	0.0000524	-0.004699
-55	0.0149435	0.028967	-0.0056710	-0.022168	0.0025174	0.002552	-0.0011664	-0.005865
-54	0.0158230	0.044791	0.0037340	-0.018434	0.0023702	0.004922	-0.0015041	-0.007369
-53	0.0164821	0.061273	0.0006029	-0.017831	-0.0001825	0.004739	-0.0008015	-0.008171
-52	0.0157662	0.077039	-0.0074477	-0.025279	-0.0053590	-0.000620	0.0011445	-0.007026
-51	0.0121561	0.089195	-0.0087675	-0.034046	0.0004925	-0.000127	0.0083656	0.001339
-50	0.0154768	0.104672	0.0023172	-0.031729	-0.0071648	-0.007292	0.0025747	0.003914
-49	0.0305795	0.135251	-0.0032346	-0.034964	0.0074465	0.000155	0.0083880	0.012302
-48	0.0029591	0.132292	0.0044472	-0.030516	0.0002406	0.000395	-0.0093355	0.002967
-47	0.0054457	0.137738	-0.0049247	-0.035441	0.0000395	0.000435	0.0072665	0.010233
-46	-0.0316241	0.106114	0.0056535	-0.029788	0.0064052	0.006840	-0.0112187	-0.000985
-45	-0.0184648	0.087649	0.0054453	-0.024342	-0.0022750	0.004565	0.0145599	0.013575
-44	-0.0093705	0.078278	0.0007321	-0.023610	0.0004241	0.004989	-0.0017674	0.011807
-43	0.0115982	0.089877	-0.0057392	-0.029349	0.0016499	0.006639	0.0095632	0.021370
-42	0.0161619	0.106039	0.0022073	-0.027142	0.0066556	0.013294	0.0111316	0.032502
-41	-0.0103497	0.095689	0.0021187	-0.025023	-0.0105986	0.002696	0.0052827	0.037785
-40	0.0007239	0.096413	-0.0074789	-0.032502	0.0031598	-0.000464	0.0086976	0.046482
-39	-0.0155922	0.080821	0.0004255	-0.032077	0.0017554	0.001291	0.0025250	0.049007
-38	-0.0087084	0.072112	-0.0025368	-0.034614	-0.0051292	-0.003838	0.0175019	0.066509
-37	0.0155234	0.087636	0.0066691	-0.027944	0.0031905	-0.000647	-0.0040832	0.062426
-36	0.0032938	0.090929	0.0108435	-0.017101	0.0009210	0.000274	0.0038616	0.066288
-35	0.0000292	0.090958	0.0045462	-0.012555	-0.0040026	-0.003729	-0.0024475	0.063840
-34	-0.0137607	0.077198	-0.0093707	-0.021925	0.0332804	0.029551	0.0035651	0.067405
-33	-0.0126323	0.064566	-0.0028311	-0.024756	0.0294581	0.059009	0.0097335	0.077139
-32	-0.0031084	0.061457	0.0053648	-0.019392	0.0247158	0.083725	-0.0041479	0.072991
-31	0.0183937	0.079851	0.0087580	-0.010634	0.0401095	0.123835	0.0137465	0.086737
-30	-0.0070474	0.072803	0.0117064	0.001073	-0.0005834	0.123251	-0.0140494	0.072688
-29	-0.0020778	0.070726	0.0000739	0.001147	-0.0021876	0.121064	0.0054638	0.078152
-28	-0.0043841	0.066342	-0.0037410	-0.002594	-0.0050634	0.116000	0.0100444	0.088196
-27	0.0001515	0.066493	-0.0052938	-0.007888	-0.0164544	0.099546	0.0052382	0.093434
-26	-0.0020526	0.064440	-0.0032575	-0.011146	-0.0077128	0.091833	-0.0060859	0.087348
-25	0.0076530	0.072093	-0.0057016	-0.016847	0.0353189	0.127152	-0.0002934	0.087055
-24	-0.0071180	0.064975	-0.0019393	-0.018786	0.0059941	0.133146	0.0022747	0.089330
-23	0.0013319	0.066307	0.0051363	-0.013650	-0.0019392	0.131207	0.0116431	0.100973
-22	-0.0027239	0.063583	-0.0086795	-0.022330	-0.0271464	0.104061	0.0072002	0.108173
-21	0.0004034	0.063987	0.0112667	-0.011063	0.0002469	0.104307	0.0013219	0.109495
-20	0.0009243	0.064911	0.0002403	-0.010823	0.0014430	0.105750	-0.0200876	0.089407
-19	0.0011283	0.066039	-0.0047406	-0.015563	-0.0045313	0.101219	0.0020458	0.091453
-18	-0.0015616	0.064478	0.0009107	-0.014653	0.0026210	0.103840	0.0027047	0.094158
-17	0.0011499	0.065628	-0.0005213	-0.015174	-0.0121061	0.091734	0.0312270	0.125385
-16	-0.0030315	0.062596	0.0168062	0.001632	0.0005675	0.092302	0.0030684	0.128453
-15	-0.0074708	0.055125	-0.0090897	-0.007457	0.0003705	0.092672	0.0011063	0.129559
-14	-0.0345008	0.020625	-0.0150609	-0.022518	0.0058156	0.098488	-0.0046563	0.124903
-13	-0.0007417	0.019883	-0.0035895	-0.026108	0.0074284	0.105916	0.0064230	0.131326

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-12	0.0023838	0.022267	-0.0008581	-0.026966	0.0182397	0.124156	0.0018279	0.133154
-11	0.0162664	0.038533	-0.0012448	-0.028211	0.0013119	0.125468	0.0036338	0.136788
-10	0.0145151	0.053048	0.0041075	-0.024103	-0.0114053	0.114062	0.0079235	0.144711
-9	-0.0049387	0.048110	0.0019261	-0.022177	-0.0037987	0.110264	0.0026929	0.147404
-8	0.0062036	0.054313	0.0030511	-0.019126	-0.0108201	0.099444	0.0197932	0.167197
-7	-0.0048273	0.049486	-0.0033147	-0.022441	-0.0009659	0.098478	0.0109222	0.178120
-6	-0.0074758	0.042010	0.0043315	-0.018109	-0.0037205	0.094757	-0.0000597	0.178060
-5	0.0102049	0.052215	-0.0087178	-0.026827	-0.0058189	0.088938	-0.0100335	0.168026
-4	-0.0094244	0.042791	-0.0078240	-0.034651	-0.0056557	0.083283	-0.0018977	0.166129
-3	-0.0078371	0.034953	-0.0017793	-0.036430	-0.0023838	0.080899	-0.0051742	0.160954
-2	-0.0073307	0.027623	-0.0022364	-0.038667	0.0000759	0.080975	-0.0030098	0.157945
-1	0.0147298	0.042353	-0.0160227	-0.054689	-0.0164494	0.064525	0.0091602	0.167105
0	-0.0129332	0.029419	-0.0068949	-0.061584	-0.0031274	0.061398	-0.0015671	0.165538
1	-0.0187114	0.010708	-0.0094779	-0.071062	-0.0149294	0.046468	0.0015093	0.167047
2	-0.0047837	0.005924	-0.0053035	-0.076366	-0.0012531	0.045215	-0.0027734	0.164274
3	-0.0306396	-0.024715	-0.0124050	-0.088771	0.0031556	0.048371	-0.0146217	0.149652
4	-0.0153406	-0.040056	0.0013087	-0.087462	0.0151591	0.063530	0.0069634	0.156615
5	0.0007498	-0.039306	0.0008612	-0.086601	-0.0027760	0.060754	-0.0010929	0.155522
6	-0.0001523	-0.039458	-0.0116862	-0.098287	0.0142531	0.075007	0.0094485	0.164971
7	0.0215479	-0.017910	0.0078623	-0.090425	0.0033985	0.078406	0.0027235	0.167694
8	0.0144656	-0.003445	-0.0081746	-0.098599	-0.0165394	0.061866	0.0096470	0.177341
9	0.0121671	0.008722	-0.0081913	-0.106791	-0.0075372	0.054329	0.0049968	0.182338
10	-0.0030369	0.005685	-0.0074918	-0.114282	-0.0011422	0.053187	-0.0127380	0.169600
11	0.0071701	0.012855	0.0040456	-0.110237	-0.0087764	0.044410	0.0065816	0.176182
12	-0.0005288	0.012327	-0.0109187	-0.121156	0.0052291	0.049639	0.0014229	0.177605
13	0.0007870	0.013114	-0.0026051	-0.123761	0.0045866	0.054226	0.0060847	0.183690
14	-0.0009008	0.012213	0.0133387	-0.110422	-0.0149877	0.039238	0.0118767	0.195566
15	0.0019357	0.014149	-0.0005553	-0.110977	0.0001400	0.039378	-0.0092994	0.186267
16	0.0048399	0.018988	0.0169596	-0.094018	-0.0001050	0.039273	0.0086017	0.194868
17	-0.0008760	0.018112	0.0127803	-0.081237	0.0044193	0.043693	-0.0032469	0.191622
18	-0.0063071	0.011805	-0.0072157	-0.088453	-0.0007788	0.042914	0.0019073	0.193529
19	-0.0022434	0.009562	0.0036997	-0.084753	-0.0059618	0.036952	-0.0012046	0.192324
20	0.0056279	0.015190	0.0062423	-0.078511	0.0022204	0.039172	0.0016248	0.193949

Cg = Control Group  
Eg = Experimental Group

**Appendix C**  
**Table C.3**  
**Market Model (MM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Services Sector**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	0.0177439	0.0177439	-0.0318570	-0.031857	-0.0023489	-0.002349	-0.0021313	-0.002131
-59	0.0113418	0.0290857	-0.0026330	-0.034490	0.0038918	0.001543	0.0212446	0.019113
-58	0.0140618	0.0431475	-0.0142565	-0.048747	0.0234217	0.024965	-0.0009882	0.018125
-57	0.0156822	0.0588297	-0.0105696	-0.059316	0.0005329	0.025498	0.0182903	0.036415
-56	0.0050999	0.0639297	0.0150445	-0.044272	0.0084627	0.033960	-0.0020655	0.034350
-55	0.0265832	0.0905128	0.0151136	-0.029158	0.0168899	0.050850	0.0089392	0.043289
-54	-0.0059021	0.0846107	0.0156274	-0.013531	0.0091827	0.060033	0.0000749	0.043364
-53	-0.0068731	0.0777376	0.0128224	-0.000708	0.0112905	0.071323	0.0077096	0.051074
-52	0.0077633	0.0855009	0.0074638	0.006756	0.0075337	0.078857	0.0119719	0.063046
-51	0.0031983	0.0886992	0.0055093	0.012265	0.0167229	0.095580	0.0113757	0.074421
-50	-0.0045846	0.0841146	0.0131740	0.025439	0.0081039	0.103684	0.0125933	0.087014
-49	-0.0092465	0.0748681	0.0170405	0.042479	-0.0001536	0.103530	0.0027218	0.089736
-48	-0.0012507	0.0736174	0.0102814	0.052761	0.0002564	0.103787	0.0073723	0.097109
-47	-0.0116023	0.0620150	0.0126456	0.065406	0.0033527	0.107139	0.0055461	0.102655
-46	0.0016634	0.0636784	0.0060841	0.071490	0.0025313	0.109671	-0.0135741	0.089081
-45	-0.0042872	0.0593912	0.0170918	0.088582	-0.0022322	0.107438	-0.0166132	0.072467
-44	-0.0120004	0.0473908	-0.0009107	0.087671	0.0045969	0.112035	0.0103487	0.082816
-43	-0.0038038	0.0435870	-0.0139831	0.073688	0.0018645	0.113900	0.0023886	0.085205
-42	0.0089109	0.0524979	0.0177516	0.091440	0.0074079	0.121308	0.0084876	0.093692
-41	-0.0115699	0.0409280	0.0004182	0.091858	0.0027986	0.124106	0.0056726	0.099365
-40	0.0028879	0.0438159	-0.0045399	0.087318	-0.0053490	0.118757	0.0028869	0.102252
-39	0.0123046	0.0561206	-0.0003547	0.086964	-0.0051790	0.113578	-0.0125885	0.089663
-38	-0.0086680	0.0474526	0.0191247	0.106088	0.0224520	0.136030	0.0267347	0.116398
-37	-0.0114504	0.0360022	-0.0038781	0.102210	0.0010320	0.137062	-0.0023006	0.114097
-36	0.0183081	0.0543103	0.0218392	0.124049	-0.0080039	0.129058	-0.0266844	0.087413
-35	0.0121730	0.0664832	-0.0120898	0.111960	-0.0135156	0.115543	-0.0107224	0.076691
-34	-0.0040770	0.0624063	-0.0169029	0.095057	-0.0053443	0.110198	0.0124168	0.089107
-33	0.0145669	0.0769732	-0.0164950	0.078562	0.0002218	0.110420	0.0015732	0.090681
-32	-0.0012674	0.0757058	-0.0139490	0.064613	-0.0047155	0.105705	0.0036167	0.094297
-31	-0.0076877	0.0680181	0.0016862	0.066299	0.0128315	0.118536	-0.0016765	0.092621
-30	-0.0022941	0.0657240	-0.0128844	0.053415	0.0002563	0.118793	0.0026851	0.095306
-29	0.0035017	0.0692257	-0.0108107	0.042604	-0.0016980	0.117095	0.0088651	0.104171
-28	0.0061407	0.0753664	0.0007047	0.043309	-0.0002206	0.116874	0.0028742	0.107045
-27	-0.0027865	0.0725798	0.0022410	0.045550	-0.0071541	0.109720	-0.0016804	0.105365
-26	-0.0100305	0.0625493	-0.0227536	0.022796	-0.0009145	0.108805	-0.0046183	0.100746
-25	-0.0224209	0.0401284	-0.0066161	0.016180	-0.0064036	0.102402	0.0006624	0.101409
-24	-0.0128633	0.0272651	-0.0009126	0.015267	-0.0081779	0.094224	0.0085526	0.109961
-23	-0.0146440	0.0126212	0.0080032	0.023270	-0.0011724	0.093051	0.0092548	0.119216
-22	-0.0238948	-0.0112736	0.0296195	0.052890	-0.0057457	0.087306	-0.0032550	0.115961
-21	0.0100050	-0.0012686	-0.0117146	0.041175	-0.0027466	0.084559	-0.0055041	0.110457
-20	-0.0073743	-0.0086429	0.0203818	0.061557	-0.0093784	0.075181	0.0162371	0.126694
-19	0.0054273	-0.0032156	0.0076246	0.069182	0.0057541	0.080935	-0.0067369	0.119957
-18	-0.0006376	-0.0038532	-0.0383380	0.030844	-0.0006745	0.080260	0.0154392	0.135396
-17	0.0005637	-0.0032895	0.0213844	0.052228	0.0169886	0.097249	0.0200233	0.155420
-16	0.0094812	0.0061917	-0.0130243	0.039204	-0.0003805	0.096868	0.0062707	0.161690
-15	-0.0144251	-0.0082334	-0.0059485	0.033255	0.0128490	0.109717	0.0241772	0.185868
-14	0.0265600	0.0183267	0.0013557	0.034611	0.0010341	0.110751	-0.0074372	0.178431
-13	-0.0034988	0.0148279	0.0003609	0.034972	0.0182882	0.129040	0.0026078	0.181038

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-12	-0.0046674	0.0101605	0.0013542	0.036326	0.0057756	0.134815	0.0040092	0.185048
-11	0.0023843	0.0125448	-0.0019362	0.034390	0.0190906	0.153906	-0.0021561	0.182891
-10	-0.0086462	0.0038986	0.0096901	0.044080	0.0165221	0.170428	0.0141767	0.197068
-9	0.0027595	0.0066581	0.0152968	0.059377	0.0138874	0.184315	0.0026205	0.199689
-8	0.0165401	0.0231982	0.0268640	0.086241	0.0227617	0.207077	0.0042783	0.203967
-7	0.0072741	0.0304723	0.0111468	0.097388	-0.0009783	0.206099	0.0018575	0.205825
-6	0.0061692	0.0366415	0.0319476	0.129335	-0.0090906	0.197008	-0.0014365	0.204388
-5	0.0115609	0.0482024	0.0111527	0.140488	0.0153168	0.212325	0.0136025	0.217991
-4	0.0001266	0.0483290	0.0152890	0.155777	-0.0040500	0.208275	-0.0007269	0.217264
-3	0.0076336	0.0559626	-0.0269524	0.128825	-0.0060854	0.202190	0.0132623	0.230526
-2	0.0159067	0.0718692	-0.0072480	0.121577	0.0076502	0.209840	0.0141459	0.244672
-1	-0.0070017	0.0648676	0.0212206	0.142797	0.0107352	0.220575	-0.0322876	0.212384
0	0.0098535	0.0747210	0.0164140	0.159211	0.0130716	0.233647	-0.0039824	0.208402
1	-0.0075910	0.0671300	-0.0080551	0.151156	0.0133113	0.246958	0.0226381	0.231040
2	-0.0035810	0.0635491	0.0031430	0.154299	0.0009178	0.247876	-0.0045904	0.226449
3	0.0012915	0.0648405	0.0028657	0.157165	0.0139772	0.261853	0.0027364	0.229186
4	-0.0006918	0.0641488	0.0099619	0.167127	-0.0196143	0.242239	0.0004865	0.229672
5	-0.0052932	0.0588556	0.0044279	0.171555	0.0069162	0.249155	0.0056166	0.235289
6	0.0064106	0.0652661	0.0091421	0.180697	0.0118327	0.260987	-0.0115489	0.223740
7	-0.0009167	0.0643494	-0.0060226	0.174674	0.0009022	0.261890	0.0055419	0.229282
8	0.0024925	0.0668418	0.0225884	0.197263	-0.0044449	0.257445	-0.0017748	0.227507
9	0.0126169	0.0794587	-0.0083920	0.188871	-0.0001112	0.257333	0.0079630	0.235470
10	-0.0051362	0.0743225	0.0052580	0.194129	-0.0094117	0.247922	-0.0034712	0.231999
11	-0.0091654	0.0651571	-0.0064030	0.187726	0.0046626	0.252584	0.0067763	0.238775
12	-0.0042181	0.0609390	0.0087319	0.196458	-0.0043843	0.248200	0.0001045	0.238880
13	-0.0004456	0.0604934	-0.0143731	0.182085	-0.0104134	0.237787	-0.0035547	0.235325
14	0.0083394	0.0688328	-0.0041210	0.177964	0.0020131	0.239800	-0.0032999	0.232025
15	-0.0075193	0.0613135	-0.0058394	0.172124	0.0045293	0.244329	-0.0008683	0.231157
16	0.0004595	0.0617730	-0.0052977	0.166826	-0.0047479	0.239581	0.0039627	0.235120
17	-0.0019740	0.0597990	-0.0053272	0.161499	0.0065369	0.246118	0.0108412	0.245961
18	-0.0141321	0.0456669	-0.0089480	0.152551	0.0049531	0.251071	0.0020320	0.247993
19	-0.0054606	0.0402064	0.0148208	0.167372	0.0111696	0.262241	-0.0134040	0.234589
20	-0.0015268	0.0386795	0.0184293	0.185801	0.0055587	0.267799	-0.0053057	0.229283

Cg = Control Group

Eg = Experimental Group

**Appendix C**  
**Table C.4**  
**Market Model (MM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Industrial Sector**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	-0.0022179	-0.0022179	0.0009722	0.000972	0.0076214	-0.0076214	0.0018613	0.001861
-59	-0.0041576	-0.0063755	-0.0005028	0.000469	0.0085359	-0.0161572	0.0006228	0.002484
-58	-0.0025003	-0.0088758	-0.0060877	-0.005618	0.0075037	-0.0236609	-0.0047994	-0.002315
-57	0.0020528	-0.0068230	-0.0158378	-0.021456	0.0068803	-0.0167807	-0.0033291	-0.005644
-56	-0.0097778	-0.0166009	0.0013286	-0.020128	0.0052203	-0.0115603	-0.0019071	-0.007551
-55	-0.0008636	-0.0174645	-0.0071195	-0.027247	0.0056998	-0.0172601	-0.0028779	-0.010429
-54	0.0128812	-0.0045833	-0.0073676	-0.034615	0.0028963	-0.0143638	-0.0061518	-0.016581
-53	0.0049949	0.0004116	-0.0093045	-0.043919	0.0097120	-0.0046519	-0.0071372	-0.023718
-52	-0.0021165	-0.0017049	-0.0006114	-0.044531	0.0028152	-0.0074671	0.0056390	-0.018079
-51	0.0008086	-0.0008964	-0.0018439	-0.046375	0.0024348	-0.0050323	-0.0047800	-0.022859
-50	0.0020604	0.0011640	0.0042571	-0.042117	0.0016619	-0.0066943	-0.0024270	-0.025286
-49	-0.0020510	-0.0008870	-0.0101157	-0.052233	0.0035905	-0.0031038	-0.0111775	-0.036464
-48	-0.0054754	-0.0063624	0.0041182	-0.048115	0.0073988	0.0042950	0.0040125	-0.032451
-47	-0.0013466	-0.0077090	-0.0068926	-0.055007	0.0082401	0.0125350	0.0041627	-0.028289
-46	0.0052722	-0.0024368	-0.0064659	-0.061473	0.0058622	0.0066728	0.0014895	-0.026799
-45	-0.0018636	-0.0043004	-0.0119570	-0.073430	0.0059227	0.0125956	0.0050510	-0.021748
-44	-0.0010913	-0.0053917	0.0080126	-0.065418	0.0059594	0.0066361	0.0013135	-0.020435
-43	-0.0006184	-0.0060101	-0.0124494	-0.077867	0.0051026	0.0117387	-0.0024837	-0.022918
-42	-0.0031464	-0.0091564	-0.0033166	-0.081184	0.0002114	0.0115273	0.0082075	-0.014711
-41	0.0024176	-0.0067388	-0.0034295	-0.084613	0.0102828	0.0218101	0.0092076	-0.005503
-40	-0.0016258	-0.0083646	0.0015695	-0.083044	0.0027345	0.0245446	0.0092186	0.003715
-39	0.0076594	-0.0007053	-0.0113592	-0.094403	0.0070303	0.0315749	0.0016892	0.005405
-38	-0.0063525	-0.0070578	0.0012660	-0.093137	0.0102636	0.0418385	0.0035784	0.008983
-37	0.0031567	-0.0039011	-0.0041522	-0.097289	0.0063163	0.0355222	0.0072442	0.016227
-36	-0.0089258	-0.0128269	-0.0047962	-0.102085	0.0031720	0.0386942	0.0115557	0.027783
-35	0.0050178	-0.0078091	-0.0055298	-0.107615	0.0003477	0.0390419	0.0064348	0.034218
-34	-0.0119335	-0.0197426	-0.0045342	-0.112149	0.0045690	0.0344729	0.0119226	0.046140
-33	0.0012541	-0.0184885	0.0015569	-0.110593	0.0002273	0.0347002	0.0008989	0.047039
-32	0.0041347	-0.0143538	-0.0034522	-0.114045	0.0002327	0.0344674	0.0033920	0.050431
-31	0.0018441	-0.0125097	-0.0017681	-0.115813	0.0066867	0.0411542	0.0046827	0.055114
-30	0.0016025	-0.0109072	0.0038520	-0.111961	0.0000563	0.0412105	0.0009179	0.056032
-29	-0.0104899	-0.0213971	-0.0063980	-0.118359	0.0037467	0.0449571	-0.0056317	0.050400
-28	-0.0056951	-0.0270922	-0.0030518	-0.121411	0.0008166	0.0441406	0.0049019	0.055302
-27	-0.0008159	-0.0279081	0.0021062	-0.119304	0.0034501	0.0475907	-0.0081649	0.047137
-26	-0.0095225	-0.0374306	0.0009382	-0.118366	0.0073555	0.0549461	0.0048363	0.051973
-25	0.0088216	-0.0286090	-0.0070471	-0.125413	0.0055604	0.0605065	0.0089816	0.060955
-24	0.0009915	-0.0276175	-0.0156824	-0.141096	0.0067107	0.0672172	0.0030797	0.064035
-23	-0.0023164	-0.0299339	-0.0056971	-0.146793	0.0059101	0.0731273	0.0066803	0.070715
-22	0.0036520	-0.0262819	0.0016462	-0.145147	0.0030934	0.0762207	-0.0018367	0.068878
-21	-0.0050491	-0.0313309	0.0090201	-0.136126	0.0025513	0.0787720	0.0039141	0.072792
-20	0.0067356	-0.0245953	0.0038441	-0.132282	0.0035045	0.0822765	-0.0038546	0.068938
-19	-0.0018771	-0.0264724	0.0000440	-0.132238	0.0072441	0.0895206	-0.0006086	0.068329
-18	0.0017385	-0.0247339	-0.0019485	-0.134187	0.0024145	0.0871060	-0.0013306	0.066998
-17	-0.0022767	-0.0270107	-0.0063871	-0.140574	0.0021856	0.0849204	0.0056198	0.072618
-16	0.0159501	-0.0110606	-0.0007033	-0.141277	0.0052920	0.0796284	0.0058175	0.078436
-15	-0.0010311	-0.0120916	-0.0004159	-0.141693	0.0002451	0.0793833	0.0094030	0.087839
-14	-0.0062969	-0.0183886	0.0009288	-0.140764	0.0045060	0.0748773	0.0086665	0.096505
-13	-0.0103927	-0.0287813	0.0003926	-0.140372	0.0059256	0.0689517	0.0096090	0.106114

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-12	-0.0120445	-0.0408258	-0.0052583	-0.145630	0.0028952	0.0660565	0.0087922	0.114906
-11	-0.0013029	-0.0421287	-0.0032125	-0.148843	0.0003513	0.0657052	-0.0035224	0.111384
-10	0.0016536	-0.0404751	-0.0083282	-0.157171	0.0016572	0.0673624	0.0052346	0.116619
-9	0.0144980	-0.0259771	-0.0052007	-0.162372	0.0022034	0.0695658	0.0014099	0.118028
-8	-0.0043246	-0.0303018	0.0034562	-0.158915	0.0050349	0.0645309	-0.0002745	0.117754
-7	-0.0052318	-0.0355335	0.0033522	-0.155563	0.0014054	0.0659362	-0.0006697	0.117084
-6	-0.0051245	-0.0406580	0.0028726	-0.152691	0.0010011	0.0669373	0.0070851	0.124169
-5	0.0011793	-0.0394787	-0.0021655	-0.154856	0.0065124	0.0734497	0.0036618	0.127831
-4	0.0049119	-0.0345667	-0.0158465	-0.170703	0.0023579	0.0758076	-0.0044069	0.123424
-3	0.0016039	-0.0329628	-0.0035531	-0.174256	0.0079730	0.0678346	0.0006082	0.124033
-2	-0.0014748	-0.0344377	-0.0068321	-0.181088	0.0077447	0.0600898	0.0021552	0.126188
-1	0.0046148	-0.0298228	0.0046820	-0.176406	0.0095103	0.0505796	0.0011621	0.127350
0	-0.0064953	-0.0363181	0.0019262	-0.174480	0.0102143	0.0403652	0.0038079	0.131158
1	-0.0104600	-0.0467782	-0.0010226	-0.175502	0.0059958	0.0343695	0.0022164	0.133374
2	-0.0015446	-0.0483228	-0.0033599	-0.178862	0.0002057	0.0341637	0.0026261	0.136000
3	0.0055054	-0.0428173	0.0003747	-0.178488	0.0060251	0.0281386	-0.0052166	0.130784
4	0.0044904	-0.0383269	-0.0020057	-0.180493	0.0062040	0.0219347	-0.0068592	0.123925
5	0.0057125	-0.0326144	0.0006439	-0.179849	0.0005031	0.0224377	0.0014017	0.125326
6	-0.0009784	-0.0335928	-0.0009360	-0.180785	0.0011204	0.0235581	-0.0040582	0.121268
7	-0.0025342	-0.0361269	0.0034545	-0.177331	0.0012614	0.0248195	0.0052707	0.126539
8	-0.0060814	-0.0422084	-0.0021300	-0.179461	0.0032435	0.0215760	0.0007176	0.127256
9	-0.0031907	-0.0453991	-0.0005101	-0.179971	0.0081930	0.0133830	0.0010884	0.128345
10	0.0025927	-0.0428064	-0.0032724	-0.183244	0.0051360	0.0082469	-0.0006940	0.127651
11	-0.0031786	-0.0459849	-0.0036722	-0.186916	0.0045682	0.0036787	-0.0033033	0.124347
12	-0.0022439	-0.0482289	-0.0053042	-0.192220	0.0032014	0.0068801	0.0012702	0.125618
13	0.0007755	-0.0474534	-0.0017462	-0.193966	0.0006144	0.0074946	-0.0035687	0.122049
14	-0.0039131	-0.0513665	0.0016517	-0.192314	0.0012553	0.0062393	0.0043660	0.126415
15	-0.0015349	-0.0529014	0.0003234	-0.191991	0.0037855	0.0100248	0.0033014	0.129716
16	-0.0098318	-0.0627332	-0.0053574	-0.197348	0.0017582	0.0082665	0.0049671	0.134683
17	-0.0060626	-0.0687958	0.0015756	-0.195773	0.0034522	0.0048143	-0.0036792	0.131004
18	0.0013837	-0.0674121	-0.0036953	-0.199468	0.0030365	0.0017779	-0.0001149	0.130889
19	0.0118340	-0.0555781	0.0000674	-0.199401	0.0009823	0.0007956	-0.0006160	0.130273
20	0.0008095	-0.0547686	-0.0037247	-0.203126	0.0013086	0.0021042	-0.0006876	0.129586

Cg = Control Group

Eg = Experimental Group



**Appendix C**  
**Table C.5**  
**Market Model (MM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Low Traded Firms**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	0.009021	0.009021	0.0021153	0.002115	-0.0088806	-0.008881	0.0001897	0.00019
-59	0.0041252	0.0131462	0.0097172	0.011833	-0.0001498	-0.00903	0.0054442	0.005634
-58	0.0077297	0.0208759	-0.002158	0.009675	0.0106232	0.001593	0.0015727	0.007207
-57	0.0037124	0.0245882	-0.009839	-0.000164	-0.002656	-0.001063	0.0013477	0.008554
-56	0.0098842	0.0344725	-0.005445	-0.005609	0.0033953	0.002332	-0.0015136	0.007041
-55	0.015168	0.0496405	-0.001008	-0.006616	0.0075599	0.009892	0.0034525	0.010493
-54	0.0049636	0.0546041	0.0018572	-0.004759	0.0033329	0.013225	0.0011479	0.011641
-53	-0.000104	0.0545003	-0.005193	-0.009952	0.0051079	0.018333	-0.002726	0.008915
-52	0.0100558	0.0645561	-0.004228	-0.01418	0.0034106	0.021743	0.0076789	0.016594
-51	0.0048406	0.0693967	-0.011068	-0.025249	0.0074713	0.029215	0.0014202	0.018014
-50	0.0116496	0.0810463	0.0115398	-0.013709	0.0038267	0.033041	0.0050133	0.023028
-49	0.0030278	0.0840741	-0.003654	-0.017363	0.0009021	0.033944	0.0008023	0.02383
-48	-0.002479	0.0815954	0.0011718	-0.016191	0.0000632	0.034007	0.0120413	0.035871
-47	-0.006617	0.074978	-0.003763	-0.019954	0.0012704	0.035277	0.0048423	0.040713
-46	-0.008333	0.0666451	-0.011958	-0.031912	-0.0003155	0.034962	0.0040234	0.044737
-45	-0.007197	0.0594477	-0.012186	-0.044098	-0.000715	0.034247	0.0033461	0.048083
-44	-0.009965	0.0494831	0.0151486	-0.02895	0.0012383	0.035485	0.0070807	0.055164
-43	0.0015972	0.0510803	0.0028954	-0.026054	0.0028955	0.038381	-0.0006298	0.054534
-42	0.0094724	0.0605526	-0.00482	-0.030875	0.004922	0.043303	0.0127268	0.067261
-41	-0.008576	0.0519764	-0.015295	-0.046169	0.0032452	0.046548	0.0045977	0.071858
-40	0.0011602	0.0531366	-0.004728	-0.050898	-0.0036157	0.042932	0.0104859	0.082344
-39	0.0033395	0.0564761	-0.008347	-0.059244	-0.0014988	0.041433	0.0072108	0.089555
-38	-0.009001	0.0474749	0.0039591	-0.055285	0.0184021	0.059835	0.0022605	0.091815
-37	-0.0019	0.045575	-0.008322	-0.063608	-0.0045786	0.055257	0.0027866	0.094602
-36	0.0082827	0.0538578	0.0001734	-0.063434	-0.0021091	0.053148	0.0072278	0.10183
-35	0.0066447	0.0605025	-0.008541	-0.071976	-0.0096405	0.043507	0.0020655	0.103895
-34	-0.00479	0.0557124	-0.010911	-0.082886	0.0077534	0.051261	0.0130925	0.116988
-33	0.0039543	0.0596667	-0.000778	-0.083664	0.0008129	0.052073	0.0053249	0.122313
-32	-0.003801	0.0558658	-0.005082	-0.088746	0.0023761	0.05445	0.0025184	0.124831
-31	0.0036427	0.0595085	-0.002329	-0.091075	0.0240508	0.0785	0.0098782	0.134709
-30	-0.004465	0.0550433	0.0025986	-0.088477	0.0020376	0.080538	0.0113924	0.146102
-29	0.0002841	0.0553273	-0.004238	-0.092714	-0.0000522	0.080486	0.0021356	0.148237
-28	-0.003906	0.0514216	-0.005669	-0.098384	0.0003193	0.080805	0.0104579	0.158695
-27	-0.002783	0.0486385	-0.010393	-0.108777	-0.004135	0.07667	0.0010278	0.159723
-26	-0.006395	0.0422432	-0.000485	-0.109261	0.0063782	0.083048	0.0030824	0.162805
-25	-0.009211	0.0330322	0.0019098	-0.107352	0.0093896	0.092438	0.0118316	0.174637
-24	-0.006642	0.0263897	-0.008606	-0.115958	0.0004825	0.09292	0.0095537	0.184191
-23	-0.00776	0.0186301	-0.01115	-0.127108	0.0025605	0.095481	0.0071839	0.191375
-22	-0.011179	0.007451	0.012472	-0.114636	-0.0114453	0.084036	-0.0004487	0.190926
-21	0.0048475	0.0122985	0.0124498	-0.102186	0.0021269	0.086163	0.0091693	0.200095
-20	-0.004369	0.0079296	-0.001309	-0.103495	-0.004009	0.082154	-0.004825	0.19527
-19	0.003329	0.0112586	-0.006573	-0.110068	0.0015856	0.083739	0.0041722	0.199442
-18	-0.001213	0.0100456	0.0026697	-0.107398	-0.0001749	0.083564	0.0008137	0.200256
-17	-0.001984	0.0080615	-0.002793	-0.110191	0.0024263	0.085991	0.0211112	0.221367
-16	0.0027407	0.0108022	0.0101974	-0.099993	-0.0001308	0.08586	0.0025899	0.223957
-15	-0.009394	0.0014083	-0.003286	-0.10328	0.0057314	0.091591	0.0077012	0.231658
-14	0.0024999	0.0039082	-0.002027	-0.105307	0.0013184	0.09291	-0.0072546	0.224404
-13	-0.007146	-0.003238	0.0077303	-0.097577	0.0082706	0.10118	-0.0040382	0.220366

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-12	-0.005263	-0.0085	0.0014849	-0.096092	-0.0001873	0.100993	-0.0023519	0.218014
-11	0.0052009	-0.003299	-0.000867	-0.096959	0.011858	0.112851	0.0019977	0.220011
-10	0.0005593	-0.00274	-0.00435	-0.101308	0.0060965	0.118947	-0.0044556	0.215556
-9	0.001111	-0.001629	-0.002583	-0.103891	0.0049949	0.123942	0.0012878	0.216844
-8	0.0114609	0.0098319	-0.000985	-0.104876	-0.003119	0.120823	0.0007346	0.217578
-7	-0.001855	0.0079769	0.0064147	-0.098461	0.0007455	0.121569	-0.0040064	0.213572
-6	-0.002791	0.0051862	0.0048456	-0.093616	-0.0049781	0.116591	0.0018102	0.215382
-5	0.008987	0.0141732	-0.008822	-0.102438	0.0092573	0.125848	-0.003097	0.212285
-4	-0.004952	0.0092217	-0.01583	-0.118268	0.0007716	0.12662	-0.0036019	0.208683
-3	0.0014993	0.010721	-0.012464	-0.130732	-0.0054397	0.12118	-0.0033781	0.205305
-2	0.0035163	0.0142373	0.0040502	-0.126682	-0.0005868	0.120593	0.0079994	0.213304
-1	0.0032671	0.0175044	-0.002261	-0.128943	0.0067976	0.127391	0.0036651	0.216969
0	0.0008767	0.0183811	-0.001815	-0.130758	0.005968	0.133359	0.0062928	0.223262
1	-0.007084	0.0112968	-0.004535	-0.135293	-0.0000167	0.133342	0.0037639	0.227026
2	-0.003465	0.0078319	0.0005708	-0.134723	-0.0010508	0.132291	0.0002095	0.227235
3	-0.006431	0.0014012	0.0004631	-0.134259	0.0061252	0.138416	-0.0048149	0.222421
4	-0.006248	-0.004847	-0.008405	-0.142665	-0.0055228	0.132894	-0.0062967	0.216124
5	-0.003916	-0.008763	0.0030888	-0.139576	0.0029832	0.135877	0.0015992	0.217723
6	0.0014003	-0.007363	-0.006807	-0.146383	0.0155517	0.151428	0.0021577	0.219881
7	0.0059085	-0.001454	0.0050639	-0.141319	0.0040534	0.155482	0.0035875	0.223468
8	0.0053867	0.0039327	0.0025791	-0.138739	-0.0098478	0.145634	0.0053776	0.228846
9	0.0094832	0.0134159	-0.001716	-0.140456	-0.0041691	0.141465	0.0008231	0.229669
10	-0.003287	0.0101287	0.0042899	-0.136166	-0.0099814	0.131483	-0.0022252	0.227444
11	-0.001894	0.0082346	-0.001498	-0.137664	-0.0002549	0.131229	0.001809	0.229253
12	-0.004152	0.0040828	-0.004889	-0.142552	-0.0011607	0.130068	-0.0087257	0.220527
13	-0.000029	0.0040537	-0.001366	-0.143918	-0.00557	0.124498	0.0001617	0.220689
14	0.0051208	0.0091744	-0.000383	-0.144301	-0.0029412	0.121557	0.0104269	0.231116
15	-0.004924	0.0042508	-0.005168	-0.149469	0.0033767	0.124933	0.0013138	0.232429
16	0.0010228	0.0052736	-0.001081	-0.150549	-0.0018703	0.123063	0.0065335	0.238963
17	-0.00216	0.0031132	0.0103662	-0.140183	0.0038391	0.126902	-0.0018085	0.237154
18	-0.008725	-0.005612	0.0003721	-0.139811	0.0024639	0.129366	0.0083814	0.245536
19	-0.004539	-0.010151	-0.003768	-0.143579	0.0039416	0.133308	-0.0026766	0.242859
20	-0.000579	-0.01073	-0.000605	-0.144185	0.0032804	0.136588	-0.0031666	0.239693

Cg = Control Group

Eg = Experimental Group



**Appendix C**  
**Table C.6**  
**Market Model (MM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Heviely Traded Firms**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	-0.0040545	-0.0040545	-0.0072597	-0.0072597	-0.0004597	-0.000460	0.0011994	0.001199
-59	-0.0024212	-0.0064757	-0.0069297	-0.0141893	-0.0047897	-0.005249	0.0001581	0.001358
-58	-0.0029619	-0.0094376	-0.0062170	-0.0204063	-0.0075082	-0.012758	-0.0056727	-0.004315
-57	0.0043869	-0.0050507	-0.0117431	-0.0321494	0.0108065	-0.001951	0.0012002	-0.003115
-56	-0.0138653	-0.0189161	0.0017061	-0.0304432	0.0080283	0.006077	0.0010698	-0.002045
-55	0.0026134	-0.0163027	-0.0050541	-0.0354973	-0.0049850	0.001092	-0.0036397	-0.005685
-54	0.0120362	-0.0042666	0.0011581	-0.0343392	0.0065373	0.007629	-0.0029881	-0.008673
-53	0.0087247	0.0044581	-0.0005376	-0.0348769	0.0131762	0.020806	0.0007850	-0.007888
-52	-0.0047845	-0.0003264	-0.0016114	-0.0364882	-0.0054074	0.015398	0.0025940	-0.005294
-51	0.0016187	0.0012923	0.0011858	-0.0353024	0.0046132	0.020011	0.0011621	-0.004132
-50	-0.0106350	-0.0093426	0.0003880	-0.0349144	-0.0048856	0.015126	-0.0018236	-0.005955
-49	-0.0004616	-0.0098042	-0.0042118	-0.0391262	0.0064092	0.021535	-0.0047252	-0.010681
-48	-0.0056603	-0.0154645	0.0031927	-0.0359335	0.0097086	0.031244	-0.0000068	-0.010688
-47	0.0017684	-0.0136961	-0.0027883	-0.0387218	0.0111911	0.042435	0.0064427	-0.004245
-46	0.0063177	-0.0073784	0.0039462	-0.0347757	-0.0025333	0.039901	-0.0067527	-0.010998
-45	-0.0030899	-0.0104682	-0.0008320	-0.0356077	0.0060669	0.045968	0.0045288	-0.006469
-44	0.0002444	-0.0102238	0.0011328	-0.0344750	-0.0059659	0.040002	-0.0019976	-0.008466
-43	-0.0008231	-0.0110469	-0.0114520	-0.0459270	0.0044629	0.044465	0.0023941	-0.006072
-42	-0.0042858	-0.0153328	0.0021191	-0.0438079	0.0008406	0.045306	0.0050313	-0.001041
-41	0.0026603	-0.0126725	0.0049896	-0.0388183	0.0060415	0.051347	0.0088720	0.007831
-40	-0.0013746	-0.0140471	0.0002615	-0.0385568	0.0035061	0.054854	0.0060670	0.013898
-39	0.0071837	-0.0068634	-0.0021324	-0.0406893	0.0082331	0.063087	0.0002227	0.014121
-38	-0.0052323	-0.0120956	0.0009111	-0.0397782	0.0007462	0.063833	0.0091478	0.023269
-37	0.0052467	-0.0068489	0.0016280	-0.0381501	0.0005244	0.064357	0.0019185	0.025187
-36	-0.0088197	-0.0156686	-0.0009759	-0.0391260	0.0017690	0.066126	0.0023376	0.027525
-35	0.0056665	-0.0100021	0.0001716	-0.0389544	0.0028498	0.068976	0.0018871	0.029412
-34	-0.0173097	-0.0273118	-0.0079358	-0.0468902	-0.0065050	0.062471	0.0044290	0.033841
-33	0.0009545	-0.0263573	-0.0014239	-0.0483140	0.0119142	0.074385	0.0034989	0.037340
-32	0.0085085	-0.0178488	0.0004840	-0.0478300	0.0035306	0.077916	0.0022211	0.039561
-31	-0.0004412	-0.0182900	0.0020295	-0.0458005	0.0005941	0.078510	0.0024888	0.042050
-30	0.0037804	-0.0145096	0.0031589	-0.0426416	-0.0029054	0.075605	-0.0055381	0.036511
-29	-0.0122821	-0.0267916	-0.0071865	-0.0498281	0.0027413	0.078346	-0.0003026	0.036209
-28	0.0007646	-0.0260270	-0.0008139	-0.0506420	-0.0038337	0.074512	0.0021216	0.038330
-27	0.0010015	-0.0250255	0.0038670	-0.0467750	-0.0018190	0.072693	-0.0048463	0.033484
-26	-0.0111516	-0.0361771	-0.0058811	-0.0526561	-0.0036134	0.069080	-0.0011345	0.032350
-25	0.0117656	-0.0244115	-0.0046279	-0.0572840	0.0042980	0.073378	0.0044404	0.036790
-24	-0.0014747	-0.0258862	-0.0082539	-0.0655379	0.0046662	0.078044	0.0024400	0.039230
-23	-0.0017822	-0.0276683	0.0010542	-0.0644837	0.0022723	0.080316	0.0073312	0.046561
-22	0.0024305	-0.0252378	0.0005236	-0.0639601	0.0045894	0.084906	0.0017602	0.048321
-21	-0.0060974	-0.0313352	0.0028149	-0.0611451	-0.0016142	0.083291	-0.0008011	0.047520
-20	0.0100301	-0.0213050	0.0089374	-0.0522077	0.0041524	0.087444	-0.0012443	0.046276
-19	-0.0028089	-0.0241140	0.0005202	-0.0516875	0.0092168	0.096661	0.0001967	0.046473
-18	0.0028434	-0.0212706	-0.0056919	-0.0573794	-0.0022131	0.094448	0.0011906	0.047663
-17	0.0008026	-0.0204679	-0.0007273	-0.0581066	0.0006701	0.095118	0.0087558	0.056419
-16	0.0220651	0.0015971	0.0052152	-0.0528915	-0.0066457	0.088472	0.0044559	0.060875
-15	-0.0014113	0.0001859	-0.0023482	-0.0552397	0.0008339	0.089306	0.0099271	0.070802
-14	-0.0074819	-0.0072960	-0.0026997	-0.0579394	-0.0044458	0.084860	0.0045063	0.075308
-13	-0.0059705	-0.0132665	-0.0031073	-0.0610467	-0.0031872	0.081673	0.0081420	0.083450

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-12	-0.0102802	-0.0235467	-0.0054772	-0.0665239	0.0084876	0.090160	0.0094197	0.092870
-11	-0.0004306	-0.0239773	-0.0018728	-0.0683967	-0.0031933	0.086967	-0.0026202	0.090250
-10	0.0013719	-0.0226054	-0.0016574	-0.0700541	0.0003349	0.087302	0.0114535	0.101703
-9	0.0169076	-0.0056978	0.0046914	-0.0653627	0.0039891	0.091291	0.0027110	0.104415
-8	-0.0074599	-0.0131577	0.0041308	-0.0612319	0.0096033	0.100895	0.0071711	0.111586
-7	-0.0009496	-0.0141073	0.0008665	-0.0603654	-0.0003708	0.100524	0.0031389	0.114724
-6	-0.0013993	-0.0155066	0.0056393	-0.0547261	0.0003109	0.100835	0.0033403	0.118065
-5	0.0013091	-0.0141975	0.0029240	-0.0518022	0.0035950	0.104430	0.0052152	0.123280
-4	0.0094402	-0.0047573	-0.0021181	-0.0539202	-0.0033874	0.101042	-0.0023596	0.120920
-3	0.0020141	-0.0027432	-0.0041233	-0.0580435	-0.0078484	0.093194	0.0001875	0.121108
-2	0.0013007	-0.0014425	-0.0078184	-0.0658619	-0.0036223	0.089572	0.0001235	0.121231
-1	0.0025776	0.0011351	0.0046111	-0.0612508	-0.0213201	0.068251	-0.0071013	0.114130
0	-0.0081081	-0.0069730	-0.0011555	-0.0624063	-0.0136618	0.054590	-0.0019609	0.112169
1	-0.0167695	-0.0237425	-0.0050151	-0.0674214	-0.0045753	0.050014	0.0034773	0.115646
2	-0.0016440	-0.0253864	-0.0029899	-0.0704114	0.0013551	0.051369	0.0003701	0.116017
3	0.0040563	-0.0213301	0.0013887	-0.0690227	-0.0051608	0.046209	-0.0060509	0.109966
4	0.0076306	-0.0136995	0.0052354	-0.0637873	-0.0076003	0.038608	-0.0021860	0.107780
5	0.0094792	-0.0042203	0.0021985	-0.0615888	0.0001356	0.038744	0.0015599	0.109340
6	0.0012554	-0.0029649	0.0003763	-0.0612124	-0.0062157	0.032528	-0.0047472	0.104592
7	-0.0031190	-0.0060839	0.0013934	-0.0598190	-0.0020679	0.030460	0.0023986	0.106991
8	-0.0075343	-0.0136182	-0.0023402	-0.0621592	-0.0003652	0.030095	0.0006274	0.107618
9	-0.0034232	-0.0170414	-0.0026148	-0.0647740	-0.0078877	0.022207	0.0014695	0.109088
10	0.0030592	-0.0139822	-0.0019103	-0.0666843	0.0004436	0.022651	-0.0031551	0.105933
11	-0.0048547	-0.0188369	-0.0018783	-0.0685626	-0.0059401	0.016711	-0.0018938	0.104039
12	-0.0001934	-0.0190304	-0.0026022	-0.0711649	0.0048836	0.021594	0.0038920	0.107931
13	0.0010577	-0.0179727	-0.0031543	-0.0743192	0.0032746	0.024869	-0.0008520	0.107079
14	-0.0067758	-0.0247485	0.0018491	-0.0724701	-0.0023975	0.022472	0.0006923	0.107771
15	0.0005189	-0.0242296	0.0007275	-0.0717426	0.0033384	0.025810	0.0014707	0.109242
16	-0.0116996	-0.0359292	-0.0037648	-0.0755074	-0.0030251	0.022785	0.0025270	0.111769
17	-0.0064938	-0.0424231	-0.0010120	-0.0765194	-0.0033598	0.019425	-0.0015214	0.110248
18	0.0014457	-0.0409774	-0.0054635	-0.0819829	-0.0042197	0.015205	-0.0019072	0.108340
19	0.0168380	-0.0241394	0.0086320	-0.0733509	-0.0014706	0.013735	-0.0016188	0.106722
20	0.0031898	-0.0209496	0.0026994	-0.0706515	0.0019183	0.015653	-0.0006906	0.106031

Cg = Control Group  
Eg = Experimental Group

**Appendix C**  
**Table C.7**  
**Market Model (MM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Small Size Firms**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	0.0039945	0.0039945	-0.0067916	-0.006792	-0.0072268	-0.007227	0.0005758	0.000576
-59	0.0031637	0.0071582	-0.0039894	-0.010781	-0.0045187	-0.011746	0.0029791	0.003555
-58	0.0043148	0.0114730	-0.0056005	-0.016381	0.0001098	-0.011636	-0.0026363	0.000919
-57	0.0077132	0.0191862	-0.0150291	-0.031411	0.0045691	-0.007067	-0.0011150	-0.000196
-56	-0.0045535	0.0146327	0.0016309	-0.029780	0.0036174	-0.003449	-0.0015240	-0.001720
-55	0.0100622	0.0246949	-0.0043799	-0.034160	0.0033933	-0.000056	-0.0012025	-0.002923
-54	0.0088871	0.0335820	-0.0012254	-0.035385	0.0089659	0.008910	-0.0037947	-0.006717
-53	0.0017542	0.0353362	-0.0048377	-0.040223	0.0091005	0.018010	-0.0034102	-0.010128
-52	0.0003386	0.0356748	-0.0022896	-0.042512	-0.0022227	0.015788	0.0055296	-0.004598
-51	0.0018019	0.0374766	-0.0022760	-0.044788	0.0045258	0.020313	0.0000568	-0.004541
-50	-0.0003081	0.0371686	0.0076233	-0.037165	0.0093776	0.029691	0.0014686	-0.003073
-49	-0.0053979	0.0317706	-0.0053879	-0.042553	0.0058795	0.035571	-0.0033166	-0.006389
-48	-0.0049631	0.0268075	0.0059409	-0.036612	0.0070273	0.042598	0.0043385	-0.002051
-47	-0.0067818	0.0200257	-0.0042853	-0.040897	0.0084491	0.051047	0.0047721	0.002721
-46	0.0032796	0.0233053	-0.0039298	-0.044827	0.0014168	0.052464	-0.0007151	0.002006
-45	-0.0034167	0.0198885	-0.0066537	-0.051481	0.0073913	0.059855	0.0038550	0.005861
-44	-0.0070622	0.0128263	0.0074567	-0.044024	-0.0020012	0.057854	0.0014347	0.007296
-43	-0.0055426	0.0072837	-0.0105955	-0.054620	0.0038908	0.061745	0.0005867	0.007882
-42	0.0016561	0.0089398	0.0000482	-0.054571	0.0037711	0.065516	0.0095647	0.017447
-41	-0.0039039	0.0050359	-0.0006189	-0.055190	0.0086543	0.074170	0.0080503	0.025497
-40	-0.0011571	0.0038788	-0.0007998	-0.055990	-0.0037357	0.070434	0.0076760	0.033173
-39	0.0130643	0.0169431	-0.0074580	-0.063448	0.0037070	0.074141	0.0007692	0.033943
-38	-0.0107764	0.0061667	0.0050484	-0.058400	0.0157801	0.089921	0.0065393	0.040482
-37	-0.0032565	0.0029102	-0.0020345	-0.060434	-0.0028895	0.087032	0.0038482	0.044330
-36	0.0012836	0.0041938	0.0010808	-0.059353	-0.0013378	0.085694	0.0049957	0.049326
-35	0.0084367	0.0126305	-0.0024208	-0.061774	-0.0049738	0.080720	0.0012968	0.050623
-34	-0.0125763	0.0000542	-0.0079144	-0.069689	-0.0026676	0.078053	0.0108398	0.061462
-33	0.0075781	0.0076324	-0.0004966	-0.070185	0.0017318	0.079785	0.0016090	0.063071
-32	0.0030153	0.0106477	-0.0041543	-0.074340	-0.0024903	0.077294	0.0020914	0.065163
-31	-0.0017239	0.0089238	-0.0000836	-0.074423	0.0096699	0.086964	0.0055447	0.070708
-30	0.0013766	0.0103004	0.0040866	-0.070337	0.0004431	0.087407	0.0002131	0.070921
-29	-0.0062407	0.0040597	-0.0049145	-0.075251	-0.0006879	0.086720	-0.0005489	0.070372
-28	-0.0010942	0.0029655	-0.0034010	-0.078652	-0.0017360	0.084983	0.0057986	0.076170
-27	-0.0038987	-0.0009332	0.0000418	-0.078610	-0.0028965	0.082087	-0.0034829	0.072687
-26	-0.0127933	-0.0137266	-0.0026798	-0.081290	0.0014666	0.083554	0.0014958	0.074183
-25	-0.0031042	-0.0168308	-0.0068309	-0.088121	0.0046182	0.088172	0.0076486	0.081832
-24	-0.0041093	-0.0209401	-0.0114088	-0.099530	0.0034262	0.091598	0.0030392	0.084871
-23	-0.0106532	-0.0315933	-0.0023028	-0.101833	0.0042531	0.095851	0.0059713	0.090842
-22	-0.0008614	-0.0324547	0.0019945	-0.099838	-0.0015864	0.094265	0.0025480	0.093390
-21	0.0018491	-0.0306056	0.0098526	-0.089985	0.0033691	0.097634	0.0024077	0.095798
-20	0.0044832	-0.0261224	0.0058460	-0.084139	0.0030228	0.100656	-0.0022780	0.093520
-19	-0.0011806	-0.0273030	0.0007205	-0.083419	0.0049557	0.105612	-0.0012238	0.092296
-18	0.0022411	-0.0250620	-0.0052577	-0.088677	-0.0052871	0.100325	0.0025376	0.094834
-17	0.0017437	-0.0233183	-0.0019297	-0.090606	0.0055636	0.105889	0.0156592	0.110493
-16	0.0159788	-0.0073394	0.0038415	-0.086765	-0.0023952	0.103493	0.0070845	0.117578
-15	-0.0082822	-0.0156217	-0.0013995	-0.088164	0.0013541	0.104848	0.0124155	0.129993
-14	0.0020206	-0.0136011	0.0017853	-0.086379	-0.0022825	0.102565	0.0037123	0.133705
-13	-0.0123938	-0.0259949	0.0008937	-0.085485	0.0063037	0.108869	0.0080350	0.141740

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-12	-0.0128279	-0.0388229	-0.0019478	-0.087433	0.0048736	0.113742	0.0076637	0.149404
-11	0.0006274	-0.0381955	-0.0030963	-0.090529	0.0098011	0.123543	-0.0015195	0.147885
-10	-0.0028709	-0.0410664	-0.0043740	-0.094903	0.0115912	0.135135	0.0083225	0.156207
-9	0.0148812	-0.0261853	-0.0009049	-0.095808	0.0098982	0.145033	0.0026406	0.158848
-8	-0.0002337	-0.0264189	0.0055980	-0.090210	0.0123834	0.157416	0.0025974	0.161445
-7	-0.0014959	-0.0279148	0.0041697	-0.086041	0.0015972	0.159013	0.0012912	0.162736
-6	-0.0049672	-0.0328820	0.0072347	-0.078806	-0.0017111	0.157302	0.0047129	0.167449
-5	0.0035958	-0.0292862	0.0012303	-0.077575	0.0156863	0.172989	0.0038975	0.171347
-4	0.0055728	-0.0237134	-0.0106602	-0.088236	-0.0029482	0.170040	-0.0032854	0.168061
-3	0.0066989	-0.0170144	-0.0084700	-0.096706	-0.0032507	0.166790	-0.0003445	0.167717
-2	0.0044449	-0.0125696	-0.0065358	-0.103241	0.0018028	0.168593	0.0029918	0.170709
-1	0.0061120	-0.0064576	0.0030361	-0.100205	-0.0026267	0.165966	-0.0011557	0.169553
0	-0.0002966	-0.0067542	0.0007827	-0.099423	0.0032218	0.169188	0.0034178	0.172971
1	-0.0049295	-0.0116837	-0.0042619	-0.103685	0.0014846	0.170672	0.0056793	0.178650
2	-0.0049632	-0.0166468	-0.0008521	-0.104537	0.0003336	0.171006	0.0010075	0.179658
3	0.0063968	-0.0102500	0.0012497	-0.103287	0.0022929	0.173299	-0.0055577	0.174100
4	0.0025062	-0.0077438	0.0002458	-0.103041	-0.0121198	0.161179	-0.0032798	0.170820
5	0.0043362	-0.0034076	0.0005102	-0.102531	0.0054658	0.166645	0.0007856	0.171606
6	0.0023569	-0.0010507	-0.0017141	-0.104245	0.0062840	0.172929	-0.0036116	0.167994
7	-0.0018421	-0.0028929	0.0025823	-0.101663	0.0042726	0.177201	0.0041477	0.172142
8	-0.0034189	-0.0063118	0.0017151	-0.099948	-0.0060795	0.171122	0.0031516	0.175294
9	0.0042487	-0.0020631	-0.0018521	-0.101800	-0.0077230	0.163399	0.0035169	0.178810
10	-0.0006105	-0.0026736	-0.0015307	-0.103331	-0.0079534	0.155445	-0.0019303	0.176880
11	-0.0058178	-0.0084914	-0.0001036	-0.103434	0.0018594	0.157305	0.0001023	0.176982
12	-0.0025123	-0.0110037	-0.0045882	-0.108022	-0.0023173	0.154987	-0.0002902	0.176692
13	-0.0011311	-0.0121348	-0.0033302	-0.111352	-0.0038302	0.151157	-0.0019696	0.174723
14	0.0025632	-0.0095716	0.0012404	-0.110112	0.0006886	0.151846	0.0052466	0.179969
15	-0.0044111	-0.0139827	-0.0018439	-0.111956	0.0036904	0.155536	0.0010131	0.180982
16	-0.0068779	-0.0208606	-0.0027183	-0.114674	-0.0049817	0.150555	0.0046164	0.185599
17	-0.0067235	-0.0275841	0.0037461	-0.110928	0.0045354	0.155090	-0.0020567	0.183542
18	-0.0060129	-0.0335971	-0.0042537	-0.115182	0.0014360	0.156526	0.0023223	0.185864
19	0.0091444	-0.0244527	0.0035834	-0.111598	0.0032159	0.159742	-0.0023559	0.183509
20	0.0046128	-0.0198399	0.0005055	-0.111093	0.0044900	0.164232	-0.0022553	0.181253

Cg = Control Group

Eg = Experimental Group

**Appendix C**  
**Table C.8**  
**Market Model (MM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Large Size Firms**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	0.0031262	0.0031262	0.0089815	0.0089815	-0.0028222	-0.0028222	0.0058842	0.0058842
-59	-0.0010477	0.0020786	0.0086604	0.0176420	0.0014516	-0.0013707	0.0021992	0.0080834
-58	0.0019165	0.0039950	-0.0024889	0.0151531	0.0075109	0.0061402	-0.0044283	0.0036551
-57	-0.0013286	0.0026665	-0.0102104	0.0049427	0.0004850	0.0066252	-0.0002808	0.0033743
-56	0.0067600	0.0094265	0.0107945	0.0157372	0.0077110	0.0143362	-0.0018273	0.0015471
-55	0.0099074	0.0193339	-0.0030001	0.0127371	0.0009672	0.0153034	0.0007907	0.0023378
-54	0.0064312	0.0257651	-0.0006321	0.0121049	-0.0015097	0.0137937	-0.0023630	-0.0000252
-53	0.0060704	0.0318354	0.0023321	0.0144370	0.0074726	0.0212662	-0.0015428	-0.0015680
-52	0.0090972	0.0409327	0.0021763	0.0166133	0.0026403	0.0239065	0.0059288	0.0043608
-51	0.0059597	0.0468924	-0.0094558	0.0071575	0.0088211	0.0327276	0.0035783	0.0079391
-50	0.0064474	0.0533398	-0.0016702	0.0054872	-0.0128155	0.0199121	-0.0061042	0.0018349
-49	0.0115753	0.0649151	0.0005029	0.0059902	-0.0007013	0.0192107	-0.0170775	-0.0152426
-48	-0.0021111	0.0628039	-0.0058276	0.0001626	-0.0002400	0.0189707	-0.0160764	-0.0313190
-47	0.0020033	0.0648073	0.0021900	0.0023525	0.0009359	0.0199066	0.0039391	-0.0273799
-46	-0.0102716	0.0545357	0.0110880	0.0134405	-0.0050080	0.0148986	-0.0194232	-0.0468031
-45	-0.0084908	0.0460449	0.0123627	0.0258032	-0.0055135	0.0093850	0.0024391	-0.0443641
-44	-0.0039019	0.0421430	-0.0038897	0.0219135	-0.0013380	0.0080471	0.0051171	-0.0392470
-43	0.0093766	0.0515196	0.0008071	0.0227206	0.0030411	0.0110881	0.0012978	-0.0379492
-42	0.0068802	0.0583998	0.0087067	0.0314273	0.0024847	0.0135728	0.0000188	-0.0379304
-41	-0.0040144	0.0543854	-0.0045800	0.0268473	-0.0016858	0.0118871	0.0015189	-0.0364115
-40	0.0019358	0.0563212	-0.0020631	0.0247841	0.0036776	0.0155646	0.0107458	-0.0256658
-39	-0.0067089	0.0496123	-0.0040308	0.0207533	0.0007961	0.0163608	0.0003380	-0.0253277
-38	-0.0026963	0.0469161	-0.0108258	0.0099275	0.0044920	0.0208528	0.0222317	-0.0030960
-37	0.0071847	0.0541008	-0.0022183	0.0077092	-0.0018886	0.0189641	-0.0045952	-0.0076913
-36	0.0011791	0.0552799	0.0014580	0.0091672	0.0006671	0.0196312	-0.0028194	-0.0105106
-35	0.0031065	0.0583864	-0.0133619	-0.0041947	-0.0038170	0.0158143	0.0044430	-0.0060676
-34	-0.0061865	0.0521999	-0.0011998	-0.0053945	0.0083821	0.0241963	0.0008605	-0.0052071
-33	-0.0042224	0.0479775	-0.0097416	-0.0151361	0.0106015	0.0347979	0.0055015	0.0002944
-32	-0.0012289	0.0467485	0.0049825	-0.0101535	0.0104826	0.0452804	0.0010121	0.0013065
-31	0.0072254	0.0539740	0.0102909	0.0001374	0.0211382	0.0664187	0.0027836	0.0040901
-30	-0.0045652	0.0494087	-0.0056511	-0.0055137	-0.0006276	0.0657910	-0.0058970	-0.0018069
-29	-0.0029609	0.0464478	-0.0027707	-0.0082844	0.0036495	0.0694405	0.0015642	-0.0002427
-28	-0.0032518	0.0431960	0.0018348	-0.0064495	-0.0008975	0.0685430	0.0072640	0.0070212
-27	0.0025951	0.0457911	-0.0007908	-0.0072403	-0.0035882	0.0649548	-0.0040865	0.0029347
-26	-0.0020114	0.0437797	-0.0032652	-0.0105055	0.0034031	0.0683580	-0.0039685	-0.0010339
-25	0.0030415	0.0468213	-0.0010304	-0.0115359	0.0111144	0.0794724	0.0043236	0.0032898
-24	-0.0050933	0.0417279	0.0007329	-0.0108030	0.0004609	0.0799333	0.0107815	0.0140713
-23	0.0023514	0.0440794	-0.0012158	-0.0120188	-0.0001456	0.0797877	0.0222739	0.0363452
-22	-0.0123091	0.0317703	0.0152401	0.0032213	-0.0094947	0.0702930	-0.0119657	0.0243795
-21	-0.0018139	0.0299564	-0.0058578	-0.0026365	-0.0033888	0.0669042	0.0046156	0.0289951
-20	-0.0026157	0.0273407	0.0010191	-0.0016174	-0.0058930	0.0610113	-0.0132805	0.0157146
-19	0.0036334	0.0309741	-0.0127658	-0.0143832	0.0044022	0.0654135	0.0028751	0.0185898
-18	-0.0020910	0.0288831	-0.0010980	-0.0154812	0.0050901	0.0705036	-0.0045779	0.0140119
-17	-0.0045228	0.0243603	0.0008303	-0.0146510	-0.0038117	0.0666919	0.0036253	0.0176372
-16	0.0031534	0.0275137	-0.0034590	-0.0181100	-0.0034108	0.0632811	-0.0015130	0.0161242
-15	-0.0029993	0.0245144	-0.0132948	-0.0314048	0.0070872	0.0703683	-0.0004841	0.0156401
-14	-0.0067972	0.0177172	-0.0232047	-0.0546095	0.0006982	0.0710665	-0.0064661	0.0091739
-13	0.0015264	0.0192437	0.0018713	-0.0527382	-0.0003773	0.0706892	-0.0002307	0.0089432

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-12	0.0005276	0.0197713	-0.0020155	-0.0547536	0.0012578	0.0719470	-0.0002007	0.0087425
-11	0.0061030	0.0258743	0.0066615	-0.0480921	-0.0002548	0.0716921	-0.0027427	0.0059998
-10	0.0062723	0.0321466	0.0042904	-0.0438017	-0.0075146	0.0641775	0.0002293	0.0062291
-9	-0.0027641	0.0293825	-0.0003742	-0.0441759	-0.0030157	0.0611618	-0.0011641	0.0050650
-8	0.0092466	0.0386292	0.0015535	-0.0426223	-0.0125430	0.0486188	0.0143905	0.0194555
-7	-0.0014627	0.0371665	-0.0025322	-0.0451545	-0.0015875	0.0470313	-0.0002643	0.0191912
-6	0.0017101	0.0388765	0.0038347	-0.0413198	-0.0043562	0.0426751	-0.0041354	0.0150558
-5	0.0090107	0.0478873	-0.0147541	-0.0560739	-0.0055893	0.0370858	-0.0055025	0.0095534
-4	-0.0055945	0.0422928	0.0016372	-0.0544367	0.0019265	0.0390123	0.0030593	0.0126126
-3	-0.0054139	0.0368789	-0.0052381	-0.0596748	-0.0109755	0.0280368	0.0066396	0.0192522
-2	-0.0000259	0.0368530	-0.0007984	-0.0604732	-0.0070360	0.0210008	0.0062822	0.0255344
-1	-0.0014865	0.0353666	0.0003158	-0.0601574	-0.0078568	0.0131440	-0.0030509	0.0224835
0	-0.0064320	0.0289346	-0.0033257	-0.0634830	-0.0097387	0.0034052	-0.0005738	0.0219097
1	-0.0198478	0.0090867	0.0002535	-0.0632296	-0.0067200	-0.0033147	0.0001879	0.0220976
2	0.0004963	0.0095831	-0.0124751	-0.0757046	-0.0006225	-0.0039372	-0.0059185	0.0161792
3	-0.0142687	-0.0046856	-0.0104601	-0.0861647	0.0003140	-0.0036232	-0.0074845	0.0086947
4	-0.0048756	-0.0095612	-0.0007410	-0.0869057	0.0018241	-0.0017992	0.0042570	0.0129517
5	-0.0023094	-0.0118706	0.0055699	-0.0813359	-0.0034110	-0.0052102	0.0097828	0.0227344
6	-0.0001112	-0.0119817	-0.0031533	-0.0844892	0.0070238	0.0018136	0.0077033	0.0304377
7	0.0079534	-0.0040283	0.0099427	-0.0745464	-0.0023811	-0.0005675	0.0011244	0.0315621
8	0.0050451	0.0010167	-0.0079538	-0.0825002	-0.0057485	-0.0063160	-0.0026104	0.0289517
9	0.0040545	0.0050713	-0.0035025	-0.0860027	-0.0028107	-0.0091267	0.0022728	0.0312245
10	-0.0007646	0.0043067	0.0018708	-0.0841319	-0.0024536	-0.0115803	-0.0144901	0.0167344
11	0.0007506	0.0050572	-0.0093111	-0.0934430	-0.0089606	-0.0205409	0.0015619	0.0182963
12	-0.0025355	0.0025217	0.0016580	-0.0917850	0.0065358	-0.0140051	-0.0013208	0.0169755
13	0.0026319	0.0051536	-0.0051559	-0.0969409	0.0007892	-0.0132158	0.0025204	0.0194959
14	-0.0031222	0.0020315	0.0149550	-0.0819859	-0.0075830	-0.0207989	-0.0004974	0.0189986
15	-0.0002133	0.0018182	0.0045338	-0.0774520	0.0028903	-0.0179086	-0.0021831	0.0168155
16	-0.0004128	0.0014053	0.0106224	-0.0668296	0.0014197	-0.0164888	0.0049336	0.0217490
17	0.0000248	0.0014302	0.0040531	-0.0627765	-0.0043545	-0.0208433	0.0046330	0.0263821
18	-0.0024284	-0.0009983	-0.0099474	-0.0727239	-0.0027513	-0.0235946	-0.0039585	0.0224236
19	-0.0027102	-0.0037084	-0.0048005	-0.0775244	-0.0004338	-0.0240285	-0.0016718	0.0207518
20	-0.0042276	-0.0079360	0.0075002	-0.0700241	0.0001904	-0.0238381	-0.0009370	0.0198148

Cg = Control Group

Eg = Experimental Group



**Appendix C**  
**Table C.9**  
**Market Model (MM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Domestic Ownership**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	0.0067384	0.0067384	-0.0030157	-0.0030157	-0.0073951	-0.007395	0.0013862	0.001386
-59	0.0073073	0.0140457	-0.0033066	-0.0063224	0.0029641	-0.004431	0.0066564	0.008043
-58	0.0042770	0.0183226	-0.0068763	-0.0131987	0.0066065	0.002175	-0.0017010	0.006342
-57	0.0040980	0.0224207	-0.0121978	-0.0253965	0.0046369	0.006812	-0.0008084	0.005533
-56	-0.0009335	0.0214872	0.0058526	-0.0195439	0.0083332	0.015146	-0.0010994	0.004434
-55	0.0127252	0.0342123	0.0048773	-0.0146666	0.0083995	0.023545	0.0010728	0.005507
-54	0.0028656	0.0370779	0.0010444	-0.0136222	0.0060098	0.029555	-0.0037140	0.001793
-53	-0.0028485	0.0342294	0.0012397	-0.0123825	0.0146628	0.044218	-0.0024702	-0.000678
-52	0.0024890	0.0367184	0.0020900	-0.0102925	0.0033850	0.047603	0.0074174	0.006740
-51	0.0048768	0.0415953	-0.0024836	-0.0127761	0.0084118	0.056014	-0.0021405	0.004599
-50	0.0030753	0.0446706	0.0054821	-0.0072940	0.0034530	0.059467	0.0008156	0.005415
-49	-0.0028776	0.0417929	-0.0037792	-0.0110732	0.0028236	0.062291	-0.0070441	-0.001629
-48	-0.0086819	0.0331111	0.0072135	-0.0038596	0.0039719	0.066263	0.0041452	0.002516
-47	-0.0058211	0.0272899	-0.0024290	-0.0062886	0.0080980	0.074361	0.0037839	0.006300
-46	0.0006761	0.0279660	-0.0007315	-0.0070201	-0.0039672	0.070394	-0.0035960	0.002704
-45	-0.0015813	0.0263847	-0.0026503	-0.0096704	0.0034383	0.073832	-0.0003541	0.002350
-44	-0.0079603	0.0184244	0.0055636	-0.0041068	-0.0006029	0.073229	0.0035132	0.005863
-43	-0.0021378	0.0162867	-0.0065423	-0.0106491	0.0057002	0.078929	0.0010812	0.006944
-42	-0.0000098	0.0162769	-0.0027396	-0.0133887	0.0055929	0.084522	0.0092659	0.016210
-41	-0.0022122	0.0140647	0.0009805	-0.0124082	0.0083318	0.092854	0.0099376	0.026148
-40	0.0005149	0.0145796	0.0000046	-0.0124036	-0.0006373	0.092217	0.0132162	0.039364
-39	0.0084623	0.0230419	-0.0038183	-0.0162219	0.0037013	0.095918	0.0014794	0.040843
-38	-0.0047736	0.0182683	0.0048153	-0.0114066	0.0112660	0.107184	0.0160851	0.056928
-37	0.0017335	0.0200018	-0.0075725	-0.0189791	0.0006547	0.107839	0.0051356	0.062064
-36	0.0074678	0.0274696	0.0010599	-0.0179192	0.0003005	0.108139	0.0036822	0.065746
-35	0.0071283	0.0345979	-0.0059689	-0.0238881	-0.0048379	0.103301	0.0031044	0.068851
-34	-0.0077299	0.0268681	-0.0051647	-0.0290528	-0.0025541	0.100747	0.0133712	0.082222
-33	0.0033046	0.0301726	0.0009801	-0.0280727	0.0050502	0.105797	0.0042925	0.086514
-32	0.0014913	0.0316639	-0.0056645	-0.0337372	0.0055823	0.111380	-0.0002779	0.086236
-31	-0.0004061	0.0312578	-0.0022132	-0.0359504	0.0084845	0.119864	-0.0002288	0.086008
-30	0.0008997	0.0321575	0.0017802	-0.0341702	-0.0007024	0.119162	0.0001092	0.086117
-29	-0.0046885	0.0274690	-0.0048463	-0.0390165	0.0006852	0.119847	0.0029989	0.089116
-28	0.0054955	0.0329645	-0.0026358	-0.0416523	-0.0006110	0.119236	0.0063138	0.095430
-27	0.0008555	0.0338199	-0.0024160	-0.0440683	0.0013247	0.120561	-0.0032632	0.092166
-26	-0.0077555	0.0260644	-0.0010400	-0.0451083	0.0025891	0.123150	-0.0014279	0.090738
-25	-0.0072309	0.0188335	-0.0074374	-0.0525457	0.0020062	0.125156	0.0054890	0.096227
-24	-0.0070525	0.0117811	-0.0127243	-0.0652700	0.0009321	0.126088	-0.0019483	0.094279
-23	-0.0079124	0.0038687	-0.0024785	-0.0677485	0.0049996	0.131088	0.0075563	0.101836
-22	-0.0114873	-0.0076186	0.0044180	-0.0633306	0.0015127	0.132600	0.0019584	0.103794
-21	0.0006208	-0.0069978	0.0059136	-0.0574170	-0.0012731	0.131327	0.0015705	0.105365
-20	0.0010846	-0.0059132	0.0055021	-0.0519149	0.0005866	0.131914	-0.0022061	0.103158
-19	0.0006245	-0.0052887	0.0013978	-0.0505171	0.0079303	0.139844	-0.0044240	0.098734
-18	0.0023462	-0.0029424	-0.0050736	-0.0555907	-0.0007400	0.139104	0.0005132	0.099248
-17	0.0005090	-0.0024334	0.0003557	-0.0552350	0.0035156	0.142620	0.0133635	0.112611
-16	0.0151105	0.0126771	-0.0013484	-0.0565833	-0.0033837	0.139236	0.0112717	0.123883
-15	-0.0079738	0.0047032	-0.0011650	-0.0577484	0.0054232	0.144659	0.0155783	0.139461
-14	0.0008613	0.0055646	0.0034586	-0.0542898	0.0020180	0.146677	-0.0027875	0.136674
-13	-0.0095117	-0.0039471	0.0044145	-0.0498753	0.0040612	0.150738	0.0068219	0.143496

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-12	-0.0108410	-0.0147882	0.0010038	-0.0488716	0.0019427	0.152681	0.0104604	0.153956
-11	0.0006478	-0.0141404	-0.0043043	-0.0531758	0.0121868	0.164868	-0.0019631	0.151993
-10	-0.0036959	-0.0178363	-0.0012825	-0.0544584	0.0072807	0.172149	0.0059322	0.157925
-9	0.0097637	-0.0080726	0.0043148	-0.0501436	0.0095312	0.181680	0.0033058	0.161231
-8	0.0064768	-0.0015957	0.0085950	-0.0415485	0.0078617	0.189542	0.0055293	0.166760
-7	-0.0008909	-0.0024867	0.0069569	-0.0345916	0.0030726	0.192614	0.0046660	0.171426
-6	-0.0041556	-0.0066422	0.0077130	-0.0268787	-0.0016474	0.190967	0.0051608	0.176587
-5	0.0091362	0.0024940	0.0037404	-0.0231382	0.0074883	0.198455	0.0007418	0.177329
-4	-0.0002210	0.0022730	-0.0057083	-0.0288465	0.0011172	0.199572	-0.0031732	0.174156
-3	0.0046039	0.0068769	-0.0078555	-0.0367020	-0.0041592	0.195413	-0.0015381	0.172618
-2	0.0097745	0.0166514	-0.0047678	-0.0414698	-0.0017531	0.193660	0.0072383	0.179856
-1	0.0023801	0.0190314	0.0030887	-0.0383811	0.0005152	0.194175	-0.0019040	0.177952
0	0.0023850	0.0214165	0.0003112	-0.0380700	0.0042737	0.198449	0.0021393	0.180091
1	-0.0058509	0.0155655	-0.0080266	-0.0460966	-0.0025456	0.195903	0.0070381	0.187129
2	-0.0035883	0.0119772	0.0012934	-0.0448032	0.0022017	0.198105	0.0009380	0.188067
3	0.0012478	0.0132250	0.0032891	-0.0415141	0.0086991	0.206804	-0.0025755	0.185492
4	0.0023218	0.0155467	0.0039783	-0.0375358	-0.0083211	0.198483	-0.0064671	0.179024
5	0.0014194	0.0169662	-0.0001408	-0.0376766	0.0065784	0.205062	0.0028746	0.181899
6	0.0029299	0.0198960	-0.0028824	-0.0405590	0.0124301	0.217492	-0.0014120	0.180487
7	-0.0007380	0.0191580	0.0023601	-0.0381989	0.0031214	0.220613	0.0064353	0.186922
8	-0.0018737	0.0172843	0.0057750	-0.0324239	-0.0105185	0.210095	0.0038861	0.190809
9	0.0038165	0.0211008	-0.0051665	-0.0375904	-0.0054868	0.204608	0.0064309	0.197239
10	-0.0004123	0.0206885	-0.0033061	-0.0408965	-0.0065142	0.198094	-0.0023477	0.194892
11	-0.0047440	0.0159445	0.0009104	-0.0399861	-0.0008888	0.197205	-0.0012751	0.193617
12	-0.0014009	0.0145437	-0.0026031	-0.0425893	-0.0016170	0.195588	-0.0000795	0.193537
13	0.0013282	0.0158718	-0.0012259	-0.0438151	-0.0041035	0.191484	0.0001771	0.193714
14	-0.0010300	0.0148418	-0.0019115	-0.0457266	-0.0023142	0.189170	0.0058980	0.199612
15	-0.0038879	0.0109539	-0.0026045	-0.0483311	0.0028818	0.192052	0.0006407	0.200253
16	-0.0053300	0.0056239	-0.0004824	-0.0488135	-0.0022306	0.189821	0.0059595	0.206212
17	-0.0046552	0.0009687	-0.0031580	-0.0519715	0.0006993	0.190521	0.0009450	0.207157
18	-0.0070613	-0.0060927	-0.0061816	-0.0581531	0.0003466	0.190867	-0.0009392	0.206218
19	0.0037061	-0.0023865	0.0072147	-0.0509385	0.0040298	0.194897	-0.0048923	0.201326
20	-0.0027404	-0.0051269	0.0038055	-0.0471329	0.0052597	0.200157	0.0000954	0.201421

Cg = Control Group

Eg = Experimental Group



**Appendix C**  
**Table C.10**  
**Market Model (MM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Foreign Ownership**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	-0.0020490	-0.0020490	-0.0084117	-0.008412	-0.0017795	-0.001780	0.0009976	0.0009976
-59	-0.0093461	-0.0113951	-0.0003632	-0.008775	-0.0112720	-0.013051	-0.0050552	-0.0040576
-58	0.0015862	-0.0098089	-0.0016765	-0.010451	-0.0031661	-0.016218	-0.0053172	-0.0093748
-57	0.0037922	-0.0060166	-0.0190474	-0.029499	-0.0003201	-0.016538	-0.0014252	-0.0108600
-56	0.0020089	-0.0040077	-0.0035691	-0.033068	-0.0002523	-0.016790	-0.0025370	-0.0133370
-55	0.0049995	0.0009917	-0.0232681	-0.056336	-0.0086151	-0.025405	-0.0051832	-0.0185202
-54	0.0170614	0.0180531	-0.0057545	-0.062091	0.0021637	-0.023241	-0.0033915	-0.0219117
-53	0.0152280	0.0332811	-0.0147325	-0.076823	-0.0029963	-0.026238	-0.0046375	-0.0265491
-52	0.0066145	0.0398956	-0.0097005	-0.086523	-0.0068301	-0.033068	0.0017247	-0.0248244
-51	0.0010153	0.0409109	-0.0047119	-0.091235	0.0024125	-0.030655	0.0060797	-0.0187447
-50	0.0013704	0.0422813	0.0084023	-0.082833	-0.0056525	-0.036308	-0.0001894	-0.0189341
-49	0.0097836	0.0520649	-0.0064099	-0.089243	0.0038044	-0.032503	-0.0009933	-0.0199275
-48	0.0051818	0.0572468	-0.0014390	-0.090682	0.0041503	-0.028353	-0.0034216	-0.0233490
-47	0.0017063	0.0589531	-0.0055936	-0.096276	0.0003274	-0.028026	0.0065142	-0.0168348
-46	-0.0077570	0.0511961	-0.0046391	-0.100915	0.0037919	-0.024234	-0.0021485	-0.0189834
-45	-0.0127015	0.0384946	-0.0074543	-0.108369	-0.0004172	-0.024651	0.0121277	-0.0068557
-44	-0.0017287	0.0367659	0.0068937	-0.101475	-0.0037911	-0.028442	-0.0014572	-0.0083129
-43	0.0056210	0.0423869	-0.0145463	-0.116022	-0.0004179	-0.028860	-0.0001672	-0.0084801
-42	0.0108051	0.0531919	0.0093659	-0.106656	-0.0010696	-0.029929	0.0063738	-0.0021063
-41	-0.0071344	0.0460576	-0.0055622	-0.112218	-0.0028180	-0.032747	0.0014744	-0.0006318
-40	-0.0006141	0.0454435	-0.0029944	-0.115212	-0.0007673	-0.033515	-0.0027306	-0.0033625
-39	-0.0015675	0.0438760	-0.0137306	-0.128943	0.0003215	-0.033193	-0.0008946	-0.0042571
-38	-0.0123547	0.0315213	-0.0008117	-0.129755	0.0108864	-0.022307	-0.0072299	-0.0114870
-37	-0.0002233	0.0312980	0.0095217	-0.120233	-0.0082195	-0.030526	-0.0022327	-0.0137196
-36	-0.0101760	0.0211220	0.0012756	-0.118957	-0.0020023	-0.032529	0.0046280	-0.0090917
-35	0.0046168	0.0257387	0.0006536	-0.118304	-0.0038732	-0.036402	-0.0012408	-0.0103324
-34	-0.0140067	0.0117321	-0.0110029	-0.129307	0.0100156	-0.026386	0.0015323	-0.0088002
-33	0.0016457	0.0133778	-0.0072956	-0.136602	0.0059961	-0.020390	-0.0024692	-0.0112693
-32	0.0008578	0.0142356	0.0026719	-0.133930	-0.0021551	-0.022545	0.0066354	-0.0046340
-31	0.0063010	0.0205366	0.0085383	-0.125392	0.0252229	0.002678	0.0165645	0.0119305
-30	-0.0046812	0.0158555	0.0050350	-0.120357	0.0012941	0.003972	-0.0020129	0.0099176
-29	-0.0052600	0.0105955	-0.0042002	-0.124557	0.0018550	0.005827	-0.0071541	0.0027635
-28	-0.0156926	-0.0050971	-0.0029134	-0.127471	-0.0028203	0.003007	0.0053029	0.0080664
-27	-0.0050385	-0.0101356	0.0048703	-0.122600	-0.0114424	-0.008436	-0.0041858	0.0038807
-26	-0.0094505	-0.0195860	-0.0063577	-0.128958	0.0016681	-0.006768	0.0054500	0.0093306
-25	0.0116314	-0.0079546	-0.0032369	-0.132195	0.0169856	0.010218	0.0108537	0.0201844
-24	0.0001384	-0.0078163	-0.0037895	-0.135984	0.0045392	0.014757	0.0166098	0.0367942
-23	-0.0005060	-0.0083222	-0.0014990	-0.137483	-0.0022473	0.012510	0.0091639	0.0459580
-22	0.0052639	-0.0030583	0.0022035	-0.135280	-0.0164943	-0.003985	-0.0020193	0.0439387
-21	-0.0001726	-0.0032309	0.0118404	-0.123440	0.0039955	0.000011	0.0050490	0.0489877
-20	0.0024320	-0.0007990	0.0046376	-0.118802	-0.0029125	-0.002901	-0.0068300	0.0421577
-19	0.0011263	0.0003273	-0.0060963	-0.124898	-0.0011434	-0.004045	0.0071362	0.0492939
-18	-0.0030059	-0.0026786	-0.0039805	-0.128879	-0.0015167	-0.005562	0.0039425	0.0532364
-17	-0.0033036	-0.0059822	-0.0056252	-0.134504	-0.0016196	-0.007181	0.0156666	0.0689030
-16	0.0026079	-0.0033743	0.0118201	-0.122684	-0.0017678	-0.008949	-0.0051477	0.0637553
-15	-0.0026842	-0.0060585	-0.0066499	-0.129334	0.0005827	-0.008366	0.0006137	0.0643690
-14	-0.0061416	-0.0122001	-0.0117244	-0.141058	-0.0066892	-0.015056	0.0132906	0.0776596
-13	-0.0014374	-0.0136374	-0.0061090	-0.147167	0.0026204	-0.012435	0.0072761	0.0849357

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-12	-0.0008892	-0.0145266	-0.0081732	-0.155340	0.0060285	-0.006407	-0.0013550	0.0835807
-11	0.0069782	-0.0075485	0.0033435	-0.151997	-0.0063047	-0.012711	-0.0010773	0.0825034
-10	0.0093087	0.0017602	-0.0074002	-0.159397	-0.0027964	-0.015508	0.0101048	0.0926083
-9	0.0036770	0.0054372	-0.0116539	-0.171051	-0.0044952	-0.020003	-0.0002781	0.0923302
-8	-0.0014759	0.0039613	-0.0023136	-0.173365	-0.0084076	-0.028410	0.0011577	0.0934879
-7	-0.0025662	0.0013951	-0.0043642	-0.177729	-0.0048232	-0.033234	-0.0064181	0.0870698
-6	0.0013350	0.0027301	0.0048705	-0.172858	-0.0049139	-0.038148	0.0002330	0.0873029
-5	-0.0002442	0.0024859	-0.0104346	-0.183293	0.0058945	-0.032253	0.0067644	0.0940673
-4	0.0031663	0.0056522	-0.0161401	-0.199433	-0.0047143	-0.036967	-0.0009831	0.0930842
-3	-0.0035918	0.0020603	-0.0084677	-0.207901	-0.0105975	-0.047565	0.0049557	0.0980399
-2	-0.0105420	-0.0084816	-0.0079537	-0.215854	-0.0019900	-0.049555	-0.0046096	0.0934303
-1	0.0040890	-0.0043926	0.0018376	-0.214017	-0.0144887	-0.064044	-0.0003425	0.0930878
0	-0.0123709	-0.0167635	0.0001295	-0.213887	-0.0138274	-0.077871	0.0045060	0.0975939
1	-0.0206449	-0.0374084	0.0054500	-0.208437	-0.0006987	-0.078570	0.0006294	0.0982233
2	-0.0011143	-0.0385227	-0.0100069	-0.218444	-0.0042067	-0.082776	-0.0016168	0.0966064
3	-0.0082730	-0.0467957	-0.0077168	-0.226161	-0.0117606	-0.094537	-0.0125909	0.0840155
4	-0.0057677	-0.0525634	-0.0079872	-0.234148	-0.0028164	-0.097353	0.0064284	0.0904439
5	0.0019304	-0.0506330	0.0039012	-0.230247	-0.0069303	-0.104284	-0.0000025	0.0904413
6	-0.0015730	-0.0522060	0.0001635	-0.230083	-0.0041208	-0.108404	-0.0037048	0.0867366
7	0.0075618	-0.0446442	0.0059930	-0.224090	-0.0013795	-0.109784	-0.0018656	0.0848710
8	0.0036229	-0.0410213	-0.0106781	-0.234769	0.0024449	-0.107339	-0.0006957	0.0841753
9	0.0048146	-0.0362067	0.0044479	-0.230321	-0.0060917	-0.113431	-0.0031001	0.0810752
10	-0.0011537	-0.0373604	0.0035583	-0.226762	-0.0041755	-0.117606	-0.0060774	0.0749977
11	-0.0001234	-0.0374838	-0.0059160	-0.232678	-0.0057254	-0.123332	0.0035785	0.0785763
12	-0.0045771	-0.0420608	-0.0062583	-0.238937	0.0067275	-0.116604	-0.0011448	0.0774315
13	-0.0012496	-0.0433104	-0.0084794	-0.247416	0.0020601	-0.114544	-0.0046817	0.0727498
14	0.0025179	-0.0407925	0.0133450	-0.234071	-0.0034564	-0.118000	0.0015812	0.0743310
15	-0.0004729	-0.0412654	0.0023044	-0.231767	0.0042393	-0.113761	0.0005166	0.0748477
16	-0.0021731	-0.0434385	-0.0020775	-0.233844	-0.0025569	-0.116318	0.0019227	0.0767703
17	-0.0026423	-0.0460809	0.0183676	-0.215477	0.0011967	-0.115121	-0.0056842	0.0710861
18	0.0000910	-0.0459899	-0.0024826	-0.217959	-0.0014519	-0.116573	0.0066592	0.0777453
19	0.0052842	-0.0407057	-0.0073958	-0.225355	-0.0025342	-0.119108	0.0032442	0.0809895
20	0.0077798	-0.0329258	-0.0036268	-0.228982	-0.0019374	-0.121045	-0.0066644	0.0743251

Cg = Control Group

Eg = Experimental Group

**Appendix C**  
**Table C.11**  
**Market Model (MM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Winner Firms**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	0.0023202	0.0023202	-0.0000244	-0.000024	-0.005099	-0.005099	0.001797	0.001797
-59	0.0001683	0.0024885	0.0020516	0.002027	-0.00145	-0.006549	0.0016607	0.0034577
-58	0.0027676	0.0052561	-0.0037944	-0.001767	0.006682	0.000133	-0.0032078	0.0002499
-57	0.0043184	0.0095745	-0.014662	-0.016429	-0.0003064	-0.0001734	-0.0023965	-0.002147
-56	0.0010689	0.0106434	0.004441	-0.011988	0.0037423	0.0035689	-0.0020466	-0.004193
-55	0.008125	0.0187684	-0.0067371	-0.018725	0.0012382	0.0048071	-0.0031364	-0.00733
-54	0.0072192	0.0259876	-0.0057929	-0.024518	0.0037775	0.0085846	-0.0015273	-0.008857
-53	0.0055305	0.0315181	-0.0069576	-0.031476	0.0030693	0.011654	-0.0058103	-0.014667
-52	0.0065872	0.0381052	-0.0022301	-0.033706	0.0007213	0.0123753	0.0037636	-0.010904
-51	0.0031898	0.0412951	-0.0029361	-0.036642	0.0060172	0.0183926	-0.0003926	-0.011296
-50	0.0052836	0.0465787	0.0022643	-0.034378	-0.0028684	0.0155242	0.0000142	-0.011282
-49	0.004665	0.0512436	-0.0077579	-0.042136	0.000027	0.0155512	-0.0053992	-0.016681
-48	-0.000669	0.0505743	0.0026559	-0.03948	0.0012272	0.0167784	0.0019262	-0.014755
-47	-0.001757	0.0488171	-0.0020747	-0.041554	0.0038008	0.0205791	0.0024876	-0.012267
-46	-0.003245	0.0455721	-0.0005088	-0.042063	-0.0044652	0.016114	-0.0020823	-0.01435
-45	-0.004838	0.0407345	-0.0092679	-0.051331	-0.0000428	0.0160711	0.002716	-0.011634
-44	-0.006669	0.0340654	0.0052559	-0.046075	-0.0035294	0.0125417	0.0009106	-0.010723
-43	0.0010642	0.0351297	-0.0054865	-0.051562	0.0050102	0.017552	-0.003871	-0.014594
-42	0.0056242	0.0407538	-0.0027535	-0.054315	0.0023569	0.0199089	0.0066066	-0.007987
-41	-0.002819	0.0379346	-0.009198	-0.063513	0.001539	0.0214479	0.004676	-0.003311
-40	-0.003066	0.034869	-0.0026825	-0.066196	0.0022095	0.0236573	0.0072724	0.003961
-39	0.0030344	0.0379034	-0.0100827	-0.076278	0.0048635	0.0285209	0.0027145	0.0066755
-38	-0.007983	0.0299208	-0.0009784	-0.077257	0.0088287	0.0373495	0.0057923	0.0124679
-37	-0.001393	0.0285282	-0.0017937	-0.079051	-0.0048576	0.0324919	0.0010696	0.0135374
-36	-0.0016	0.0269282	-0.0012273	-0.080278	-0.0020279	0.0304641	0.0015228	0.0150602
-35	0.0031659	0.030094	-0.0075842	-0.087862	-0.0063172	0.0241468	0.0021913	0.0172516
-34	-0.015584	0.0145101	-0.0059136	-0.093776	0.0042863	0.0284331	0.0069321	0.0241837
-33	-0.002841	0.0116691	-0.001686	-0.095461	0.0060376	0.0344708	0.0050651	0.0292488
-32	-0.001168	0.0105014	-0.0037741	-0.099236	0.0052107	0.0396815	0.0029318	0.0321806
-31	0.0021161	0.0126175	0.0010832	-0.098152	0.0154648	0.0551463	0.003327	0.0355076
-30	0.0000908	0.0127083	0.0055173	-0.092635	-0.0031195	0.0520268	-0.002399	0.0331086
-29	-0.003494	0.0092144	-0.0064207	-0.099056	0.0012546	0.0532814	-0.0048829	0.0282257
-28	-0.002008	0.0072061	0.0004889	-0.098567	-0.0002833	0.052998	0.0050929	0.0333186
-27	-0.001876	0.00533	0.0002117	-0.098355	-0.0032689	0.0497291	-0.0061126	0.027206
-26	-0.008807	-0.0034765	-0.0007106	-0.099066	0.0031391	0.0528683	0.0018045	0.0290104
-25	-0.003595	-0.007071	-0.0042802	-0.103346	0.0071074	0.0599757	0.0067975	0.0358079
-24	-0.004959	-0.0120302	-0.0099049	-0.113251	0.0035395	0.0635152	0.0058431	0.0416511
-23	-0.004236	-0.0162663	-0.0090677	-0.122319	0.0018994	0.0654146	0.0067323	0.0483834
-22	-0.005948	-0.0222139	0.0041413	-0.118177	-0.0066176	0.058797	-0.0061038	0.0422796
-21	0.0008482	-0.0213656	0.0054042	-0.112773	-0.0003523	0.0584447	0.0004588	0.0427384
-20	0.0016952	-0.0196704	0.0034591	-0.109314	0.001884	0.0603288	-0.0073988	0.0353396
-19	0.0013079	-0.0183625	-0.0006685	-0.109982	0.0041303	0.0644591	-0.0041675	0.0311722
-18	-0.002738	-0.0211006	0.0000332	-0.109949	-0.0026104	0.0618487	-0.002798	0.0283742
-17	-0.004442	-0.0255421	-0.0083904	-0.11834	-0.0016424	0.0602063	0.0093149	0.0376891
-16	0.0089249	-0.0166172	0.0015961	-0.116744	-0.0006719	0.0595344	0.0016975	0.0393866
-15	-0.006511	-0.0231286	-0.0031395	-0.119883	0.0005503	0.0600847	0.0033092	0.0426957
-14	-0.0001	-0.0232287	-0.0057114	-0.125595	-0.0038382	0.0562464	0.0036089	0.0463046
-13	-0.004557	-0.0277855	-0.0029037	-0.128498	0.0007956	0.057042	0.0066649	0.0529696

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-12	-0.006984	-0.0347697	-0.0039152	-0.132413	0.0004355	0.0574775	0.0042106	0.0571801
-11	0.0043912	-0.0303786	0.0000236	-0.13239	0.0070615	0.0645391	-0.0046329	0.0525472
-10	0.0006486	-0.02973	-0.0062966	-0.138686	0.0004099	0.0649489	0.0009661	0.0535133
-9	0.0070372	-0.0226928	-0.0004135	-0.1391	0.0021584	0.0671073	0.0011467	0.0546599
-8	0.0059506	-0.0167422	-0.0012303	-0.14033	-0.0000096	0.0670977	-0.0017958	0.0528641
-7	-0.001123	-0.0178648	0.0013195	-0.139011	-0.001176	0.0659217	-0.0001546	0.0527095
-6	-0.002163	-0.0200282	0.005921	-0.13309	-0.0011669	0.0647549	0.0047771	0.0574866
-5	0.0073087	-0.0127195	-0.0066487	-0.139738	0.0063804	0.0711353	-0.0005964	0.0568902
-4	0.0014983	-0.0112212	-0.0120405	-0.151779	-0.0005187	0.0706166	-0.004068	0.0528222
-3	0.0011437	-0.0100775	-0.002534	-0.154313	-0.0058324	0.0647841	0.0002179	0.0530401
-2	0.0016221	-0.0084554	-0.0014058	-0.155719	-0.0022606	0.0625236	-0.0017922	0.0512479
-1	0.0032084	-0.0052469	0.0013738	-0.154345	-0.0024356	0.0600879	-0.0018492	0.0493986
0	-0.001932	-0.0071792	0.0032867	-0.151058	-0.0022434	0.0578446	-0.0008308	0.0485679
1	-0.011408	-0.018587	-0.0014846	-0.152543	-0.0018221	0.0560225	0.001476	0.0500439
2	-0.003961	-0.0225483	-0.0022689	-0.154812	-0.0027664	0.0532561	0.0019743	0.0520181
3	-0.003464	-0.0260119	-0.0015611	-0.156373	-0.0001085	0.0531476	-0.0051726	0.0468456
4	0.0013935	-0.0246184	-0.0044001	-0.160773	-0.0025926	0.050555	-0.0032344	0.0436112
5	0.0019211	-0.0226973	0.0032692	-0.157504	0.0026309	0.0531858	0.0023043	0.0459155
6	-0.000441	-0.0231385	-0.0026609	-0.160165	0.0083196	0.0615054	-0.0005472	0.0453683
7	0.0018132	-0.0213253	0.0057225	-0.154442	0.0026925	0.0641979	0.0076972	0.0530656
8	0.0016351	-0.0196903	-0.0021776	-0.15662	-0.002239	0.0619589	0.0007942	0.0538598
9	0.0060425	-0.0136478	-0.001632	-0.158252	-0.0060062	0.0559527	-0.0006499	0.0532098
10	0.000291	-0.0133568	-0.0024662	-0.160718	-0.0070739	0.0488788	-0.0028832	0.0503266
11	-0.004222	-0.0175788	-0.003832	-0.16455	-0.0027286	0.0461502	0.0005496	0.0508762
12	-0.003536	-0.0211152	-0.0048988	-0.169449	0.0031618	0.049312	-0.0021779	0.0486983
13	-0.000528	-0.0216431	-0.001443	-0.170892	-0.0014807	0.0478313	-0.0038785	0.0448198
14	0.0026189	-0.0190242	0.0041739	-0.166718	-0.0019759	0.0458555	0.0058817	0.0507014
15	-0.00336	-0.0223846	-0.0004172	-0.167135	0.0032242	0.0490796	-0.0003658	0.0503356
16	-0.001365	-0.0237499	-0.0012333	-0.168368	-0.0025849	0.0464947	0.0071686	0.0575042
17	-0.002306	-0.0260556	0.0049849	-0.163383	0.0010449	0.0475396	-0.0033332	0.054171
18	-0.004703	-0.030759	-0.0034105	-0.166794	-0.0005914	0.0469483	0.0010172	0.0551882
19	0.0024132	-0.0283457	-0.0007771	-0.167571	-0.0011145	0.0458338	-0.0007972	0.054391
20	0.0014238	-0.0269219	-0.0003837	-0.167955	-0.0002913	0.0455425	-0.0006105	0.05378

Cg = Control Group

Eg = Experimental Group

**Appendix C**  
**Table C.12**  
**Market Model (MM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Loser Firms**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	0.0135129	0.013513	-0.0157951	-0.015795	-0.0077694	-0.007769	-0.000102	-0.000102
-59	0.0108894	0.024402	-0.011984	-0.027779	-0.0066379	-0.014407	0.0057521	0.00565
-58	0.0075248	0.031927	-0.0114929	-0.039272	-0.023278	-0.037685	-0.003262	0.002388
-57	0.0015276	0.033455	-0.0182811	-0.057553	0.026841	-0.010844	0.0057747	0.008163
-56	-0.0071243	0.02633	0.0011602	-0.056393	0.0170082	0.006164	0.0001203	0.008283
-55	0.0240496	0.05038	0.0056246	-0.050768	0.0110651	0.017229	0.0061541	0.014437
-54	0.0128007	0.063181	0.0103389	-0.040429	0.0112139	0.028443	-0.013144	0.001293
-53	-0.0114613	0.051719	0.0044555	-0.035974	0.0486363	0.077079	0.002607	0.0039
-52	-0.0158705	0.035849	0.0032305	-0.032743	-0.0072828	0.069796	0.0112995	0.0152
-51	0.0059446	0.041793	-0.0001439	-0.032887	0.0083732	0.078169	0.0019305	0.01713
-50	-0.0186016	0.023192	0.013953	-0.018934	0.0235468	0.101716	0.002771	0.019901
-49	-0.0214634	0.001728	0.0038901	-0.015044	0.0267405	0.128457	-0.0046247	0.015276
-48	-0.0271846	-0.025456	0.0125178	-0.002526	0.0250919	0.153549	0.001048	0.016324
-47	-0.0137185	-0.039175	-0.0091831	-0.011709	0.0170155	0.170564	0.0128781	0.029203
-46	0.0047855	-0.034389	-0.0076288	-0.019338	0.0230448	0.193609	-0.0067855	0.022417
-45	-0.01052	-0.044909	0.011107	-0.008231	0.0179806	0.21159	0.0081604	0.030577
-44	0.0010505	-0.043859	0.005337	-0.002894	0.0117813	0.223371	0.005102	0.035679
-43	-0.0028765	-0.046735	-0.0294576	-0.032352	-0.007479	0.215892	0.0149865	0.050666
-42	-0.0098198	-0.056555	0.0116876	-0.020664	0.0098754	0.225767	0.0159052	0.066571
-41	-0.0124258	-0.068981	0.0216544	0.0009901	0.0258286	0.251596	0.0180655	0.084637
-40	0.0239813	-0.045	0.003686	0.0046762	-0.0223782	0.229218	0.0112707	0.095907
-39	0.0190827	-0.025917	0.0010184	0.0056946	-0.0151548	0.214063	-0.0089755	0.086932
-38	-0.0034498	-0.029367	0.0152652	0.0209598	0.0284072	0.24247	0.0217868	0.108719
-37	0.0193092	-0.010057	-0.0021328	0.018827	0.0153744	0.257845	0.0114868	0.120205
-36	0.0225447	0.012487	0.0126128	0.0314399	0.010855	0.2687	0.0146411	0.134847
-35	0.0293122	0.0418	0.0058148	0.0372547	0.0091511	0.277851	0.002354	0.137201
-34	0.0323451	0.074145	-0.0114124	0.0258422	-0.0161477	0.261703	0.0207258	0.157926
-33	0.0444202	0.118565	-0.0023277	0.0235146	0.0004821	0.262185	-0.0042371	0.153689
-32	0.0195328	0.138098	-0.0008814	0.0226332	-0.0148428	0.247342	-0.0014963	0.152193
-31	0.0007989	0.138897	0.000267	0.0229002	0.006347	0.253689	0.0130788	0.165272
-30	-0.0097761	0.12912	-0.0042131	0.0186872	0.0234155	0.277105	-0.000477	0.164795
-29	-0.0153622	0.113758	-0.0033007	0.0153865	-0.0000759	0.277029	0.0098093	0.174604
-28	-0.0017904	0.111968	-0.0126239	0.0027626	-0.0096963	0.267333	0.0075508	0.182155
-27	0.0036601	0.115628	0.0017944	0.004557	-0.0025247	0.264808	0.0005788	0.182734
-26	-0.0049578	0.11067	-0.0110143	-0.006457	-0.0042993	0.260509	-0.0003997	0.182334
-25	0.0220831	0.132753	-0.0143434	-0.020801	0.0086855	0.269194	0.0031422	0.185476
-24	-0.0011796	0.131574	-0.0136205	-0.034421	-0.0078018	0.261392	-0.003168	0.182308
-23	-0.0132649	0.118309	0.0220105	-0.012411	0.0065102	0.267903	0.0122418	0.19455
-22	-0.002782	0.115527	0.0009383	-0.011472	0.0084682	0.276371	0.0185096	0.21306
-21	-0.0034651	0.112061	0.0104616	-0.001011	0.0076265	0.283997	0.0071698	0.220229
-20	0.0005472	0.112609	0.0114153	0.0104046	-0.0196417	0.264356	0.0048513	0.225081
-19	-0.0029957	0.109613	0.002514	0.0129186	0.0092095	0.273565	0.0093495	0.23443
-18	0.0244226	0.134036	-0.02652	-0.013601	0.0109575	0.284523	0.0163226	0.250753
-17	0.0262002	0.160236	0.0208064	0.007205	0.0267953	0.311318	0.0241861	0.274939
-16	0.023994	0.18423	0.0000377	0.0072427	-0.018875	0.292443	0.0166688	0.291608
-15	-0.0030733	0.181157	-0.002452	0.0047907	-0.0274485	0.319891	0.029886	0.321494
-14	-0.0129364	0.16822	0.0083366	0.0131272	0.0198183	0.33971	0.0039404	0.325434
-13	-0.0224504	0.14577	0.0073208	0.020448	0.0242311	0.363941	0.0121302	0.337564

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-12	-0.0099116	0.135858	-0.0019295	0.0185185	0.0255036	0.389444	0.014489	0.352053
-11	-0.0084365	0.127422	-0.0109671	0.0075514	-0.0048479	0.384596	0.0068822	0.358936
-10	0.002734	0.130156	0.0062421	0.0137935	0.0285807	0.413177	0.0260645	0.385
-9	0.0119527	0.142108	-0.0024247	0.0113688	0.0227481	0.435925	0.0040287	0.389029
-8	-0.0134346	0.128674	0.0312138	0.0425826	0.0180887	0.454014	0.0243094	0.413338
-7	-0.0041791	0.124495	0.0084801	0.0510627	0.0112494	0.465263	0.0090916	0.42243
-6	-0.0026254	0.121869	0.0111568	0.0622195	-0.0150506	0.450213	0.0033452	0.425775
-5	-0.0052983	0.116571	0.0139187	0.0761382	0.0110162	0.461229	0.0109863	0.436761
-4	-0.0029537	0.113617	-0.0031402	0.0729981	-0.004108	0.457121	-0.0012184	0.435543
-3	0.0059679	0.119585	-0.0186067	0.0543913	-0.0109244	0.446196	0.0041096	0.439652
-2	0.009968	0.129553	-0.0201849	0.0342064	0.0013424	0.447539	0.0169861	0.456639
-1	0.0012941	0.130847	0.006783	0.0409893	-0.0223653	0.425174	-0.0016323	0.455006
0	-0.0095028	0.121344	-0.0016318	0.0393575	-0.0011513	0.424022	0.0093277	0.464334
1	-0.008556	0.112788	-0.0108365	0.028521	-0.0024314	0.421591	0.0156069	0.479941
2	0.006631	0.119419	-0.0047388	0.0237822	0.0202375	0.441828	-0.0040771	0.475864
3	0.0080201	0.127439	-0.0030721	0.0207101	0.0133767	0.455205	-0.0088718	0.466992
4	-0.0149844	0.112455	0.0151993	0.0359094	-0.0347701	0.420435	-0.002206	0.464786
5	-0.0008104	0.111645	-0.0052585	0.0306509	-0.0043412	0.416094	-0.0011648	0.463621
6	0.0147044	0.126349	0.0010293	0.0316802	-0.0063935	0.4097	-0.0077962	0.455825
7	0.0050276	0.131377	-0.0053111	0.0263691	-0.0071645	0.402536	-0.0043839	0.451441
8	-0.0116999	0.119677	0.0069634	0.0333325	-0.0337244	0.368811	0.0067063	0.458147
9	-0.0098838	0.109793	-0.0080718	0.0252607	-0.0034063	0.365405	0.0138302	0.471978
10	-0.0079112	0.101882	-0.0045482	0.0207126	0.0046997	0.370105	-0.005724	0.466254
11	0.0052033	0.107085	0.0018846	0.0225971	-0.0016008	0.368504	-0.0011798	0.465074
12	0.0050866	0.112172	-0.0033701	0.019227	-0.0124243	0.35608	0.0115718	0.476645
13	0.0075156	0.119687	-0.0106509	0.0085762	-0.0052834	0.350796	0.0056875	0.482333
14	-0.0177533	0.101934	0.0004437	0.0090198	-0.0082785	0.342518	0.0016596	0.483993
15	0.0024009	0.104335	-0.0016239	0.007396	0.0043866	0.346904	0.0016437	0.485636
16	-0.025595	0.07874	0.0008441	0.0082401	-0.0005527	0.346352	0.0005897	0.486226
17	-0.0162376	0.062502	-0.00348	0.0047601	-0.0004005	0.345951	0.0039013	0.490127
18	-0.003289	0.059213	-0.0106094	-0.005849	0.0019856	0.347937	-0.0007128	0.489415
19	0.0181371	0.07735	0.0142655	0.0084161	0.0229196	0.370856	-0.0078585	0.481556
20	-0.002411	0.074939	0.0069776	0.0153937	0.025301	0.396157	-0.0015866	0.479969

Cg = Control Group

Eg = Experimental Group



## APPENDIX D

**Table D.1**  
**Average Return Model (ARM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**All Sectors (Study Sample)**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	0.0062093	0.0062093	-0.002151	-0.002151	-0.005976	-0.005976	0.0040417	0.004042
-59	0.0022714	0.0084807	-0.001131	-0.003282	-0.001186	-0.007162	0.0056975	0.009739
-58	0.0042206	0.0127013	-0.002647	-0.00593	0.0036141	-0.003548	0.0005136	0.010253
-57	0.0041819	0.0168832	-0.013877	-0.019807	0.0023424	-0.001206	0.0024368	0.01269
-56	-0.00001	0.0168735	0.0051192	-0.014688	0.0046009	0.003395	0.0007793	0.013469
-55	0.010044	0.0269175	-0.002764	-0.017452	0.0016506	0.005046	0.0020279	0.015497
-54	0.0074831	0.0344006	0.0002046	-0.017247	0.0042455	0.009291	0.0019083	0.017405
-53	0.0037371	0.0381377	-0.003346	-0.020593	0.0068473	0.016138	0.0010987	0.018504
-52	0.0047628	0.0429005	-0.000323	-0.020916	-0.0001	0.016038	0.0076427	0.026147
-51	0.0038567	0.0467572	-0.000889	-0.021805	0.0078432	0.023882	0.0014491	0.027596
-50	0.0033897	0.0501469	0.0059426	-0.015862	0.0012774	0.025159	0.0045143	0.03211
-49	0.0022189	0.0523658	-0.003415	-0.019277	0.0036627	0.028822	-0.000572	0.031538
-48	-0.003722	0.0486434	0.0058708	-0.013406	0.0046865	0.033508	0.004563	0.036101
-47	-0.002354	0.0462897	-0.002309	-0.015715	0.008089	0.041597	0.0074225	0.043523
-46	-0.002434	0.0438557	-0.001176	-0.016891	0.0021132	0.04371	0.0000584	0.043582
-45	-0.005336	0.0385199	-0.003162	-0.020053	0.0040944	0.047805	0.0068092	0.050391
-44	-0.004734	0.0337861	0.0063131	-0.01374	0.0006252	0.04843	0.0059739	0.056365
-43	0.0013269	0.035113	-0.011204	-0.024944	0.0040722	0.052502	0.0054618	0.061826
-42	0.0046155	0.0397285	0.0016231	-0.023321	0.0041601	0.056662	0.0124231	0.07425
-41	-0.001107	0.0386213	0.0009115	-0.022409	0.0066045	0.063267	0.0096281	0.083878
-40	0.0005992	0.0392205	-0.000255	-0.022664	0.0022829	0.06555	0.0085702	0.092448
-39	0.0057356	0.0449561	-0.005727	-0.028392	0.0036707	0.06922	0.0021765	0.094624
-38	-0.006424	0.038532	0.0039055	-0.024486	0.0104034	0.079624	0.0120371	0.106661
-37	0.0019046	0.0404366	0.0010101	-0.023476	-0.003118	0.076506	0.0056538	0.112315
-36	0.0027744	0.043211	0.0039065	-0.01957	0.0012048	0.077711	0.004144	0.116459
-35	0.0079244	0.0511354	-0.002449	-0.022019	-0.002764	0.074947	0.001502	0.117961
-34	-0.009886	0.0412499	-0.005983	-0.028002	0.0053116	0.080259	0.0105404	0.128502
-33	0.0036146	0.0448646	-0.000454	-0.028456	0.0075352	0.087794	0.0052968	0.133798
-32	0.0028626	0.0477271	-0.002092	-0.030548	0.004808	0.092602	0.0037817	0.13758
-31	0.003108	0.0508351	0.0015949	-0.028953	0.0154262	0.108028	0.0067569	0.144337
-30	-0.000119	0.0507163	0.0056984	-0.023255	0.0016443	0.109672	-0.003065	0.141272
-29	-0.004193	0.0465233	-0.003706	-0.02696	0.0042165	0.113889	0.000484	0.141756
-28	-0.001592	0.0449313	-0.000967	-0.027927	-0.001272	0.112617	0.0078347	0.149591
-27	-0.000395	0.0445364	0.0034875	-0.02444	-0.004421	0.108196	-0.000151	0.149439
-26	-0.007608	0.0369286	-0.000651	-0.02509	0.0009823	0.109178	0.0027728	0.152212
-25	0.0009153	0.0378439	-0.004129	-0.029219	0.0073067	0.116485	0.0052647	0.157477
-24	-0.00246	0.0353837	-0.008878	-0.038097	0.0030618	0.119547	0.0031442	0.160621
-23	-0.004831	0.0305525	-0.000061	-0.038157	0.0025719	0.122118	0.0096804	0.170301
-22	-0.004799	0.0257532	0.0061438	-0.032013	-0.006054	0.116065	0.0011711	0.171472

Days	AAR Cg 1990	CAR Cg 1990	AAK Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-21	0.0012356	0.0269889	0.0079621	-0.024051	-0.000389	0.115676	0.0019351	0.173408
-20	0.0015246	0.0285135	0.0074106	-0.016641	-0.001137	0.114539	-0.00525	0.168157
-19	0.0021196	0.0306331	0.0022012	-0.014439	0.0052779	0.119817	-0.000018	0.16814
-18	0.0011651	0.0317982	-0.004221	-0.018661	-0.000208	0.119609	0.0036017	0.171741
-17	-0.000287	0.0315111	-0.000257	-0.018918	0.0011827	0.120792	0.0151464	0.186888
-16	0.0117668	0.0432779	0.0019822	-0.016935	-0.003293	0.117499	0.0062584	0.193146
-15	-0.005213	0.038065	-0.000837	-0.017772	0.0046039	0.122103	0.0098644	0.20301
-14	-0.000675	0.03739	-0.000191	-0.017963	-0.000564	0.121539	0.0033407	0.206351
-13	-0.005044	0.0323463	0.0025932	-0.01537	0.0049297	0.126469	0.0067574	0.213108
-12	-0.006423	0.0259235	-0.00114	-0.01651	0.0026672	0.129136	0.007859	0.220968
-11	0.0033276	0.0292511	-0.001575	-0.018085	0.0058707	0.135007	-0.000846	0.220121
-10	0.0017842	0.0310353	-0.001051	-0.019136	0.0023376	0.137344	0.0075925	0.227714
-9	0.0084403	0.0394757	0.0015042	-0.017632	0.0048726	0.142217	0.0015662	0.22928
-8	0.0040962	0.0435719	0.0094716	-0.00816	0.001707	0.143924	0.0049949	0.234275
-7	-0.001429	0.0421427	0.0048086	-0.003351	-0.001013	0.142911	0.0031514	0.237426
-6	-0.00161	0.0405332	0.008978	0.0056266	-0.00337	0.139541	0.0049432	0.24237
-5	0.0063475	0.0468807	0.0007551	0.0063817	0.0061003	0.145642	0.0017155	0.244085
-4	0.0024691	0.0493498	-0.0078	-0.001418	0.000047	0.145689	-0.003586	0.240499
-3	0.0020999	0.0514497	-0.004308	-0.005727	-0.00515	0.140539	-0.000098	0.240401
-2	0.0025122	0.0539618	-0.003212	-0.008938	-0.00096	0.139579	0.0033657	0.243767
-1	0.0041543	0.0581162	0.0035852	-0.005353	-0.004534	0.135045	-0.000728	0.243039
0	-0.000238	0.0578781	0.0043493	-0.001004	-0.002976	0.132069	0.0031054	0.246144
1	-0.009797	0.0480813	-0.001445	-0.002449	-0.002532	0.129537	0.0044849	0.250629
2	-0.002246	0.0458348	-0.000329	-0.002778	0.0001722	0.12971	0.000454	0.251083
3	-0.002129	0.0437056	-0.000997	-0.003775	0.0023972	0.132107	-0.005177	0.245906
4	-0.000402	0.0433041	0.0010659	-0.002709	-0.007239	0.124868	-0.002582	0.243324
5	0.0022618	0.0455659	0.0028946	0.0001853	0.0015278	0.126396	0.0006526	0.243976
6	0.0008212	0.0463871	0.0012165	0.0014017	0.0066748	0.133071	-0.002815	0.241161
7	0.0024419	0.048829	0.0054736	0.0068753	0.0015954	0.134666	0.0050489	0.24621
8	0.0010499	0.0498789	0.0010595	0.0079348	-0.005883	0.128783	0.0025915	0.248802
9	0.0045959	0.0544747	-0.002397	0.0055382	-0.006176	0.122608	0.0030017	0.251803
10	0.000257	0.0547317	-0.001361	0.0041775	-0.005449	0.117159	-0.003976	0.247827
11	-0.00187	0.0528621	0.0004104	0.004588	-0.003148	0.114012	-0.000006	0.247821
12	-0.001827	0.0510351	-0.002053	0.0025347	0.0005002	0.114512	0.0007943	0.248615
13	0.0002922	0.0513272	-0.002054	0.000481	-0.003042	0.11147	-0.001852	0.246763
14	0.0012068	0.052534	0.0056497	0.0061307	-0.003201	0.108269	0.0060747	0.252838
15	-0.002464	0.05007	0.0012075	0.0073382	0.0028965	0.111166	-0.000311	0.252527
16	-0.003669	0.0464014	0.0014817	0.0088199	-0.002138	0.109028	0.0059279	0.258455
17	-0.003348	0.0430537	0.0045436	0.0133635	0.0018633	0.110891	-0.001719	0.256736
18	-0.004693	0.0383608	-0.003895	0.009469	-0.000958	0.109933	0.0000129	0.256749
19	0.0042929	0.0426537	0.0045163	0.0139854	0.0012306	0.111164	-0.002135	0.254613
20	0.0009492	0.0436029	0.0030088	0.0169942	0.0027764	0.11394	0.0001401	0.254754

Cg = Control group

Eg = Experimental group



**Appendix D Table D.2**  
**Average Return Model (ARM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Financial Sector**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	-0.00297	-0.00298	-0.0006	-0.0006	-0.00474	-0.00474	0.002516	0.002516
-59	0.003372	0.000397	-0.00551	-0.00611	0.005726	0.00099	-0.00129	0.001231
-58	0.001755	0.002151	0.00442	-0.00169	-0.00052	0.000473	0.003014	0.004246
-57	-0.00935	-0.0072	-0.01618	-0.01787	-0.00674	-0.00627	-0.0001	0.004146
-56	0.021057	0.01386	0.001666	-0.0162	-0.00191	-0.00817	0.002964	0.00711
-55	0.015262	0.029122	-0.00728	-0.02349	0.001168	-0.007	0.001503	0.008613
-54	0.014797	0.043918	0.005135	-0.01835	0.001938	-0.00507	0.001737	0.01035
-53	0.014777	0.058695	0.000954	-0.0174	-0.00119	-0.00625	0.005939	0.016289
-52	0.015494	0.074189	-0.00519	-0.02259	-0.00663	-0.01288	0.005491	0.02178
-51	0.010825	0.085014	-0.00778	-0.03037	0.000379	-0.0125	0.011401	0.033181
-50	0.015012	0.100026	0.002337	-0.02803	-0.0072	-0.0197	0.001938	0.035118
-49	0.030426	0.130452	-0.00091	-0.02894	0.007456	-0.01224	0.008824	0.043942
-48	-0.00308	0.127374	0.004134	-0.02481	-0.00059	-0.01283	-0.00809	0.035851
-47	0.0059	0.133274	-0.00424	-0.02905	-0.0007	-0.01354	0.00773	0.043582
-46	-0.03179	0.101483	0.005541	-0.02351	0.006054	-0.00748	-0.01061	0.032971
-45	-0.01837	0.083114	0.006458	-0.01705	-0.00257	-0.01005	0.012729	0.0457
-44	-0.00656	0.076553	0.003882	-0.01317	0.00056	-0.00949	-0.00436	0.041341
-43	0.010536	0.087088	-0.00439	-0.01755	0.000788	-0.0087	0.008292	0.049633
-42	0.018782	0.10587	0.003421	-0.01413	0.00533	-0.00338	0.00971	0.059342
-41	-0.00585	0.100018	0.005974	-0.00816	-0.01071	-0.01408	0.006123	0.065465
-40	0.002322	0.10234	-0.00394	-0.01209	-0.003	-0.01708	0.00688	0.072345
-39	-0.01346	0.088882	0.002863	-0.00923	0.001692	-0.01539	-0.00112	0.071222
-38	-0.00744	0.081445	0.000338	-0.00889	-0.00464	-0.02003	0.012935	0.084157
-37	0.017917	0.099362	0.007695	-0.0012	0.003177	-0.01685	-0.00621	0.077949
-36	0.006687	0.106049	0.013151	0.011953	0.00074	-0.01611	0.004361	0.08231
-35	0.00352	0.109569	0.00621	0.018162	-0.00466	-0.02077	-0.00504	0.077268
-34	-0.01372	0.095853	-0.00777	0.01039	0.035465	0.014691	0.00087	0.078137
-33	-0.00993	0.085923	-0.00203	0.008361	0.030609	0.0453	0.00695	0.085087
-32	0.000537	0.086461	0.00391	0.012271	0.023755	0.069055	-0.00527	0.07982
-31	0.020539	0.107	0.009291	0.021562	0.038248	0.107303	0.012308	0.092129
-30	-0.00784	0.099158	0.012983	0.034545	-0.00117	0.10613	-0.01642	0.075705
-29	-0.00241	0.09675	0.000593	0.035137	-0.00195	0.104175	0.001422	0.077127
-28	-0.00386	0.092891	-0.00305	0.032087	-0.00756	0.09662	0.009518	0.086645
-27	0.001998	0.094889	-0.0041	0.027988	-0.01873	0.077885	0.002507	0.089152
-26	-0.00167	0.093221	-0.00145	0.026541	-0.00884	0.069045	-0.00434	0.084816
-25	0.008338	0.10156	-0.00356	0.022978	0.033707	0.102752	-0.00363	0.081183
-24	-0.00446	0.097096	-0.00306	0.019919	0.004571	0.107323	0.001856	0.083039
-23	0.00153	0.098626	0.005175	0.025094	-0.00314	0.10418	0.009899	0.092938
-22	-0.00064	0.097989	-0.00669	0.018407	-0.02826	0.075917	0.005908	0.098846
-21	0.000925	0.098914	0.010563	0.02897	-0.00005	0.075866	-0.00113	0.09772

Days	AAK Cg 1990	CAR Cg 1990	AAK Eg 1990	CAR Eg 1990	AAK Cg 1991	CAR Cg 1991	AAK Eg 1991	CAR Eg 1991
-20	0.00203	0.100944	-0.00085	0.028118	-0.00014	0.075722	-0.02191	0.075807
-19	0.00312	0.104064	-0.00488	0.023236	-0.00555	0.070169	0.002835	0.078642
-18	0.000245	0.104308	0.001446	0.024682	0.000954	0.071122	0.00294	0.081582
-17	0.002973	0.107282	0.00296	0.027641	-0.01386	0.057266	0.031123	0.112705
-16	0.000164	0.107446	0.018463	0.046104	-0.00213	0.055132	0.004377	0.117081
-15	-0.00724	0.100202	-0.0089	0.037202	-0.0021	0.053033	0.000331	0.117412
-14	-0.03314	0.067063	-0.01304	0.024164	0.003306	0.056338	-0.00478	0.112637
-13	0.000597	0.067659	-0.00176	0.022402	0.00467	0.061008	0.001786	0.114423
-12	0.003166	0.070825	0.00104	0.023442	0.0137	0.074708	-0.00049	0.113933
-11	0.01595	0.086775	-0.00048	0.022965	-0.00108	0.07363	0.000434	0.114367
-10	0.016488	0.103263	0.003145	0.02611	-0.01405	0.059576	0.006745	0.121112
-9	-0.00513	0.098134	0.00478	0.03089	-0.00331	0.056266	0.000708	0.12182
-8	0.005798	0.103933	0.004572	0.035461	-0.01268	0.043582	0.018739	0.140559
-7	-0.00341	0.100524	-0.00702	0.028445	-0.00162	0.041966	0.011317	0.151876
-6	-0.00662	0.093907	0.00314	0.031585	-0.0035	0.038468	0.000019	0.151895
-5	0.011867	0.105774	-0.00818	0.023409	-0.00599	0.032474	-0.0077	0.144197
-4	-0.00785	0.097927	-0.00755	0.015856	-0.00649	0.025981	-0.0022	0.142002
-3	-0.00587	0.092061	0.000914	0.01677	-0.00333	0.022648	-0.00464	0.137358
-2	-0.00623	0.085836	-0.00103	0.015741	-0.00129	0.021361	-0.00519	0.132166
-1	0.014702	0.100537	-0.01543	0.000311	-0.01809	0.003276	0.00826	0.140427
0	-0.01129	0.089246	-0.00724	-0.00693	-0.00472	-0.00144	-0.00365	0.136776
1	-0.01748	0.071765	-0.008	-0.01493	-0.0164	-0.01784	-0.00085	0.135924
2	-0.00596	0.065808	-0.00415	-0.01908	-0.00123	-0.01907	-0.00486	0.131061
3	-0.03151	0.034301	-0.0102	-0.02928	0.00159	-0.01748	-0.01572	0.115339
4	-0.01462	0.019685	0.000779	-0.0285	0.013333	-0.00415	0.00687	0.12221
5	-0.00014	0.019544	-0.00059	-0.02909	-0.00445	-0.0086	-0.00274	0.119466
6	-0.00085	0.018695	-0.00998	-0.03907	0.013267	0.004669	0.008041	0.127507
7	0.021556	0.04025	0.008169	-0.0309	0.003148	0.007817	0.001673	0.12918
8	0.013727	0.053977	-0.00859	-0.03949	-0.01796	-0.01014	0.008206	0.137387
9	0.012567	0.066544	-0.0103	-0.04979	-0.00773	-0.01788	0.00518	0.142567
10	-0.00143	0.06511	-0.00638	-0.05618	-0.00179	-0.01967	-0.01456	0.128003
11	0.007315	0.072424	0.006255	-0.04992	-0.01	-0.02966	0.005564	0.133567
12	0.001206	0.07363	-0.01059	-0.06051	0.005506	-0.02416	0.000038	0.133605
13	0.001756	0.075386	-0.00531	-0.06582	0.002044	-0.02211	0.006118	0.139723
14	-0.00048	0.074907	0.013143	-0.05268	-0.01598	-0.03809	0.012821	0.152544
15	0.002403	0.077309	0.001178	-0.0515	-0.0027	-0.0408	-0.00879	0.143749
16	0.004668	0.081977	0.018272	-0.03323	-0.00087	-0.04167	0.008589	0.152339
17	-0.0002	0.081778	0.014044	-0.01918	0.003601	-0.03806	-0.00319	0.149149
18	-0.00643	0.075352	-0.00611	-0.0253	-0.00283	-0.04089	-0.00003	0.149122
19	-0.00191	0.073442	0.004376	-0.02092	-0.00723	-0.04813	-0.00334	0.145781
20	0.004689	0.07813	0.007488	-0.01343	0.001369	-0.04676	0.000955	0.146735

Cg = Control group

Eg = Experimental group

**Appendix D Table D.3**  
**Average Return Model (ARM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Services Sector**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	0.0213783	0.021378	-0.031472	-0.031472	-0.007212	-0.007211	-0.000177	-0.000177
-59	0.0138074	0.035186	-0.004217	-0.035689	0.000489	-0.006722	0.0214832	0.021306
-58	0.0163335	0.051519	-0.01519	-0.050879	0.0212084	0.014486	-0.003323	0.017983
-57	0.0136431	0.065162	-0.011986	-0.062865	-0.001701	0.012785	0.0168869	0.034869
-56	0.0049185	0.070081	0.0177802	-0.045085	0.0057246	0.01851	-0.001354	0.033515
-55	0.0292121	0.099293	0.0147873	-0.030297	0.0118024	0.030312	0.0109375	0.044453
-54	-0.007039	0.092254	0.016625	-0.013672	0.0072444	0.037557	0.0035854	0.048038
-53	-0.006042	0.086212	0.0134079	-0.000265	0.0116789	0.049236	0.0106008	0.058639
-52	0.0086516	0.094864	0.0080025	0.007738	0.0076101	0.056846	0.0103388	0.068978
-51	0.0047789	0.099643	0.004375	0.012113	0.0152935	0.072139	0.0063552	0.075333
-50	-0.002746	0.096897	0.0122619	0.024375	0.0060692	0.078209	0.0188297	0.094163
-49	-0.008203	0.088694	0.0178197	0.042195	-0.002172	0.076036	0.0110117	0.105174
-48	-0.001103	0.087591	0.0113817	0.053576	-0.000676	0.07536	0.0124937	0.117668
-47	-0.012549	0.075042	0.0145828	0.068159	0.0048426	0.080203	0.0088905	0.126558
-46	0.0020231	0.077065	0.0055476	0.073707	0.0047109	0.084914	-0.012024	0.114535
-45	-0.004342	0.072723	0.0168377	0.090544	-0.002224	0.08269	-0.010044	0.104491
-44	-0.010933	0.06179	0.0001615	0.090706	0.0067724	0.089462	0.0163782	0.120869
-43	-0.003055	0.058735	-0.014136	0.07657	0.0040529	0.093515	0.0146454	0.135515
-42	0.0096175	0.068352	0.0152754	0.091845	0.0106746	0.10419	0.0163611	0.151876
-41	-0.009104	0.059248	-0.000432	0.091413	0.0069592	0.111149	0.0088025	0.160678
-40	0.002397	0.061645	-0.006138	0.085275	0.0021209	0.11327	0.0056468	0.166325
-39	0.0136037	0.075249	-0.00076	0.084515	-0.000507	0.112763	-0.005141	0.161184
-38	-0.006868	0.068381	0.0183841	0.102899	0.0209049	0.133668	0.0349819	0.196166
-37	-0.01354	0.054842	-0.00427	0.098629	0.0002623	0.13393	0.0054345	0.201601
-36	0.0199299	0.074771	0.0224043	0.121033	-0.00319	0.13074	-0.026815	0.174786
-35	0.012888	0.087659	-0.012829	0.108205	-0.009672	0.121068	-0.010932	0.163854
-34	-0.004971	0.082688	-0.016677	0.091528	-0.006791	0.114278	0.0120553	0.175909
-33	0.0138479	0.096536	-0.017038	0.07449	0.0005022	0.11478	0.0075969	0.183506
-32	-0.000494	0.096041	-0.013391	0.061099	-0.002719	0.112061	0.0085097	0.192016
-31	-0.007812	0.08823	0.0017733	0.062872	0.0158032	0.127864	-0.004545	0.18747
-30	-0.001626	0.086604	-0.012059	0.050814	0.001105	0.128969	-0.000344	0.187127
-29	0.0041202	0.090724	-0.010395	0.040419	0.0042992	0.133269	0.0072068	0.194333
-28	0.0054545	0.096179	0.0024521	0.042871	0.0014229	0.134692	0.0051549	0.199488
-27	-0.001825	0.094354	0.0021106	0.044982	-0.007883	0.126809	0.0022567	0.201745
-26	-0.00846	0.085895	-0.023272	0.02171	-0.002295	0.124514	-0.007452	0.194292
-25	-0.020447	0.065448	-0.007114	0.014597	-0.002224	0.12229	0.0017176	0.19601
-24	-0.010349	0.055099	-0.000241	0.014356	-0.005603	0.116687	0.0057929	0.201803
-23	-0.013252	0.041847	0.0073572	0.021713	-0.003342	0.113345	0.0085092	0.210312
-22	-0.022128	0.019719	0.0300748	0.051788	-0.00797	0.105375	-0.00181	0.208502
-21	0.0106749	0.030394	-0.012316	0.039472	-0.003288	0.102087	-0.005083	0.203419

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-20	-0.007687	0.022707	0.0202985	0.05977	-0.011889	0.090198	0.0158717	0.219291
-19	0.0069802	0.029688	0.0084187	0.068189	0.0038997	0.094098	-0.010803	0.208488
-18	-0.000588	0.0291	-0.037599	0.03059	-0.001438	0.09266	0.0189913	0.227479
-17	0.0019245	0.031025	0.022468	0.053058	0.0170843	0.109745	0.0211623	0.248641
-16	0.0099288	0.040953	-0.013731	0.039327	-0.002462	0.107283	0.0085637	0.257205
-15	-0.013229	0.027725	-0.005152	0.034175	0.0159443	0.123227	0.021957	0.279162
-14	0.0281654	0.05589	0.0011925	0.035367	0.0041537	0.127381	-0.006948	0.272214
-13	-0.002349	0.053541	-0.000739	0.034628	0.0224196	0.149801	0.0011958	0.27341
-12	-0.003444	0.050097	0.0016048	0.036233	0.0053673	0.155168	0.0091642	0.282574
-11	0.0031821	0.053279	-0.002179	0.034054	0.0185835	0.173751	0.0000202	0.282594
-10	-0.007871	0.045408	0.008349	0.042403	0.015802	0.189554	0.0169803	0.299575
-9	0.0039781	0.049386	0.0149247	0.057328	0.0115798	0.201133	0.0032969	0.302871
-8	0.015837	0.065223	0.0264216	0.083749	0.0215555	0.222689	0.0020986	0.30497
-7	0.0073887	0.072611	0.0097957	0.093545	-0.002633	0.220056	0.0048091	0.309779
-6	0.0062461	0.078858	0.0328506	0.126396	-0.009793	0.210262	-0.000986	0.308793
-5	0.0109478	0.089805	0.011548	0.137944	0.0127129	0.222975	0.010436	0.319229
-4	0.0027727	0.092578	0.0144167	0.15236	0.0002237	0.223199	-0.002823	0.316406
-3	0.0095737	0.102152	-0.027801	0.124559	-0.003375	0.219824	0.0107744	0.327181
-2	0.0153876	0.117539	-0.007584	0.116976	0.0082687	0.228092	0.0154657	0.342646
-1	-0.005605	0.111935	0.0213938	0.13837	0.0093443	0.237437	-0.033481	0.309165
0	0.014846	0.126781	0.018313	0.156683	0.0129733	0.25041	-0.001952	0.307213
1	-0.00417	0.12261	-0.009817	0.146866	0.0127877	0.263198	0.0223776	0.329591
2	-0.003071	0.11954	0.0018866	0.148753	-0.001635	0.261563	-0.008348	0.321243
3	0.0009416	0.120481	0.0028537	0.151606	0.014908	0.276471	0.002971	0.324214
4	-0.000087	0.120395	0.0101567	0.161763	-0.019143	0.257328	0.0022531	0.326467
5	-0.002486	0.117909	0.0049694	0.166733	0.0057796	0.263108	0.0050002	0.331467
6	0.0047612	0.12267	0.0079142	0.174647	0.0117121	0.27482	-0.012205	0.319262
7	-0.002447	0.120223	-0.006994	0.167653	0.0023735	0.277193	0.0078595	0.327122
8	0.0034075	0.12363	0.0225613	0.190215	-0.002511	0.274682	-0.002009	0.325113
9	0.0145877	0.138218	-0.008231	0.181983	-0.00262	0.272062	0.0064173	0.33153
10	-0.002942	0.135276	0.0044416	0.186425	-0.010017	0.262045	-0.005036	0.326494
11	-0.008786	0.12649	-0.007362	0.179063	0.0038447	0.26589	0.0086573	0.335151
12	-0.004857	0.121633	0.0090675	0.18813	-0.006886	0.259003	-0.00002	0.335132
13	-0.000295	0.121338	-0.013688	0.174442	-0.012407	0.246596	-0.003968	0.331163
14	0.0115277	0.132866	-0.003813	0.170629	0.0025316	0.249128	-0.003068	0.328095
15	-0.007244	0.125622	-0.005915	0.164714	0.003898	0.253026	-0.004341	0.323754
16	0.0012589	0.126881	-0.006117	0.158596	-0.005584	0.247442	0.0012519	0.325006
17	-0.000228	0.126653	-0.006386	0.15221	0.0080674	0.255509	0.0086738	0.33368
18	-0.01341	0.113243	-0.009578	0.142632	0.0055227	0.261032	0.0027695	0.336449
19	-0.005897	0.107346	0.0135802	0.156213	0.0099984	0.27103	-0.0107	0.32575
20	-0.00142	0.105926	0.0186896	0.174902	0.003799	0.274829	-0.005866	0.319884

Cg = Control group

Eg = Experimental group

**Appendix D Table D.4**  
**Average Return Model (ARM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Industrial Sector**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	0.0008434	0.0008434	0.0035333	0.0035333	-0.005704	-0.005704	0.0054116	0.005412
-59	-0.004504	-0.003661	0.0009003	0.0044336	-0.004421	-0.010124	0.0045792	0.009991
-58	-0.001687	-0.005348	-0.002239	0.0021948	-0.004783	-0.014907	0.0005317	0.010523
-57	0.0034359	-0.001912	-0.013548	-0.011353	0.0076151	-0.007292	0.0001957	0.010718
-56	-0.00977	-0.011682	0.0035441	-0.007809	0.0061456	-0.001147	0.0005386	0.011257
-55	-0.002344	-0.014026	-0.005032	-0.012841	-0.003829	-0.004975	0.0003179	0.011575
-54	0.0131129	-0.000913	-0.004809	-0.01765	0.0033487	-0.001627	0.0016095	0.013184
-53	0.0054899	0.0045771	-0.008231	-0.025881	0.0068406	0.005214	-0.00243	0.010754
-52	-0.000975	0.0036024	-0.000538	-0.026419	-0.002207	0.003007	0.0077546	0.018509
-51	0.0010217	0.004624	0.0001783	-0.026241	0.0061923	0.009199	-0.002727	0.015782
-50	0.0029241	0.0075481	0.0057507	-0.02049	0.0014403	0.010639	0.0023143	0.018096
-49	-0.001394	0.0061545	-0.008676	-0.029167	0.0056401	0.016279	-0.005978	0.012118
-48	-0.005392	0.0007623	0.0052591	-0.023908	0.0094244	0.025704	0.0068894	0.019007
-47	0.0005591	0.0013214	-0.005255	-0.029162	0.012823	0.038527	0.0070162	0.026023
-46	0.0048755	0.0061969	-0.004713	-0.033876	-0.000643	0.037883	0.0059713	0.031995
-45	-0.001543	0.0046536	-0.01041	-0.044286	0.0098268	0.04771	0.0084877	0.040482
-44	-0.000681	0.003973	0.0083759	-0.03591	-0.002768	0.044942	0.0070465	0.047529
-43	0.0006916	0.0046645	-0.012739	-0.048649	0.0051775	0.050119	0.0026348	0.050164
-42	-0.002886	0.001779	-0.001819	-0.050468	0.000151	0.05027	0.012451	0.062615
-41	0.0049174	0.0066964	-0.000404	-0.050872	0.0121779	0.062448	0.010909	0.073524
-40	-0.000974	0.0057226	0.0021458	-0.048726	0.0041329	0.066581	0.0097193	0.083243
-39	0.0077622	0.0134848	-0.009486	-0.058212	0.0066512	0.073233	0.0047589	0.088002
-38	-0.00584	0.0076448	0.0019841	-0.056228	0.009584	0.082816	0.006923	0.094925
-37	0.0051473	0.0127921	0.0000107	-0.056217	-0.007094	0.075722	0.0094458	0.104371
-36	-0.008061	0.0047315	-0.002907	-0.059125	0.0038012	0.079523	0.0105933	0.114964
-35	0.0066349	0.0113664	-0.002999	-0.062123	0.0017071	0.081231	0.0061863	0.12115
-34	-0.011338	0.000028	-0.003167	-0.06529	0.0019841	0.083215	0.0132753	0.134426
-33	0.002444	0.002472	0.0035351	-0.061755	0.0037514	0.086966	0.0042906	0.138716
-32	0.0055027	0.0079747	-0.001609	-0.063364	0.0026737	0.08964	0.0056437	0.14436
-31	0.0033639	0.0113385	-0.000873	-0.064237	0.0076094	0.097249	0.0073833	0.151743
-30	0.0032929	0.0146314	0.0071365	-0.0571	0.002883	0.100132	0.0005802	0.152323
-29	-0.009407	0.0052249	-0.003655	-0.060755	0.0062278	0.10636	-0.001227	0.151096
-28	-0.004751	0.0004738	-0.001029	-0.061784	-0.000674	0.105686	0.0078673	0.158963
-27	-0.000398	0.0000755	0.0061731	-0.055611	0.0022732	0.107959	-0.001498	0.157465
-26	-0.009115	-0.009039	0.0043628	-0.051248	0.0060772	0.114036	0.0071705	0.164636
-25	0.0103087	0.0012697	-0.003679	-0.054927	0.0038011	0.117837	0.0088211	0.173457
-24	0.0025906	0.0038604	-0.012533	-0.06746	0.0073725	0.12521	0.0029934	0.176451
-23	-0.002274	0.0015866	-0.003275	-0.070735	0.0077622	0.132972	0.0098579	0.186308
-22	0.0034402	0.0050268	0.0051574	-0.065578	0.0024146	0.135386	0.0003028	0.186611
-21	-0.003905	0.001122	0.0114099	-0.054168	0.0011098	0.136496	0.0043793	0.190991

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-20	0.0064735	0.0075955	0.0073066	-0.046861	0.0045052	0.141001	-0.004435	0.186556
-19	-0.000914	0.0066815	0.0031291	-0.043732	0.0096539	0.150655	0.0013518	0.187907
-18	0.0024456	0.0091271	0.0010159	-0.042716	0.0000874	0.150743	0.0005708	0.188478
-17	-0.002603	0.0065245	-0.006057	-0.048773	-0.002638	0.148104	0.0088347	0.197313
-16	0.0166556	0.02318	0.000086	-0.048687	-0.004141	0.143964	0.0063673	0.20368
-15	-0.000083	0.0230972	0.0026183	-0.046069	0.000538	0.144502	0.0103292	0.214009
-14	-0.005876	0.0172214	0.0035743	-0.042494	-0.004474	0.140027	0.0080696	0.222079
-13	-0.008421	0.0088007	0.0046702	-0.037824	-0.0047	0.135327	0.0094982	0.231577
-12	-0.011274	-0.002473	-0.002406	-0.04023	-0.00251	0.132817	0.0102208	0.241798
-11	-0.000799	-0.003272	-0.001795	-0.042025	0.0011241	0.133941	-0.001433	0.240365
-10	0.0022472	-0.001025	-0.004354	-0.046379	0.0003214	0.134262	0.0058839	0.246249
-9	0.0154422	0.0144172	-0.002356	-0.048735	0.0038737	0.138136	0.0014728	0.247722
-8	-0.002994	0.0114234	0.0074506	-0.041284	-0.004523	0.133613	0.0012642	0.248986
-7	-0.005668	0.0057554	0.0074928	-0.033792	0.0000884	0.133702	0.0002239	0.24921
-6	-0.004305	0.0014505	0.0057956	-0.027996	0.0002414	0.133943	0.0077464	0.256957
-5	0.001952	0.0034026	0.0013034	-0.026693	0.0064579	0.140401	0.0028522	0.259809
-4	0.005739	0.0091416	-0.012555	-0.039248	0.0021288	0.14253	-0.004185	0.255623
-3	0.000603	0.0097446	-0.001012	-0.040259	-0.006741	0.135789	-0.000952	0.254671
-2	-0.001728	0.0080164	-0.002981	-0.04324	-0.005978	0.129811	0.0035205	0.258192
-1	0.0060603	0.0140767	0.0058408	-0.037399	-0.007726	0.122084	0.0033291	0.261521
0	-0.004934	0.0091427	0.0050688	-0.032331	-0.011256	0.110829	0.0063035	0.267825
1	-0.010361	-0.001218	0.0023885	-0.029942	-0.00642	0.104409	0.0024035	0.270228
2	-0.000552	-0.00177	0.0004105	-0.029532	0.001642	0.106051	0.0039862	0.274214
3	0.0059574	0.0041875	0.0010987	-0.028433	-0.004284	0.101767	-0.003563	0.270652
4	0.0041616	0.008349	-0.000757	-0.02919	-0.007483	0.094284	-0.006585	0.264066
5	0.0057002	0.0140493	0.0035569	-0.025633	0.0011582	0.095442	0.0008099	0.264876
6	-0.000811	0.0132385	0.0033413	-0.022292	0.001679	0.097122	-0.004267	0.260609
7	-0.001213	0.0120253	0.0072471	-0.015045	0.0006455	0.097767	0.0055233	0.266133
8	-0.004486	0.0075398	-0.000419	-0.015464	-0.003729	0.094038	0.0017869	0.26792
9	-0.003612	0.0039276	0.001328	-0.014136	-0.007632	0.086406	0.0015946	0.269514
10	0.0025977	0.0065253	-0.000996	-0.015132	-0.00413	0.082276	-0.000409	0.269105
11	-0.001089	0.0054366	0.0002011	-0.014931	-0.00475	0.077526	-0.003589	0.265516
12	-0.001155	0.0042821	-0.001698	-0.016629	0.0029353	0.080462	0.0012046	0.266721
13	0.0001305	0.0044126	0.0014231	-0.015206	0.0004663	0.080928	-0.003924	0.262797
14	-0.003965	0.0004477	0.0052757	-0.00993	-0.002127	0.078801	0.0058693	0.268666
15	-0.001431	-0.000983	0.0027164	-0.007214	0.0042068	0.083008	0.0032161	0.271882
16	-0.009185	-0.010168	-0.002221	-0.009434	-0.000646	0.082362	0.0060719	0.277954
17	-0.00613	-0.016298	0.0038446	-0.00559	-0.002163	0.080199	-0.003442	0.274512
18	0.0007278	-0.015571	-0.001997	-0.007587	-0.003935	0.076264	-0.000555	0.273957
19	0.0120214	-0.003549	0.0026526	-0.004934	-0.000819	0.075445	0.0000487	0.274006
20	0.0010189	-0.00253	-0.001707	-0.006641	0.0026775	0.078123	0.0011473	0.275153

Cg = Control group

Eg = Experimental group



**Appendix D Table D.5**  
**Average Return Model (ARM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Low Traded Firms**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	0.0121609	0.012161	0.0016147	0.0016147	-0.012036	-0.012036	0.0006657	0.000666
-59	0.006285	0.018446	0.010118	0.0117327	-0.003036	-0.015072	0.0067089	0.007375
-58	0.0093449	0.027791	0.0003457	0.0120784	0.008555	-0.006517	0.0018209	0.009196
-57	0.0037453	0.031536	-0.008693	0.0033852	-0.005246	-0.011763	0.0011345	0.01033
-56	0.0113005	0.042837	-0.006042	-0.002657	0.0011478	-0.010615	-0.002458	0.007872
-55	0.0170122	0.059849	-0.001652	-0.004308	0.0039011	-0.006714	0.0014706	0.009343
-54	0.0050269	0.064876	0.0037784	-0.00053	0.0012296	-0.005485	0.0008799	0.010223
-53	0.0004302	0.065306	-0.003382	-0.003912	0.0028947	-0.00259	-0.003168	0.007055
-52	0.0115223	0.076828	-0.003865	-0.007777	0.0024511	-0.000139	0.0062605	0.013316
-51	0.0067776	0.083606	-0.010674	-0.018451	0.0067865	0.006648	-0.002125	0.011191
-50	0.0134665	0.097072	0.0134383	-0.005013	0.0029886	0.009636	0.0010197	0.01221
-49	0.0044837	0.101556	-0.001248	-0.006261	-0.000985	0.008651	-0.001575	0.010636
-48	-0.001622	0.099934	0.0026697	-0.003591	-0.001101	0.00755	0.0108591	0.021495
-47	-0.00633	0.093604	-0.003284	-0.006875	0.0028783	0.010428	0.0035582	0.025053
-46	-0.00754	0.086064	-0.011534	-0.018409	0.0017724	0.012201	0.0022585	0.027312
-45	-0.006625	0.079439	-0.010102	-0.02851	-0.000284	0.011917	0.001504	0.028816
-44	-0.008733	0.070706	0.0157198	-0.012791	0.0028606	0.014777	0.0069338	0.03575
-43	0.0026229	0.073329	0.0046246	-0.008166	0.0035285	0.018306	-0.000791	0.034959
-42	0.0110033	0.084332	-0.003924	-0.01209	0.0057819	0.024088	0.0123853	0.047344
-41	-0.005968	0.078364	-0.013574	-0.025664	0.0050845	0.029172	0.0035051	0.050849
-40	0.001011	0.079375	-0.003651	-0.029314	0.0005241	0.029696	0.0072788	0.058128
-39	0.0051089	0.084484	-0.006964	-0.036278	0.0015164	0.031213	0.0043149	0.062443
-38	-0.007065	0.077419	0.0046888	-0.03159	0.0175011	0.048714	-0.00278	0.059663
-37	-0.00173	0.075689	-0.007666	-0.039256	-0.005721	0.042993	-0.000044	0.059619
-36	0.0095872	0.085277	0.0009396	-0.038316	-0.000098	0.042895	0.0042024	0.063821
-35	0.0082614	0.093538	-0.00672	-0.045036	-0.007295	0.0356	-0.003044	0.060777
-34	-0.004689	0.088849	-0.010039	-0.055075	0.0090781	0.044678	0.006482	0.067259
-33	0.0042483	0.093098	0.0004634	-0.054611	0.0024871	0.047165	0.0023966	0.069656
-32	-0.002148	0.09095	-0.004051	-0.058663	0.00414	0.051305	0.0018729	0.071529
-31	0.0046347	0.095585	-0.000758	-0.059421	0.0256985	0.077003	0.008466	0.079995
-30	-0.003719	0.091866	0.0035378	-0.055883	0.0031073	0.080111	0.0063135	0.086308
-29	0.0013488	0.093215	-0.002137	-0.05802	0.0042818	0.084393	-0.001729	0.08458
-28	-0.00342	0.089795	-0.004205	-0.062225	0.0012403	0.085633	0.0097038	0.094284
-27	-0.001831	0.087964	-0.009696	-0.071921	-0.004954	0.080679	-0.000398	0.093886
-26	-0.005485	0.082479	0.0015394	-0.070381	0.0040989	0.084778	0.0002243	0.09411
-25	-0.00743	0.07505	0.0038233	-0.066558	0.0098566	0.094634	0.0077616	0.101872
-24	-0.004792	0.070258	-0.007792	-0.07435	0.0018055	0.09644	0.0073594	0.109231
-23	-0.006854	0.063404	-0.010284	-0.084634	0.0020861	0.098526	0.005645	0.114876
-22	-0.00976	0.053644	0.014221	-0.070413	-0.013146	0.08538	-0.002091	0.112786
-21	0.0059751	0.05962	0.0149619	-0.055451	0.0008982	0.086278	0.0076911	0.120477

Days	AAR Cg 1990	CAR Cg 1990	AAK Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-20	-0.00392	0.0557	0.0001248	-0.055326	-0.005866	0.080412	-0.007009	0.113468
-19	0.0047339	0.060434	-0.005406	-0.060732	0.0014177	0.08183	0.0031912	0.116659
-18	-0.000722	0.059712	0.0044168	-0.056315	0.0001905	0.082021	-0.000176	0.116484
-17	-0.001068	0.058644	-0.000654	-0.05697	0.0024259	0.084446	0.0191261	0.13561
-16	0.00334	0.061984	0.0119648	-0.045005	-0.001082	0.083365	0.0040685	0.139678
-15	-0.007895	0.054089	-0.001438	-0.046443	0.00731	0.090675	0.0066194	0.146298
-14	0.0038714	0.057961	-0.00035	-0.046793	0.002677	0.093352	-0.006916	0.139382
-13	-0.005743	0.052218	0.0094719	-0.037321	0.0107463	0.104098	-0.005982	0.1334
-12	-0.004515	0.047703	0.003372	-0.033949	-0.000241	0.103857	-0.002655	0.130745
-11	0.0059462	0.053649	0.0004848	-0.033464	0.0121992	0.116056	0.0011095	0.131855
-10	0.0015247	0.055174	-0.003059	-0.036523	0.004299	0.120355	-0.005499	0.126356
-9	0.0022297	0.057403	-0.001121	-0.037643	0.0037207	0.124076	-0.001278	0.125078
-8	0.0115678	0.068971	0.0002355	-0.037408	-0.003895	0.120181	-0.000972	0.124105
-7	-0.001242	0.067729	0.0083351	-0.029072	-0.000188	0.119993	-0.00527	0.118835
-6	-0.00241	0.06532	0.0064119	-0.022661	-0.005573	0.11442	0.0012556	0.120091
-5	0.0090846	0.074404	-0.007347	-0.030007	0.0075068	0.121927	-0.004491	0.1156
-4	-0.003098	0.071306	-0.014008	-0.044015	0.0027619	0.124689	-0.004863	0.110737
-3	0.0032122	0.074518	-0.011091	-0.055106	-0.003335	0.121354	-0.005753	0.104984
-2	0.0037322	0.07825	0.0061976	-0.048908	0.0003464	0.121701	0.0063385	0.111323
-1	0.0043438	0.082594	-0.00051	-0.049418	0.0076884	0.129389	0.0034445	0.114767
0	0.0043139	0.086908	0.0001174	-0.049301	0.0053849	0.134774	0.0053088	0.120076
1	-0.005082	0.081826	-0.003033	-0.052334	-0.000756	0.134018	0.0026151	0.122691
2	-0.002917	0.078909	0.0022383	-0.050096	-0.002323	0.131695	-0.001788	0.120903
3	-0.006173	0.072736	0.0025548	-0.047541	0.0066403	0.138335	-0.006212	0.114691
4	-0.004839	0.067897	-0.007354	-0.054895	-0.005713	0.132622	-0.006386	0.108305
5	-0.002037	0.06586	0.0040684	-0.050826	0.0023085	0.13493	0.0014971	0.109803
6	0.0006409	0.066501	-0.003311	-0.054137	0.0156275	0.150558	0.0011105	0.110913
7	0.0056585	0.072159	0.0077996	-0.046338	0.0049685	0.155526	0.0037067	0.11462
8	0.0063576	0.078517	0.0039134	-0.042425	-0.009202	0.146325	0.0046432	0.119263
9	0.0107792	0.089296	0.0001606	-0.042264	-0.005658	0.140667	0.0000827	0.119346
10	-0.001674	0.087623	0.0078669	-0.034397	-0.010185	0.130482	-0.003879	0.115466
11	-0.000732	0.086891	0.0017972	-0.0326	-0.001454	0.129028	-0.001528	0.113939
12	-0.003649	0.083241	-0.003957	-0.036557	-0.00267	0.126358	-0.009553	0.104386
13	0.0006037	0.083845	-0.000504	-0.03706	-0.006328	0.12003	-0.001139	0.103247
14	0.0070785	0.090924	0.0010927	-0.035968	-0.002547	0.117483	0.009567	0.112814
15	-0.004568	0.086355	-0.002615	-0.038583	0.0028898	0.120373	0.0012171	0.114031
16	0.0018911	0.088246	-0.000165	-0.038748	-0.002448	0.117925	0.0057281	0.119759
17	-0.000303	0.087944	0.0110945	-0.027653	0.0049503	0.122875	-0.002648	0.117111
18	-0.007557	0.080387	0.0020089	-0.025644	0.0028231	0.125698	0.0067763	0.123887
19	-0.004313	0.076075	-0.0016	-0.027244	0.0036005	0.129299	-0.003337	0.120551
20	0.000109	0.076184	0.0012382	-0.026006	0.0032272	0.132526	-0.003439	0.117112

Cg = Control group  
Eg = Experimental group



**Appendix D Table D.6**  
**Average Return Model (ARM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Heavily Traded Firms**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	-0.002293	-0.002293	-0.006298	-0.006298	0.0026801	0.00268	0.0050696	0.00507
-59	-0.003462	-0.005755	-0.007353	-0.01365	0.0014569	0.004137	0.0051654	0.010235
-58	-0.0031	-0.008855	-0.004342	-0.017992	-0.003444	0.000693	0.0002055	0.01044
-57	0.0048056	-0.00405	-0.015007	-0.032998	0.0131834	0.013876	0.0020808	0.012521
-56	-0.016167	-0.020217	0.007754	-0.025244	0.0095338	0.02341	0.0020603	0.014582
-55	0.0000894	-0.020127	-0.004369	-0.029613	-0.001564	0.021845	0.0018474	0.016429
-54	0.0109919	-0.009135	-0.000349	-0.029961	0.0085539	0.030399	0.0027876	0.019217
-53	0.0084612	-0.000674	-0.003171	-0.033133	0.012494	0.042893	0.0035521	0.022769
-52	-0.004894	-0.005568	-0.000229	-0.033362	-0.003745	0.039149	0.007762	0.030531
-51	-0.000316	-0.005884	0.0018049	-0.031557	0.0093529	0.048502	0.0033362	0.033867
-50	-0.011006	-0.01689	0.0047576	-0.026799	-0.001167	0.047334	0.004715	0.038582
-49	-0.001017	-0.017906	-0.003847	-0.030646	0.0103025	0.057637	-0.000694	0.037888
-48	-0.006723	-0.024629	0.0074761	-0.02317	0.0129543	0.070591	0.0013547	0.039242
-47	0.0033264	-0.021302	-0.001552	-0.024722	0.0155329	0.086124	0.0083739	0.047616
-46	0.0048607	-0.016442	0.002583	-0.022139	0.0026002	0.088724	-0.001007	0.046609
-45	-0.003494	-0.019935	0.0012464	-0.020892	0.0103495	0.099074	0.0084049	0.055014
-44	0.0009787	-0.018957	0.0018828	-0.01901	-0.002568	0.096506	0.0050379	0.060052
-43	-0.000525	-0.019481	-0.015104	-0.034114	0.0048489	0.101354	0.0081398	0.068192
-42	-0.00451	-0.023991	0.0013095	-0.032804	0.0018431	0.103198	0.0131818	0.081373
-41	0.0058375	-0.018154	0.0062837	-0.02652	0.008776	0.111974	0.0118311	0.093204
-40	0.0000109	-0.018143	-0.000944	-0.027464	0.0047955	0.116769	0.0086409	0.101845
-39	0.0066309	-0.011512	-0.004078	-0.031542	0.0067484	0.123517	0.0015481	0.103393
-38	-0.005509	-0.017021	0.0046968	-0.026845	0.0002638	0.123781	0.0167199	0.120113
-37	0.0070963	-0.009924	0.0012159	-0.025629	0.000601	0.124382	0.0075277	0.127641
-36	-0.006958	-0.016883	0.0011198	-0.024509	0.0030658	0.127448	0.0038013	0.131442
-35	0.007443	-0.00944	0.0004086	-0.024101	0.0037093	0.131157	0.0011801	0.132623
-34	-0.01731	-0.026749	-0.003773	-0.027874	-0.000069	0.131088	0.0101616	0.142784
-33	0.0027093	-0.02404	0.0028453	-0.025029	0.0147469	0.145835	0.0067975	0.149582
-32	0.01002	-0.01402	-0.000459	-0.025488	0.0057621	0.151597	0.0033652	0.152947
-31	0.0009269	-0.013093	0.0035873	-0.021901	0.0007514	0.152349	0.002962	0.155909
-30	0.0050236	-0.00807	0.005068	-0.016833	-0.000446	0.151903	-0.005508	0.150401
-29	-0.01211	-0.020179	-0.005797	-0.022629	0.0041234	0.156026	0.0029856	0.153387
-28	0.0010192	-0.01916	-0.001805	-0.024434	-0.004861	0.151166	0.0076734	0.16106
-27	0.0016569	-0.017503	0.0067028	-0.017731	-0.00366	0.147506	-0.000354	0.160706
-26	-0.010641	-0.028144	0.0006937	-0.017038	-0.00347	0.144036	0.0019629	0.162669
-25	0.0128365	-0.015308	-0.006837	-0.023875	0.003664	0.1477	0.0049422	0.167612
-24	0.0008705	-0.014437	-0.010442	-0.034316	0.0048564	0.152556	0.0010557	0.168667
-23	-0.001941	-0.016379	0.0023509	-0.031965	0.0032659	0.155822	0.0104512	0.179118
-22	0.0022871	-0.014091	0.0039607	-0.028005	0.0040784	0.1599	0.0035819	0.1827
-21	-0.005535	-0.019626	0.008565	-0.01944	-0.002227	0.157674	-0.000555	0.182145

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-20	0.0093021	-0.010324	0.0099348	-0.009505	0.0056187	0.163292	-0.002842	0.179304
-19	-0.001615	-0.011939	0.0036529	-0.005852	0.0107924	0.174085	-0.001775	0.177529
-18	0.0038606	-0.008079	-0.005908	-0.01176	-0.000778	0.173307	0.0043578	0.181887
-17	0.0008288	-0.00725	-0.000209	-0.011969	-0.000593	0.172714	0.0137725	0.195659
-16	0.0238052	0.0165552	-0.00058	-0.012549	-0.006451	0.166263	0.0084717	0.204131
-15	-0.001382	0.0151731	-0.000449	-0.012998	0.000738	0.167001	0.0129032	0.217034
-14	-0.00717	0.0080034	0.0010484	-0.011949	-0.005193	0.161807	0.0066564	0.223691
-13	-0.004045	0.0039585	0.0008643	-0.011085	-0.00338	0.158427	0.0109977	0.234688
-12	-0.009148	-0.00519	-0.001357	-0.012442	0.0068218	0.165249	0.0121264	0.246815
-11	-0.000413	-0.005603	-0.003886	-0.016328	-0.00317	0.162079	-0.001807	0.245008
-10	0.002155	-0.003448	-0.000741	-0.017068	-0.000464	0.161615	0.0136771	0.258685
-9	0.0173127	0.0138646	0.002261	-0.014807	0.0065183	0.168133	0.0028123	0.261497
-8	-0.006578	0.0072871	0.0086516	-0.006156	0.0097094	0.177843	0.0064163	0.267913
-7	-0.001696	0.0055907	0.0029341	-0.003222	-0.002191	0.175651	0.005262	0.273175
-6	-0.000467	0.005124	0.0090189	0.0057973	-0.000223	0.175429	0.0052213	0.278397
-5	0.0024375	0.0075614	0.0037396	0.0095368	0.0040909	0.17952	0.0052493	0.283646
-4	0.0104226	0.017984	-0.005851	0.0036864	-0.003832	0.175688	-0.0028	0.280846
-3	0.0005109	0.0184949	-0.003393	0.0002931	-0.007743	0.167945	0.0013637	0.282209
-2	0.0007692	0.0192641	-0.004974	-0.004681	-0.002826	0.165119	0.0037378	0.285947
-1	0.0038837	0.0231478	0.0073165	0.0026354	-0.021994	0.143125	-0.003559	0.282388
0	-0.006741	0.0164068	0.0036428	0.0062782	-0.01492	0.128205	0.0036203	0.286008
1	-0.016532	-0.000125	-0.00282	0.0034587	-0.005068	0.123137	0.0049955	0.291004
2	-0.001288	-0.001414	-0.00128	0.0021783	0.0037369	0.126874	0.0007309	0.291734
3	0.0036481	0.0022343	0.0008686	0.0030469	-0.003664	0.123209	-0.004308	0.287427
4	0.0059373	0.0081716	0.0043539	0.0074008	-0.009418	0.113791	-0.002091	0.285336
5	0.0084027	0.0165743	0.0039391	0.0113399	0.0004126	0.114204	0.0006684	0.286005
6	0.0010787	0.0176531	0.0032539	0.0145938	-0.006115	0.108089	-0.004078	0.281927
7	-0.002153	0.0154998	0.0070754	0.0216691	-0.003223	0.104866	0.0041075	0.286034
8	-0.006533	0.0089672	0.0016936	0.0233628	-0.001141	0.103725	0.0031279	0.289162
9	-0.004238	0.0047297	-0.003196	0.0201664	-0.006915	0.096809	0.004757	0.293919
10	0.0030151	0.0077449	-0.003262	0.0169043	0.0013182	0.098128	-0.002415	0.291504
11	-0.003495	0.0042498	0.0021053	0.0190096	-0.005567	0.09256	0.0008721	0.292376
12	0.0007763	0.0050261	0.0009374	0.019947	0.0050287	0.097589	0.0034908	0.295866
13	-0.000153	0.0048732	-0.002789	0.0171578	0.0016536	0.099243	-0.000726	0.295141
14	-0.007181	-0.002308	0.0064878	0.0236456	-0.004136	0.095107	0.0027609	0.297902
15	0.0005419	-0.001766	0.0023948	0.0260404	0.002906	0.098013	-0.000284	0.297618
16	-0.011611	-0.013377	0.0002825	0.0263229	-0.001695	0.096317	0.003792	0.30141
17	-0.007698	-0.021075	0.0015838	0.0279067	-0.002547	0.093771	0.0005803	0.30199
18	-0.000602	-0.021677	-0.006205	0.0217014	-0.006359	0.087411	-0.001881	0.30011
19	0.0165863	-0.00509	0.0057391	0.0274406	-0.002155	0.085256	-0.002257	0.297853
20	0.0021495	-0.002941	0.0034817	0.0309223	0.0021324	0.087389	0.0000598	0.297913

Cg = Control group

Eg = Experimental group

**Appendix D Table D.7**  
**Average Return Model (ARM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Small Size Firms**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	0.0078368	0.0078368	-0.005452	-0.005452	-0.0076	-0.0076	0.0029487	0.002949
-59	0.0041347	0.0119715	-0.003912	-0.009363	-0.002084	-0.009684	0.0059592	0.008908
-58	0.0055002	0.0174717	-0.002499	-0.011862	0.0010599	-0.008624	0.0010718	0.00998
-57	0.0080143	0.0254859	-0.013653	-0.025515	0.0031558	-0.005469	0.0013237	0.011303
-56	-0.005025	0.0204607	0.0027132	-0.022802	0.0025266	-0.002942	0.0002968	0.0116
-55	0.0088637	0.0293244	-0.003977	-0.026778	0.0034243	0.000482	0.0012221	0.012822
-54	0.0082629	0.0375873	0.0012632	-0.025515	0.0082109	0.008693	0.0020373	0.014859
-53	0.0022586	0.0398458	-0.004283	-0.029798	0.0052391	0.013932	0.0004789	0.015338
-52	0.0005644	0.0404103	-0.002094	-0.031892	-0.003231	0.010701	0.0069818	0.02232
-51	0.002869	0.0432792	-0.001043	-0.032935	0.0059191	0.01662	0.0012583	0.023578
-50	0.0015591	0.0448383	0.0088852	-0.02405	0.0106832	0.027304	0.0046214	0.0282
-49	-0.004798	0.0400404	-0.003435	-0.027485	0.0056217	0.032925	0.000858	0.029058
-48	-0.00479	0.0352509	0.0071303	-0.020354	0.0075003	0.040425	0.0073639	0.036422
-47	-0.004909	0.0303423	-0.00332	-0.023674	0.0121689	0.052594	0.007985	0.044407
-46	0.0022698	0.0326121	-0.003045	-0.02672	0.0060579	0.058652	0.0029378	0.047345
-45	-0.002935	0.0296771	-0.005353	-0.032073	0.0113463	0.069998	0.0072638	0.054608
-44	-0.006083	0.0235942	0.0081882	-0.023884	0.0024204	0.072419	0.0068645	0.061473
-43	-0.004571	0.0190232	-0.010751	-0.034635	0.0052014	0.07762	0.0065683	0.068041
-42	0.0019141	0.0209372	0.0007618	-0.033873	0.0053746	0.082995	0.0143033	0.082344
-41	-0.000849	0.0200878	0.0024057	-0.031467	0.011746	0.094741	0.0114117	0.093756
-40	-0.000757	0.0193305	0.0001348	-0.031333	0.0013026	0.096043	0.0089111	0.102667
-39	0.0132722	0.0326027	-0.005786	-0.037119	0.005563	0.101606	0.0036656	0.106333
-38	-0.009687	0.0229154	0.0057728	-0.031346	0.0143858	0.115992	0.0097698	0.116103
-37	-0.001775	0.0211406	0.0008286	-0.030517	-0.004011	0.111981	0.0069618	0.123065
-36	0.0029024	0.024043	0.0025202	-0.027997	0.0008695	0.112851	0.0049208	0.127985
-35	0.0099158	0.0339588	-0.000056	-0.028053	-0.002444	0.110407	0.0001018	0.128087
-34	-0.011522	0.0224373	-0.006704	-0.034757	0.0016817	0.112088	0.0111142	0.139201
-33	0.0090978	0.031535	0.0006162	-0.034141	0.0048002	0.116889	0.0046298	0.143831
-32	0.004923	0.036458	-0.00331	-0.037451	0.0008318	0.117721	0.0042309	0.148062
-31	0.0002126	0.0366706	0.0007978	-0.036653	0.0115802	0.129301	0.0071446	0.155207
-30	0.0037071	0.0403777	0.0060907	-0.030562	0.0044311	0.133732	-0.000349	0.154858
-29	-0.004921	0.0354565	-0.002972	-0.033534	0.005436	0.139168	0.0023067	0.157164
-28	-0.000079	0.0353772	-0.001676	-0.03521	0.0002252	0.139393	0.0080453	0.16521
-27	-0.003167	0.0322101	0.0028472	-0.032363	-0.003695	0.135698	0.0012936	0.166503
-26	-0.011985	0.0202251	-0.000155	-0.032518	-0.000905	0.134793	0.0036612	0.170164
-25	-0.000805	0.0194204	-0.004317	-0.036835	0.0057075	0.140501	0.0074926	0.177657
-24	-0.001789	0.0176318	-0.009665	-0.0465	0.0049499	0.145451	0.0025268	0.180184
-23	-0.009817	0.0078153	-0.000978	-0.047478	0.0044434	0.149894	0.0073933	0.187577
-22	-0.000054	0.0077612	0.0049702	-0.042508	-0.003847	0.146047	0.0038517	0.191429
-21	0.0035771	0.0113383	0.0115947	-0.030913	0.0015534	0.1476	0.0024161	0.193845

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-20	0.0042728	0.0156111	0.0079804	-0.022933	0.0025735	0.150174	-0.003086	0.190759
-19	0.0008615	0.0164725	0.0027585	-0.020174	0.0059099	0.156084	-0.00072	0.190039
-18	0.0035174	0.0199899	-0.002813	-0.022987	-0.003826	0.152258	0.0040893	0.194128
-17	0.0020738	0.0220637	-0.000654	-0.023642	0.0046843	0.156942	0.0174345	0.211563
-16	0.0174869	0.0395506	0.0045387	-0.019103	-0.003032	0.15391	0.0085976	0.22016
-15	-0.00653	0.0330209	0.0008789	-0.018224	0.0030597	0.156969	0.0131512	0.233312
-14	0.0029082	0.0359292	0.0039177	-0.014306	-0.000899	0.156071	0.0037012	0.237013
-13	-0.009499	0.0264307	0.0041867	-0.01012	0.0092017	0.165272	0.007462	0.244475
-12	-0.011578	0.0148531	0.0004776	-0.009642	0.0052645	0.170537	0.0093516	0.253826
-11	0.0012121	0.0160652	-0.002145	-0.011787	0.0104567	0.180994	0.0003437	0.25417
-10	-0.001243	0.0148227	-0.002263	-0.014051	0.0098338	0.190827	0.0091159	0.263286
-9	0.0164542	0.0312769	0.0015373	-0.012513	0.010594	0.201421	0.0025193	0.265805
-8	0.0009254	0.0322023	0.0084901	-0.004023	0.0120162	0.213438	0.0033758	0.269181
-7	-0.001868	0.0303339	0.0061609	0.0021377	-0.000573	0.212865	0.0019584	0.271139
-6	-0.00401	0.0263243	0.0088176	0.0109552	-0.003386	0.209479	0.0049243	0.276064
-5	0.0049611	0.0312854	0.003773	0.0147283	0.0139241	0.223403	0.0032066	0.27927
-4	0.007772	0.0390574	-0.008349	0.0063793	-0.001673	0.22173	-0.003683	0.275587
-3	0.0057382	0.0447955	-0.006245	0.0001342	-0.002099	0.21963	-0.002226	0.273361
-2	0.00412	0.0489156	-0.003668	-0.003533	0.0034263	0.223057	0.0034755	0.276837
-1	0.0088391	0.0577547	0.0036928	0.0001595	-0.002524	0.220533	0.0001337	0.27697
0	0.0026403	0.060395	0.0035945	0.003754	0.0022451	0.222778	0.0052503	0.28222
1	-0.003375	0.0570201	-0.001709	0.0020453	0.0013138	0.224092	0.0051277	0.287348
2	-0.003543	0.0534772	0.0014592	0.0035044	0.0012941	0.225386	0.0017146	0.289063
3	0.0067604	0.0602376	0.0020934	0.0055978	0.0038708	0.229257	-0.004468	0.284594
4	0.0030573	0.0632949	0.0013127	0.0069105	-0.013671	0.215586	-0.003171	0.281423
5	0.0057751	0.06907	0.0023712	0.0092817	0.0048838	0.22047	0.0004973	0.281921
6	0.0013182	0.0703882	0.0019188	0.0112005	0.0067479	0.227218	-0.003734	0.278187
7	-0.001088	0.0693005	0.0051778	0.0163782	0.0047192	0.231937	0.0046713	0.282858
8	-0.001247	0.0680536	0.0029189	0.0192971	-0.005998	0.225939	0.0034402	0.286298
9	0.0048922	0.0729458	-0.000652	0.0186449	-0.008678	0.217261	0.0037793	0.290078
10	0.000784	0.0737299	0.0005778	0.0192226	-0.007918	0.209343	-0.001954	0.288123
11	-0.003729	0.0700005	0.0031718	0.0223944	0.0007383	0.210081	-0.000468	0.287656
12	-0.00203	0.0679705	-0.002125	0.0202694	-0.003939	0.206142	-0.000851	0.286804
13	-0.001839	0.0661318	-0.001791	0.0184781	-0.005199	0.200943	-0.002236	0.284569
14	0.0037335	0.0698654	0.0037855	0.0222636	-0.000224	0.200719	0.0060389	0.290608
15	-0.004375	0.0654907	0.0002895	0.0225531	0.0032424	0.203962	0.0002024	0.29081
16	-0.006419	0.0590713	-0.000929	0.021624	-0.004799	0.199163	0.0050382	0.295848
17	-0.006867	0.0522044	0.0050362	0.0266602	0.0054757	0.204639	-0.002453	0.293395
18	-0.006699	0.0455057	-0.002695	0.0239658	0.0002129	0.204852	0.0015455	0.294941
19	0.0091089	0.0546146	0.0056455	0.0296112	0.0027571	0.207609	-0.001919	0.293022
20	0.0039648	0.0585794	0.0025831	0.0321943	0.0047907	0.212399	-0.000845	0.292177

Cg = Control group

Eg = Experimental group

**Appendix D Table D.8**  
**Average Return Model (ARM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Large Size Firms**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	0.0038843	0.0038843	0.0096723	0.0096723	-0.003656	-0.003656	0.0089931	0.0089931
-59	-0.00039	0.0034939	0.008027	0.0176993	0.0000969	-0.003559	0.0045226	0.0135157
-58	0.0023926	0.0058865	-0.002146	0.015553	0.0072629	0.0037036	-0.001988	0.0115282
-57	-0.001293	0.0045935	-0.00992	0.0056326	0.0011803	0.0048839	0.0046914	0.0162196
-56	0.0071554	0.011749	0.0093833	0.015016	0.0075641	0.012448	0.0029654	0.019185
-55	0.0117302	0.0234792	-0.002521	0.0124954	-0.000883	0.0115647	0.004931	0.024116
-54	0.006369	0.0298482	-0.001344	0.0111517	-0.00142	0.0101452	0.0035602	0.0276762
-53	0.0058493	0.0356975	0.0030147	0.0141665	0.0091449	0.0192901	0.0086042	0.0362804
-52	0.0107606	0.0464581	0.002347	0.0165135	0.0043728	0.0236629	0.0120936	0.0483739
-51	0.0052677	0.0517258	-0.010144	0.0063698	0.010592	0.0342549	0.0054178	0.0537917
-50	0.0060048	0.0577306	-0.002674	0.0036964	-0.012159	0.0220955	-0.001623	0.0521691
-49	0.0122428	0.0699734	-0.000028	0.0036686	0.0008642	0.0229597	-0.012678	0.0394908
-48	-0.002198	0.0677756	-0.007839	-0.00417	0.0006667	0.0236264	-0.014892	0.0245987
-47	0.001296	0.0690716	0.0038909	-0.000279	0.0022607	0.0258871	0.0017013	0.0263
-46	-0.009154	0.059918	0.0109441	0.0106651	-0.003522	0.022365	-0.01843	0.0078701
-45	-0.008766	0.0511525	0.0123885	0.0230536	-0.006265	0.0160997	0.0022431	0.0101132
-44	-0.002807	0.048346	-0.004189	0.0188651	-0.001939	0.0141603	-0.000226	0.009887
-43	0.0097525	0.0580985	0.0015886	0.0204537	0.0024591	0.0166194	-0.002606	0.0072814
-42	0.0084746	0.0665731	0.0076182	0.0280718	0.0024251	0.0190445	-0.003209	0.0040723
-41	-0.001475	0.0650977	-0.003737	0.0243354	-0.000741	0.0183039	-0.0017	0.0023727
-40	0.0025371	0.0676349	-0.002011	0.0223248	0.0036833	0.0219872	0.007696	0.0100688
-39	-0.005031	0.0626039	-0.0051	0.0172243	0.0009675	0.0229547	-0.003335	0.0067339
-38	-0.001763	0.0608415	-0.011121	0.0061035	0.0047143	0.027669	0.0167992	0.023533
-37	0.0071609	0.0680024	-0.003015	0.0030889	-0.001842	0.025827	-0.008509	0.0150236
-36	0.0025915	0.0705939	0.000835	0.0039239	0.0016839	0.0275109	-0.004531	0.0104923
-35	0.0050796	0.0756734	-0.01435	-0.010426	-0.003221	0.0242901	0.0039616	0.0144539
-34	-0.007548	0.0681252	-0.001313	-0.01174	0.0104971	0.0347872	-0.001452	0.0130018
-33	-0.004219	0.0639067	-0.008786	-0.020525	0.0114424	0.0462296	0.0024619	0.0154638
-32	-0.000081	0.0638259	0.0046598	-0.015865	0.0104882	0.0567177	-0.000026	0.015438
-31	0.0072442	0.0710701	0.010098	-0.005767	0.0209204	0.0776382	0.0003577	0.0157957
-30	-0.005584	0.0654857	-0.003481	-0.009248	-0.002337	0.0753013	-0.00983	0.0059658
-29	-0.003153	0.0623331	-0.001115	-0.010363	0.0024745	0.0777758	-0.004518	0.0014478
-28	-0.003753	0.0585801	0.0024804	-0.007883	-0.00341	0.0743653	0.0071349	0.0085826
-27	0.0035654	0.0621455	-0.000023	-0.007906	-0.005458	0.0689071	-0.006259	0.0023241
-26	-0.001355	0.0607907	-0.002592	-0.010498	0.0036778	0.0725849	-0.006412	-0.004088
-25	0.0033725	0.0641632	-0.000182	-0.01068	0.0095913	0.0821762	0.0011135	-0.002975
-24	-0.00342	0.0607437	0.0016099	-0.00907	0.0003644	0.0825406	0.010197	0.0072223
-23	0.0022905	0.0630341	-0.000915	-0.009985	-0.000102	0.0824388	0.022842	0.0300643
-22	-0.011578	0.0514562	0.0144047	0.0044196	-0.009206	0.0732332	-0.012861	0.0172037
-21	-0.002109	0.0493469	-0.0062	-0.001781	-0.003163	0.0700706	0.0019483	0.0191521

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-20	-0.002401	0.0469455	0.0003531	-0.001427	-0.006438	0.063633	-0.014992	0.0041603
-19	0.0039169	0.0508625	-0.012595	-0.014022	0.004375	0.068008	0.0047964	0.0089567
-18	-0.002195	0.0486671	-0.000542	-0.014564	0.0049601	0.0729681	-0.003124	0.0058326
-17	-0.00366	0.0450073	0.0014498	-0.013114	-0.00382	0.0691485	0.0052172	0.0110497
-16	0.0035954	0.0486027	-0.003177	-0.016292	-0.003664	0.065484	-0.001835	0.009215
-15	-0.003332	0.0452707	-0.012732	-0.029024	0.0068099	0.0722939	-0.003049	0.0061661
-14	-0.005794	0.0394769	-0.022107	-0.051131	-0.000085	0.0722086	-0.006422	-0.000256
-13	0.0013203	0.0407972	0.0016549	-0.049476	-0.001173	0.0710353	-0.005407	-0.005663
-12	0.0009412	0.0417384	-0.00097	-0.050446	-0.001043	0.069992	-0.003447	-0.00911
-11	0.0063498	0.0480882	0.0070491	-0.043397	-0.000681	0.0693111	-0.007801	-0.01691
-10	0.006108	0.0541962	0.0042912	-0.039106	-0.008371	0.06094	-0.001587	-0.018498
-9	-0.003008	0.0511882	-0.000013	-0.039118	-0.003301	0.0576393	-0.002692	-0.02119
-8	0.008626	0.0598142	0.0010265	-0.038092	-0.01302	0.0446189	0.0117844	-0.009405
-7	-0.000802	0.0590124	-0.003522	-0.041614	-0.001641	0.0429779	0.0018912	-0.007514
-6	0.0018192	0.0608316	0.0062957	-0.035318	-0.003347	0.0396306	-0.003058	-0.010572
-5	0.0083281	0.0691598	-0.014185	-0.049503	-0.005077	0.034554	-0.003627	-0.014199
-4	-0.005107	0.0640533	0.001221	-0.048282	0.0025044	0.0370585	0.0037732	-0.010426
-3	-0.003098	0.0609556	-0.00514	-0.053422	-0.009508	0.0275506	0.0083302	-0.002095
-2	0.0002152	0.0611708	0.0000156	-0.053406	-0.007226	0.0203249	0.0058391	0.0037437
-1	-0.002538	0.0586325	0.0019762	-0.05143	-0.007405	0.0129198	-0.004968	-0.001224
0	-0.00435	0.0542825	-0.003753	-0.055183	-0.010435	0.002485	-0.002628	-0.003852
1	-0.018971	0.0353115	-0.000493	-0.055676	-0.008026	-0.005541	-0.000786	-0.004638
2	-0.000394	0.0349171	-0.011115	-0.06679	-0.00143	-0.006971	-0.010718	-0.015356
3	-0.014829	0.0200885	-0.009174	-0.075964	0.0002921	-0.006679	-0.008874	-0.024229
4	-0.005343	0.0147459	-0.003479	-0.079443	0.0019493	-0.00473	0.005515	-0.018714
5	-0.002757	0.0119887	0.0040684	-0.075374	-0.003266	-0.007996	0.0064209	-0.012294
6	0.0001112	0.0120998	-0.002614	-0.077988	0.0065704	-0.001426	0.0051748	-0.007119
7	0.0074842	0.0195841	0.010887	-0.067101	-0.002867	-0.004293	0.0005136	-0.006605
8	0.0043309	0.023915	-0.006697	-0.073798	-0.005718	-0.01001	-0.003123	-0.009728
9	0.0041725	0.0280874	-0.00334	-0.077138	-0.0026	-0.01261	0.0017984	-0.007929
10	-0.000496	0.0275915	0.0016527	-0.075485	-0.001921	-0.014531	-0.018225	-0.026154
11	0.0007871	0.0283786	-0.008706	-0.084192	-0.008699	-0.02323	0.0018636	-0.02429
12	-0.001537	0.0268416	0.002155	-0.082037	0.0068422	-0.016388	-0.000913	-0.025203
13	0.0033362	0.0301778	-0.004687	-0.086724	0.0000401	-0.016348	0.0018532	-0.02335
14	-0.002403	0.027775	0.0158718	-0.070852	-0.007455	-0.023803	0.0016231	-0.021727
15	0.0002654	0.0280404	0.0053964	-0.065456	0.0024022	-0.021401	-0.000437	-0.022164
16	0.0002612	0.0283016	0.010449	-0.055007	0.0016635	-0.019737	0.0049085	-0.017255
17	0.0016797	0.0299813	0.0046168	-0.05039	-0.003297	-0.023035	0.0050334	-0.012222
18	-0.001828	0.0281538	-0.010544	-0.060934	-0.00263	-0.025665	-0.005312	-0.017534
19	-0.002587	0.0255667	-0.005642	-0.066576	-0.00095	-0.026615	-0.003086	-0.02062
20	-0.003359	0.0222079	0.0058755	-0.0607	-0.000101	-0.026716	-0.002377	-0.022996

Cg = Control Group  
Eg = Experimental Group



**Appendix D Table D.9**  
**Average Return Model (ARM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Domestic Ownership Firms**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	0.0101358	0.0101358	-0.003481	-0.003481	-0.008262	-0.008262	0.0046239	0.004624
-59	0.0083244	0.0184601	-0.003824	-0.007305	0.0047205	-0.003541	0.0100834	0.014707
-58	0.005185	0.0236451	-0.005349	-0.012653	0.0077148	0.004173	0.0027215	0.017429
-57	0.0036024	0.0272475	-0.012189	-0.024842	0.00406	0.008233	0.0025276	0.019956
-56	-0.001659	0.0255889	0.0071426	-0.0177	0.0075706	0.015804	0.0012221	0.021178
-55	0.0123623	0.0379512	0.0050993	-0.0126	0.0078317	0.023636	0.0038333	0.025012
-54	0.0028154	0.0407666	0.0028803	-0.00972	0.0056938	0.02933	0.0035017	0.028513
-53	-0.001869	0.0388978	0.0012706	-0.008449	0.0135301	0.04286	0.0016784	0.030192
-52	0.003243	0.0421408	0.0014876	-0.006962	0.0036646	0.046524	0.0073946	0.037586
-51	0.0053895	0.0475304	-0.00165	-0.008612	0.0099464	0.056471	-0.0030314	0.034555
-50	0.0049315	0.0524619	0.0050021	-0.00361	0.0041075	0.060578	0.0041891	0.038744
-49	-0.003063	0.0493993	-0.002872	-0.006482	0.003441	0.064019	-0.0030236	0.035721
-48	-0.008561	0.0408381	0.0082096	0.0017274	0.0050125	0.069032	0.0050388	0.040759
-47	-0.004604	0.0362346	-0.001611	0.0001161	0.0108176	0.079849	0.0056484	0.046408
-46	0.0004034	0.0366379	-0.000297	-0.000181	-0.000416	0.079433	-0.0002146	0.046193
-45	-0.00186	0.0347782	-0.002351	-0.002531	0.0055155	0.084949	0.0017693	0.047963
-44	-0.007926	0.0268526	0.0060653	0.0035341	0.002239	0.087188	0.0072354	0.055198
-43	-0.001279	0.0255735	-0.006699	-0.003165	0.006968	0.094156	0.0066883	0.061886
-42	-0.000149	0.0254246	-0.002251	-0.005416	0.0071335	0.101289	0.0147438	0.07663
-41	0.0001597	0.0255843	0.002702	-0.002714	0.0110081	0.112297	0.0114382	0.088068
-40	0.0013037	0.026888	0.0001913	-0.002523	0.0027434	0.115041	0.0122048	0.100273
-39	0.0088209	0.0357089	-0.002531	-0.005054	0.0040796	0.11912	0.0036798	0.103953
-38	-0.004114	0.0315948	0.0046384	-0.000415	0.009292	0.128412	0.017219	0.121172
-37	0.0024143	0.0340091	-0.00597	-0.006386	-0.001027	0.127385	0.0063012	0.127473
-36	0.0092116	0.0432207	0.001414	-0.004972	0.0020584	0.129444	0.0020273	0.1295
-35	0.0080628	0.0512835	-0.00457	-0.009542	-0.003702	0.125742	0.0011482	0.130649
-34	-0.007228	0.044056	-0.003895	-0.013437	-0.000642	0.1251	0.0104866	0.141135
-33	0.0044223	0.0484783	0.0015531	-0.011884	0.006564	0.131664	0.0050993	0.146235
-32	0.0027606	0.0512389	-0.005482	-0.017366	0.0080952	0.139759	0.0018982	0.148133
-31	0.0009652	0.052204	-0.001163	-0.018528	0.0099487	0.149708	0.0007441	0.148877
-30	0.0025157	0.0547197	0.0032031	-0.015325	0.0007016	0.15041	-0.0029101	0.145967
-29	-0.003842	0.0508779	-0.004371	-0.019696	0.0045016	0.154911	0.0048202	0.150787
-28	0.0057054	0.0565833	-0.002515	-0.022211	0.0016581	0.156569	0.0089318	0.159719
-27	0.0014571	0.0580404	-0.000124	-0.022335	0.0006934	0.157263	0.0011964	0.160915
-26	-0.006608	0.0514326	0.0009981	-0.021337	0.0016322	0.158895	-0.0009306	0.159985
-25	-0.005168	0.0462648	-0.005406	-0.026743	0.003075	0.16197	0.0056228	0.165607
-24	-0.004771	0.0414935	-0.011254	-0.037997	0.0023968	0.164367	-0.002359	0.163248
-23	-0.006859	0.0346347	-0.000976	-0.038972	0.0047032	0.16907	0.007259	0.170507
-22	-0.010612	0.0240225	0.0065331	-0.032439	-0.000812	0.168258	0.0020285	0.172536
-21	0.0020534	0.0260759	0.0071407	-0.025298	-0.00291	0.165348	0.0018787	0.174415

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-20	0.0007659	0.0268418	0.0071853	-0.018113	-0.000066	0.165282	-0.0030597	0.171355
-19	0.0025435	0.0293852	0.0034052	-0.014708	0.0075346	0.172817	-0.0047462	0.166609
-18	0.0033345	0.0327198	-0.003163	-0.017871	-0.000135	0.172682	0.001696	0.168305
-17	0.0011362	0.033856	0.0006426	-0.017228	0.0029963	0.175678	0.0153767	0.183681
-16	0.0159536	0.0498096	-0.001593	-0.018821	-0.00377	0.171908	0.0121	0.195781
-15	-0.006916	0.0428941	0.0003856	-0.018435	0.0070474	0.178955	0.0158238	0.211605
-14	0.001834	0.0447281	0.0042528	-0.014182	0.002877	0.181832	-0.002515	0.20909
-13	-0.007561	0.0371675	0.0066983	-0.007484	0.0064865	0.188319	0.0058393	0.21493
-12	-0.009718	0.0274498	0.0021368	-0.005347	0.0016545	0.189973	0.0111013	0.226031
-11	0.0014942	0.028944	-0.003849	-0.009196	0.0122182	0.202191	-0.000572	0.225459
-10	-0.00294	0.0260036	0.0007219	-0.008474	0.0059506	0.208142	0.0075872	0.233046
-9	0.0111965	0.0372001	0.0060086	-0.002466	0.008476	0.216618	0.0022435	0.23529
-8	0.0074164	0.0446165	0.0103205	0.0078549	0.0065847	0.223203	0.0058134	0.241103
-7	-0.001469	0.0431476	0.0091877	0.0170426	0.000206	0.223409	0.0051057	0.246209
-6	-0.003566	0.039582	0.0094436	0.0264862	-0.003213	0.220195	0.0059351	0.252144
-5	0.0101169	0.0496989	0.0051229	0.0316091	0.0059653	0.22616	-0.0009857	0.251158
-4	0.0020647	0.0517636	-0.004663	0.026946	0.0018764	0.228037	-0.0039085	0.24725
-3	0.0038496	0.0556133	-0.006813	0.0201327	-0.002436	0.225601	-0.002995	0.244255
-2	0.0090184	0.0646317	-0.002969	0.0171634	-0.000693	0.224908	0.0062207	0.250475
-1	0.0044343	0.069066	0.0028711	0.0200345	0.0000155	0.224924	-0.001307	0.249168
0	0.0057241	0.0747902	0.0014294	0.0214639	0.0032981	0.228222	0.0034927	0.252661
1	-0.003749	0.0710413	-0.00637	0.015094	-0.003365	0.224857	0.0068603	0.259521
2	-0.002517	0.0685248	0.0031109	0.0182049	0.0019828	0.22684	0.000304	0.259825
3	0.0011114	0.0696362	0.002705	0.0209099	0.0100747	0.236915	-0.0019017	0.257924
4	0.0019732	0.0716094	0.0038185	0.0247284	-0.009288	0.227627	-0.0051848	0.252739
5	0.0025238	0.0741333	0.001616	0.0263444	0.0059859	0.233613	0.0020301	0.254769
6	0.0026136	0.0767469	-0.000237	0.0261076	0.0120397	0.245653	-0.0018646	0.252904
7	-0.000305	0.0764417	0.0043335	0.0304411	0.0025184	0.248171	0.0076475	0.260552
8	-0.000207	0.0762352	0.0064395	0.0368806	-0.010146	0.238025	0.0046194	0.265171
9	0.0045729	0.080808	-0.004559	0.0323221	-0.006656	0.231369	0.0050797	0.270251
10	0.0009032	0.0817112	-0.002231	0.0300907	-0.006963	0.224407	-0.0028899	0.267361
11	-0.004069	0.0776418	0.0028528	0.0329435	-0.001849	0.222558	-0.0008124	0.266549
12	-0.001388	0.0762541	-0.00081	0.032133	-0.003765	0.218793	-0.0005447	0.266004
13	0.0005485	0.0768025	0.0004063	0.0325394	-0.006159	0.212635	-0.0010054	0.264998
14	0.0004536	0.0772562	-0.000002	0.0325371	-0.003802	0.208833	0.0063891	0.271388
15	-0.003445	0.0738117	-0.001365	0.0311719	0.00268	0.211513	0.0006909	0.272078
16	-0.004697	0.0691149	0.000969	0.0321409	-0.002124	0.209389	0.0051905	0.277269
17	-0.00498	0.0641346	-0.002397	0.0297438	0.0015873	0.210976	-0.0000462	0.277223
18	-0.007776	0.056359	-0.005508	0.024236	-0.000409	0.210567	-0.0009201	0.276303
19	0.0033919	0.0597509	0.0076713	0.0319073	0.0029542	0.213521	-0.0046373	0.271665
20	-0.002825	0.0569257	0.0047999	0.0367072	0.0047189	0.21824	0.0007694	0.272435

Cg = Control Group

Eg = Experimental Group



**Appendix D Table D.10**  
**Average Return Model (ARM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Foreign Ownership Firms**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	-0.000989	-0.000989	-0.003541	-0.003541	-0.001786	-0.001786	0.0018485	0.001849
-59	-0.008826	-0.009815	0.0006791	-0.002861	-0.012015	-0.013801	-0.003276	-0.001428
-58	0.0024525	-0.007362	0.0036266	0.0007652	-0.003904	-0.017705	-0.003617	-0.005044
-57	0.0052444	-0.002118	-0.015234	-0.014468	-0.000807	-0.018511	0.0001426	-0.004902
-56	0.0030133	0.0008953	-0.00392	-0.018389	-0.000844	-0.019355	-0.000579	-0.005481
-55	0.0057939	0.0066891	-0.022453	-0.040842	-0.009682	-0.029036	-0.002778	-0.008258
-54	0.0160405	0.0227296	-0.003176	-0.044018	0.0015903	-0.027446	-0.000429	-0.008687
-53	0.0140144	0.0367441	-0.013028	-0.057045	-0.005404	-0.03285	0.0012101	-0.007477
-52	0.0075492	0.0442933	-0.007839	-0.064884	-0.007002	-0.039852	0.0081595	0.000682
-51	0.0010465	0.0453397	-0.003407	-0.068291	0.0039875	-0.035865	0.0119304	0.012613
-50	0.000563	0.0459027	0.0124161	-0.055875	-0.003911	-0.039776	0.0030316	0.015644
-49	0.0119017	0.0578044	-0.003254	-0.059128	0.0040693	-0.035707	0.0035948	0.019239
-48	0.0051488	0.0629531	-0.001124	-0.060252	0.0040887	-0.031618	0.0033444	0.022583
-47	0.0017709	0.0647241	-0.004024	-0.064276	0.0030866	-0.028531	0.0103785	0.032962
-46	-0.007636	0.0570883	-0.003222	-0.067498	0.0067498	-0.021782	0.0010106	0.033973
-45	-0.011709	0.0453797	-0.004561	-0.072059	0.0014892	-0.020292	0.0167938	0.050766
-44	0.0011179	0.0464976	0.0076955	-0.064363	-0.002334	-0.022626	0.0032494	0.054016
-43	0.0061045	0.0526021	-0.014324	-0.078687	-0.001237	-0.023863	0.0026466	0.056662
-42	0.0133502	0.0659523	0.0098321	-0.068855	-0.001291	-0.025154	0.0063733	0.063036
-41	-0.00343	0.0625226	-0.000673	-0.069529	-0.001469	-0.026623	0.0061117	0.069147
-40	-0.000692	0.0618302	-0.000842	-0.07037	0.0014387	-0.025184	0.0015082	0.070656
-39	0.0000792	0.0619094	-0.012347	-0.082718	0.002921	-0.022263	0.0008357	0.071491
-38	-0.010659	0.0512502	0.0013975	-0.08132	0.012441	-0.009822	-0.003062	0.06843
-37	0.0009702	0.0522204	0.013569	-0.067751	-0.006951	-0.016773	0.0021606	0.07059
-36	-0.009027	0.0431933	0.0041691	-0.063582	-0.00036	-0.017133	0.0072161	0.077806
-35	0.0076706	0.0508639	0.0037057	-0.059876	-0.001045	-0.018177	-0.000552	0.077255
-34	-0.014758	0.0361056	-0.010447	-0.070324	0.0162263	-0.001951	0.0074056	0.08466
-33	0.0021338	0.0382394	-0.005112	-0.075436	0.0093159	0.007365	0.0027768	0.087437
-32	0.0030496	0.041289	0.0044391	-0.070996	-0.001219	0.0061464	0.0074269	0.094864
-31	0.0070364	0.0483254	0.0086348	-0.062362	0.0254682	0.0316145	0.0178708	0.112735
-30	-0.004949	0.0433767	0.0083263	-0.054035	0.0033726	0.0349871	0.0012366	0.113971
-29	-0.004837	0.03854	0.0007105	-0.053325	0.0036939	0.038681	-0.005701	0.10827
-28	-0.014971	0.0235694	0.0017486	-0.051576	-0.006643	0.0320377	0.0058195	0.114089
-27	-0.00379	0.019779	0.0079374	-0.043639	-0.013798	0.0182402	-0.001523	0.112566
-26	-0.009441	0.0103379	-0.003552	-0.04719	-0.000209	0.018031	0.0092746	0.121841
-25	0.0120676	0.0224055	-0.000376	-0.047566	0.0150648	0.0330958	0.0088674	0.130708
-24	0.0017771	0.0241826	-0.001819	-0.049386	0.0042808	0.0373766	0.015855	0.146563
-23	-0.001114	0.0230684	-0.000957	-0.050343	-0.001336	0.036041	0.0138548	0.160418
-22	0.0058578	0.0289262	0.0054618	-0.044881	-0.015664	0.0203772	0.0009956	0.161414
-21	-0.000264	0.0286627	0.0138302	-0.031051	0.0042338	0.024611	0.0033577	0.164771

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-20	0.0029156	0.0315783	0.0065991	-0.024452	-0.0031	0.0215108	-0.007904	0.156867
-19	0.0013425	0.0329208	-0.004741	-0.029193	0.0011405	0.0226513	0.0099418	0.166809
-18	-0.002812	0.0301086	-0.00117	-0.030363	-0.000342	0.0223094	0.0062297	0.173039
-17	-0.002896	0.0272121	-0.002536	-0.032899	-0.002142	0.0201671	0.0168691	0.189908
-16	0.004091	0.0313032	0.0143281	-0.018571	-0.002417	0.0177499	-0.00293	0.186978
-15	-0.002092	0.0292115	-0.00353	-0.0221	0.0001242	0.0178741	0.0010587	0.188037
-14	-0.005275	0.0239368	-0.007196	-0.029296	-0.006872	0.0110024	0.012706	0.200743
-13	-0.000429	0.0235076	-0.002101	-0.031397	0.0020756	0.0130779	0.005722	0.206465
-12	-0.000382	0.0231252	-0.003586	-0.034983	0.0045237	0.0176016	0.0005578	0.207022
-11	0.0066889	0.0298141	0.0051105	-0.029872	-0.005767	0.0118351	-0.000991	0.206031
-10	0.0104461	0.0402602	-0.005911	-0.035783	-0.004286	0.007549	0.0080448	0.214076
-9	0.0033874	0.0436476	-0.008472	-0.044255	-0.001734	0.0058155	0.0010138	0.21509
-8	-0.001991	0.0416567	0.0016606	-0.042595	-0.007235	-0.00142	0.0016202	0.21671
-7	-0.001356	0.0403006	-0.004069	-0.046663	-0.003247	-0.004667	-0.004678	0.212032
-6	0.0019765	0.0422771	0.0064942	-0.040169	-0.003657	-0.008324	-0.000391	0.211641
-5	-0.000563	0.0417141	-0.006245	-0.046414	0.0063477	-0.001976	0.009277	0.220918
-4	0.0032103	0.0449245	-0.012261	-0.058675	-0.003307	-0.005283	-0.000228	0.22069
-3	-0.001108	0.0438164	-0.00461	-0.063285	-0.010126	-0.015409	0.0036112	0.224302
-2	-0.009416	0.0344004	-0.003661	-0.066946	-0.001449	-0.016858	-0.001344	0.222958
-1	0.003641	0.0380414	0.0047318	-0.062214	-0.012874	-0.029732	0.0011184	0.224076
0	-0.011169	0.0268725	0.0052024	-0.057011	-0.014479	-0.044211	0.0057899	0.229866
1	-0.020885	0.0059878	0.0085661	-0.048445	-0.001005	-0.045216	-0.000876	0.22899
2	-0.001751	0.0042366	-0.007039	-0.055485	-0.003147	-0.048363	-0.000296	0.228694
3	-0.00807	-0.003834	-0.003698	-0.059183	-0.011678	-0.060041	-0.011621	0.217073
4	-0.004755	-0.008589	-0.005866	-0.065048	-0.003482	-0.063523	0.0045325	0.221606
5	0.0017813	-0.006808	0.004636	-0.060412	-0.006645	-0.070169	-0.000352	0.221253
6	-0.002465	-0.009272	0.0046325	-0.05578	-0.003161	-0.073329	-0.004096	0.217158
7	0.0074781	-0.001794	0.0092343	-0.046546	-0.000097	-0.073426	-0.003242	0.213916
8	0.0033533	0.001559	-0.008321	-0.054866	0.0019328	-0.071493	-0.001661	0.212255
9	0.004638	0.006197	0.0064759	-0.04839	-0.005294	-0.076787	0.0002561	0.212511
10	-0.000928	0.0052693	0.0069071	-0.041483	-0.002673	-0.079461	-0.006498	0.206013
11	0.0021632	0.0074325	-0.00091	-0.042393	-0.005529	-0.084989	0.0011887	0.207202
12	-0.002632	0.0048002	-0.003174	-0.045566	0.0083188	-0.07667	-0.00152	0.205682
13	-0.000178	0.0046224	-0.007565	-0.053131	0.0026733	-0.073997	-0.003184	0.202498
14	0.0025877	0.0072101	0.0165743	-0.036557	-0.0021	-0.076097	0.0035372	0.206036
15	-0.000667	0.0065435	0.005807	-0.03075	0.0032932	-0.072804	-0.001079	0.204957
16	-0.001784	0.00476	-0.000364	-0.031114	-0.002164	-0.074968	0.0046665	0.209623
17	-0.000355	0.0044055	0.0204785	-0.010635	0.0023693	-0.072598	-0.004513	0.20511
18	0.0009587	0.0053642	0.0000735	-0.010562	-0.001964	-0.074562	0.0039803	0.20909
19	0.0059447	0.0113089	-0.003124	-0.013685	-0.00193	-0.076492	0.0033234	0.212414
20	0.007869	0.0191779	-0.000755	-0.014441	-0.000785	-0.077277	-0.004849	0.207565

Cg = Control Group  
Eg = Experimental Group

**Appendix D Table D.11**  
**Average Return Model (ARM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Winner Firms**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	0.0043269	0.0043269	0.0001561	0.0001561	-0.006686	-0.006686	0.0036929	0.003693
-59	0.0007062	0.0050331	0.000659	0.0008152	-0.003131	-0.009817	0.0040709	0.007764
-58	0.0039982	0.0090313	-0.001665	-0.00085	0.0061806	-0.003636	-0.000846	0.006918
-57	0.0054074	0.0144387	-0.01188	-0.01273	-0.000428	-0.004064	-0.001902	0.005016
-56	0.0015724	0.0160111	0.0044015	-0.008328	0.0034424	-0.000621	-0.00041	0.004606
-55	0.0094593	0.0254705	-0.006021	-0.014349	-0.000291	-0.000912	-0.001253	0.003353
-54	0.0067762	0.0322467	-0.002381	-0.016731	0.0025462	0.001634	0.0022781	0.005631
-53	0.0057126	0.0379593	-0.005633	-0.022363	0.0024258	0.00406	-0.001504	0.004128
-52	0.0081731	0.0461324	-0.002852	-0.025215	0.0019075	0.005967	0.0068979	0.011025
-51	0.0037416	0.049874	-0.003355	-0.02857	0.0082858	0.014253	0.0015188	0.012544
-50	0.0057795	0.0556535	0.0042085	-0.024361	-0.001181	0.013072	0.0025905	0.015135
-49	0.0063632	0.0620168	-0.00587	-0.030231	0.0007577	0.01383	-0.00232	0.012815
-48	-0.00078	0.0612366	0.004391	-0.02584	0.0019686	0.015798	0.0062261	0.019041
-47	-0.00091	0.0603268	-0.001644	-0.027484	0.007077	0.022875	0.005741	0.024782
-46	-0.00219	0.0581369	-0.001207	-0.028691	-0.000074	0.022802	0.0014272	0.026209
-45	-0.004771	0.0533655	-0.006589	-0.03528	0.0035625	0.026364	0.0048444	0.031054
-44	-0.005034	0.0483315	0.0065163	-0.028764	-0.001036	0.025328	0.0050675	0.036121
-43	0.0023706	0.0507021	-0.004214	-0.032978	0.0053965	0.030725	0.0015194	0.037641
-42	0.0071997	0.0579018	0.0000795	-0.032899	0.0034441	0.034169	0.0113483	0.048989
-41	0.0001633	0.058065	-0.003654	-0.036552	0.0048395	0.039008	0.0087046	0.057694
-40	-0.00258	0.0554856	0.0004498	-0.036103	0.0064054	0.045414	0.0091339	0.066827
-39	0.0041184	0.059604	-0.007127	-0.04323	0.006508	0.051922	0.0061447	0.072972
-38	-0.006708	0.0528964	-0.001759	-0.044989	0.0083389	0.060261	0.0092194	0.082191
-37	-0.001119	0.0517772	-0.001088	-0.046077	-0.005164	0.055096	0.0053792	0.087571
-36	-0.00057	0.0512073	-0.002414	-0.048491	0.0003376	0.055434	0.0035694	0.09114
-35	0.0051683	0.0563755	-0.002477	-0.050968	-0.003284	0.05215	0.0029318	0.094072
-34	-0.01582	0.0405559	-0.003123	-0.054092	0.007149	0.059299	0.0084232	0.102495
-33	-0.002065	0.0384907	0.0022913	-0.051801	0.008031	0.06733	0.0075557	0.110051
-32	0.0002145	0.0387052	-0.001524	-0.053324	0.006545	0.073875	0.0043558	0.114407
-31	0.0024548	0.04116	0.003121	-0.050203	0.0166366	0.090512	0.004168	0.118575
-30	0.0012674	0.0424274	0.0063574	-0.043846	-0.000968	0.089544	-0.001926	0.116649
-29	-0.002113	0.0403147	-0.002738	-0.046584	0.004982	0.094526	-0.001203	0.115446
-28	-0.001999	0.0383157	0.0013189	-0.045265	0.000058	0.094584	0.0076105	0.123057
-27	-0.000858	0.0374574	0.0020567	-0.043208	-0.004587	0.089997	-0.002094	0.120963
-26	-0.008065	0.0293929	0.002655	-0.040553	0.00192	0.091917	0.0030501	0.124013
-25	-0.002309	0.0270842	-0.001711	-0.042264	0.0074415	0.099358	0.0074475	0.13146
-24	-0.003032	0.0240525	-0.00754	-0.049804	0.0047675	0.104126	0.0047994	0.13626
-23	-0.004218	0.0198342	-0.005934	-0.055738	0.0016433	0.105769	0.0099502	0.14621
-22	-0.005591	0.0142435	0.0066277	-0.04911	-0.007879	0.09789	-0.002432	0.143778
-21	0.0012035	0.0154469	0.0091367	-0.039973	-0.000982	0.096908	0.0017615	0.14554

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-20	0.0019703	0.0174173	0.0053276	-0.034646	0.0023921	0.0993	-0.006622	0.138917
-19	0.0021563	0.0195736	0.0009325	-0.033713	0.0053862	0.104686	-0.00178	0.137137
-18	-0.002111	0.0174627	0.0034496	-0.030263	-0.001228	0.103459	-0.002013	0.135124
-17	-0.003639	0.0138233	-0.006134	-0.036398	-0.001512	0.101947	0.0130011	0.148125
-16	0.0099234	0.0237466	0.005389	-0.031009	-0.001354	0.100593	0.0063963	0.154522
-15	-0.005491	0.0182559	0.0030216	-0.027987	0.0017635	0.102356	0.0080488	0.162571
-14	0.0012367	0.0194926	0.0004405	-0.027547	-0.002928	0.099428	0.0037364	0.166307
-13	-0.0036	0.0158926	0.0034725	-0.024074	0.002109	0.101538	0.0060204	0.172327
-12	-0.006197	0.009696	-0.000175	-0.024249	-0.000499	0.101039	0.0085792	0.180907
-11	0.0050267	0.0147227	0.0017568	-0.022492	0.0069006	0.107939	-0.001572	0.179335
-10	0.0010275	0.0157503	-0.005081	-0.027573	-0.000687	0.107252	0.0025231	0.181858
-9	0.007246	0.0229963	0.0001579	-0.027415	0.0025592	0.109812	-0.000091	0.181767
-8	0.0057461	0.0287424	0.001231	-0.026184	-0.00021	0.109602	0.0002448	0.182012
-7	-0.000837	0.0279055	0.0049802	-0.021204	-0.001844	0.107758	-0.00258	0.179431
-6	-0.001126	0.0267799	0.0068656	-0.014339	-0.001601	0.106157	0.0040586	0.18349
-5	0.0073356	0.0341155	-0.00176	-0.016098	0.0055563	0.111713	0.0017568	0.185247
-4	0.0020674	0.0361829	-0.008041	-0.024139	0.0011242	0.112837	-0.002557	0.18269
-3	0.0033432	0.0395261	-0.002841	-0.02698	-0.004254	0.108583	-0.001375	0.181315
-2	0.0024175	0.0419436	0.0001308	-0.02685	-0.001245	0.107338	0.0015165	0.182831
-1	0.0040409	0.0459846	0.0029466	-0.023903	-0.001633	0.105705	0.0030323	0.185864
0	0.0001608	0.0461453	0.0034614	-0.020442	-0.002487	0.103218	0.0046227	0.190486
1	-0.010978	0.035167	-0.000573	-0.021015	-0.001902	0.101316	0.0019401	0.192426
2	-0.00318	0.0319868	-0.001064	-0.022078	-0.002766	0.09855	0.0026651	0.195091
3	-0.002794	0.0291933	0.0027887	-0.01929	0.0007441	0.099294	-0.005168	0.189923
4	0.0008568	0.0300501	-0.001871	-0.021161	-0.002969	0.096325	-0.001757	0.188166
5	0.0020482	0.0320983	0.0044787	-0.016682	0.0025629	0.098888	0.0023203	0.190486
6	-0.000218	0.0318802	-0.000012	-0.016695	0.0084057	0.107293	-0.002088	0.188398
7	0.0024333	0.0343135	0.00768	-0.009015	0.0028204	0.110114	0.0057465	0.194145
8	0.0023061	0.0366196	0.0000622	-0.008953	-0.00195	0.108164	0.0015313	0.195676
9	0.0062895	0.0429091	0.0013914	-0.007561	-0.006702	0.101462	0.0041757	0.199852
10	0.0006724	0.0435815	0.0019282	-0.005633	-0.006967	0.094495	-0.002974	0.196878
11	-0.002356	0.0412253	0.0009699	-0.004663	-0.002941	0.091554	-0.000498	0.19638
12	-0.002048	0.039177	-0.001648	-0.006311	0.0028156	0.094369	-0.004506	0.191874
13	0.0000451	0.0392222	0.0014426	-0.004869	-0.002399	0.09197	-0.003081	0.188794
14	0.0036827	0.0429049	0.0058233	0.0009546	-0.001997	0.089973	0.0053227	0.194116
15	-0.003214	0.0396904	0.0013034	0.002258	0.0026152	0.092588	-0.000221	0.193895
16	-0.000847	0.0388437	-0.000199	0.0020587	-0.002024	0.090564	0.0068491	0.200744
17	-0.000354	0.0384898	0.0065629	0.0086216	0.0025743	0.093138	-0.001702	0.199042
18	-0.004079	0.0344106	-0.00281	0.0058119	-0.000714	0.092425	0.0006509	0.199693
19	0.0023364	0.036747	0.0016997	0.0075116	-0.001138	0.091287	-0.000294	0.1994
20	0.0014858	0.0382328	0.0012799	0.0087915	-0.000083	0.091204	-0.00009	0.19931

Cg = Control Group

Eg = Experimental Group

**Appendix D Table D.12**  
**Average Return Model (ARM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Loser Firms**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	0.0203272	0.020327	-0.021027	-0.021027	0.0067568	0.006757	0.0087901	0.00879
-59	0.0140104	0.034338	-0.013005	-0.034033	0.0266667	0.033423	0.0143088	0.023099
-58	0.0058883	0.040226	-0.008801	-0.042833	-0.008475	0.024949	0.0084417	0.031541
-57	-0.005009	0.035217	-0.022196	-0.065029	0.0253164	0.050265	0.0197517	0.051292
-56	-0.011875	0.023341	0.002335	-0.062694	0.0154757	0.065741	0.0153013	0.066594
-55	0.0144293	0.03777	0.0043062	-0.058388	0.0229885	0.08873	0.0256811	0.092275
-54	0.0127842	0.050555	0.0164305	-0.041957	0.0187006	0.10743	0.0159944	0.108269
-53	-0.011079	0.039475	0.0010858	-0.040871	0.0349702	0.1424	0.018865	0.127134
-52	-0.020814	0.018661	0.0042518	-0.03662	-0.014852	0.127549	0.0160448	0.143179
-51	0.0047198	0.023381	0.0002737	-0.036346	0.0087719	0.136321	0.0136899	0.156869
-50	-0.014534	0.008847	0.0136906	-0.022655	0.0239268	0.160248	0.0257468	0.182616
-49	-0.028864	-0.020017	-0.002448	-0.025103	0.0332271	0.193475	0.0058476	0.188463
-48	-0.025789	-0.045806	0.0138419	-0.011261	0.0319183	0.225393	0.004423	0.192886
-47	-0.013183	-0.058989	-0.008106	-0.019367	0.0217102	0.247103	0.0184548	0.211341
-46	-0.004265	-0.063253	-0.013113	-0.03248	0.0241935	0.271297	0.0018858	0.213227
-45	-0.009569	-0.072823	0.004456	-0.028024	0.0197706	0.291067	0.0158157	0.229043
-44	-0.002481	-0.075304	0.0134541	-0.01457	0.022388	0.313455	0.0164345	0.245477
-43	-0.006501	-0.081805	-0.035335	-0.049904	-0.004348	0.309108	0.0326742	0.278151
-42	-0.014767	-0.096571	0.0176307	-0.032274	0.0098998	0.319007	0.0194141	0.297565
-41	-0.010635	-0.107207	0.0304603	-0.001813	0.023353	0.34236	0.0185267	0.316092
-40	0.0244392	-0.082767	0.0073727	0.005559	-0.026316	0.316045	0.0200917	0.336184
-39	0.0178646	-0.064903	0.0009448	0.006504	-0.023314	0.292731	0.0118072	0.347991
-38	-0.004298	-0.069201	0.0160452	0.022549	0.0220588	0.31479	0.0143253	0.362316
-37	0.0245828	-0.044618	-0.001943	0.020606	0.0114671	0.326257	0.009294	0.37161
-36	0.0278572	-0.016761	0.0085532	0.02916	0.0069444	0.333201	0.013492	0.385102
-35	0.0285955	0.011835	0.0090233	0.038183	0	0.333201	0.0055452	0.390647
-34	0.0346204	0.046455	-0.010221	0.027962	0	0.333201	0.0211753	0.411823
-33	0.0462131	0.092668	-0.00491	0.023052	0.0087719	0.341973	-0.013154	0.398669
-32	0.0227232	0.115391	-0.005565	0.017488	-0.003307	0.338667	0.0018676	0.400536
-31	0.0080067	0.123398	0.0039156	0.021403	0.0059524	0.344619	0.0126112	0.413147
-30	-0.010515	0.112883	-0.011533	0.009871	0.0254238	0.370043	-0.000533	0.412614
-29	-0.019795	0.093088	-0.008432	0.001439	0.00112	0.371163	0.0124777	0.425092
-28	0.0014611	0.094549	-0.012518	-0.011079	-0.010116	0.361047	0.0162088	0.4413
-27	0.0030804	0.097629	0.0099894	-0.00109	-0.003937	0.35711	0.0064567	0.447757
-26	-0.004183	0.093446	-0.018548	-0.019637	-0.007937	0.349173	-0.002194	0.445564
-25	0.0250953	0.118542	-0.009819	-0.029456	0.0040323	0.353205	0.0163775	0.461941
-24	0.0018265	0.120368	-0.010182	-0.039638	-0.011246	0.341959	0.0027488	0.46469
-23	-0.009428	0.11094	0.0254498	-0.014188	0.0113852	0.353344	0.0139715	0.478661
-22	0.0011368	0.112077	0.0027053	-0.011483	0.0072464	0.360591	0.015971	0.494632
-21	0.0014767	0.113553	0.0078782	-0.003605	-0.000857	0.359733	0.0046937	0.499326

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-20	-0.001818	0.111735	0.0176271	0.014022	-0.023302	0.336431	0.0073586	0.506685
-19	0.0018441	0.113579	0.0052638	0.019286	0.0071429	0.343574	0.01101	0.517695
-18	0.0257351	0.139314	-0.03423	-0.014944	0.0127234	0.356297	0.0320556	0.54975
-17	0.0248553	0.16417	0.0275092	0.012565	0.0202703	0.376568	0.0227524	0.572503
-16	0.0255929	0.189763	0.0019317	0.014497	-0.015207	0.361361	0.0152502	0.587753
-15	-0.003129	0.186633	0.0017042	0.016201	0.027027	0.388388	0.0276953	0.615448
-14	-0.015013	0.17162	0.0093214	0.025523	0.0171665	0.405554	0.0074235	0.622871
-13	-0.015871	0.155749	0.014316	0.039838	0.0287006	0.434255	0.0053005	0.628172
-12	-0.00812	0.147629	0.0027466	0.042585	0.0275293	0.461784	0.0018843	0.630056
-11	-0.009415	0.138214	-0.011724	0.030861	0	0.461784	0.0000257	0.630082
-10	0.0074593	0.145673	0.0045317	0.035392	0.0235405	0.485324	0.0196965	0.649778
-9	0.0173978	0.163071	-0.001771	0.033622	0.0263158	0.51164	-0.003091	0.646687
-8	-0.008278	0.154793	0.0314466	0.065068	0.016453	0.528093	0.0227927	0.66948
-7	-0.005871	0.148922	0.0132533	0.078322	0.0004141	0.528507	0.0107504	0.68023
-6	-0.005239	0.143683	0.0119656	0.090287	-0.018868	0.509639	0.0006355	0.680866
-5	-0.001063	0.14262	0.0193473	0.109635	0.0098039	0.519443	0.010662	0.691528
-4	0.0054813	0.148101	0.0048649	0.114499	-0.008772	0.510671	0.0036548	0.695183
-3	-0.007225	0.140876	-0.019003	0.095497	-0.013736	0.496935	0.0093922	0.704575
-2	0.0032219	0.144098	-0.023698	0.071798	0.0045455	0.501481	0.0111612	0.715736
-1	0.0050049	0.149103	0.01362	0.085418	-0.027027	0.474453	-0.007149	0.708587
0	-0.00323	0.145874	0.0060919	0.09151	-0.009246	0.465207	0.0120638	0.720651
1	-0.000936	0.144938	-0.001657	0.089854	-0.006132	0.459075	0.015059	0.73571
2	0.0047568	0.149695	-0.003672	0.086182	0.0263158	0.485391	-0.006502	0.729208
3	0.0028536	0.152548	-0.006585	0.079597	0.02	0.505391	-0.000868	0.72834
4	-0.009839	0.14271	0.0088364	0.088433	-0.04222	0.463171	-0.008236	0.720104
5	0.0038639	0.146573	-0.004675	0.083758	-0.004384	0.458787	-0.002189	0.717914
6	0.0086158	0.155189	0.0126004	0.096358	-0.005192	0.453595	-0.013256	0.704659
7	0.0025064	0.157696	-0.005426	0.090933	-0.010544	0.443051	0.0042058	0.708864
8	-0.008372	0.149324	0.0081629	0.099096	-0.03575	0.407301	0.0049359	0.7138
9	-0.008107	0.141217	-0.003997	0.095099	0	0.407301	0.006194	0.719994
10	-0.002859	0.138358	0.0032004	0.098299	0.0063034	0.413604	-0.007179	0.712815
11	0.0017791	0.140137	-0.003605	0.094694	-0.005435	0.408169	-0.000213	0.712602
12	-0.000167	0.13997	-0.003357	0.091338	-0.016484	0.391686	0.0110593	0.723661
13	0.0021449	0.142115	-0.014682	0.076655	-0.009709	0.381977	0.0049903	0.728652
14	-0.017362	0.124753	0.0041022	0.080758	-0.016314	0.365663	0.004039	0.732691
15	0.003164	0.127917	0.0004471	0.081205	0.005	0.370663	-0.002802	0.729888
16	-0.024832	0.103084	0.001627	0.082832	0	0.370663	-0.00223	0.727658
17	-0.025801	0.077283	-0.010537	0.072295	-0.000864	0.3698	0.0063299	0.733988
18	-0.009295	0.067988	-0.006823	0.065472	-0.006863	0.362937	0.0002127	0.734201
19	0.0189666	0.086954	0.0083081	0.07378	0.0182478	0.381185	-0.014804	0.719397
20	-0.003075	0.083879	0.0061514	0.079931	0.026084	0.407269	-0.005693	0.713705

Cg = Control Group

Eg = Experimental Group



# APPENDIX E

**Table E.1**  
**Raw Return Model (RRM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**All Sector (Study Sample)**

Days	AAR C <sub>g</sub> 1990	CAR C <sub>g</sub> 1990	AAR E <sub>g</sub> 1990	CAR E <sub>g</sub> 1990	AAR C <sub>g</sub> 1991	CAR C <sub>g</sub> 1991	AAR E <sub>g</sub> 1991	CAR E <sub>g</sub> 1991
-60	0.0053593	0.0053593	-0.002678	-0.002678	-0.003366	-0.003366	0.004607	0.004607
-59	0.0016926	0.0070519	-0.002947	-0.005625	0.0023277	-0.001039	0.006785	0.011392
-58	0.0035516	0.0106035	-0.002591	-0.008216	0.00661	0.005571	0.0033836	0.014776
-57	0.0017478	0.0123512	-0.014725	-0.022942	0.0057798	0.011351	0.0054636	0.020239
-56	-0.002068	0.0102835	0.0022553	-0.020686	0.0081807	0.019532	0.003513	0.023752
-55	0.0087641	0.0190476	-0.002649	-0.023336	0.0049178	0.02445	0.0050561	0.028808
-54	0.0059337	0.0249812	-0.000607	-0.023942	0.0046003	0.02905	0.0058583	0.034667
-53	0.0042241	0.0292053	-0.006443	-0.030385	0.0087359	0.037786	0.0052999	0.039966
-52	0.0023766	0.0315819	-0.003037	-0.033423	0.0032603	0.041046	0.0115433	0.05151
-51	0.0038915	0.0354734	-0.001894	-0.035316	0.0111748	0.052221	0.0070886	0.058598
-50	0.0036451	0.0391185	0.0053869	-0.02993	0.0043766	0.056597	0.0091488	0.067747
-49	0.0001998	0.0393182	-0.003661	-0.033591	0.0057334	0.062331	0.002785	0.070532
-48	-0.004622	0.034696	0.0029805	-0.03061	0.0067262	0.069057	0.0079822	0.078514
-47	-0.001217	0.0334794	-0.004213	-0.034824	0.0113454	0.080402	0.0118601	0.090374
-46	-0.003051	0.0304287	-0.001502	-0.036325	0.0067996	0.087202	0.0051867	0.095561
-45	-0.006053	0.0243756	-0.004639	-0.040965	0.0096507	0.096853	0.0105766	0.106138
-44	-0.00585	0.0185255	0.0043777	-0.036587	0.0038952	0.100748	0.0101261	0.116264
-43	0.0009174	0.0194429	-0.013412	-0.049998	0.004616	0.105364	0.0100594	0.126323
-42	0.0030056	0.0224485	0.0001639	-0.049835	0.0061861	0.11155	0.0166905	0.143014
-41	-0.003735	0.0187133	0.0016352	-0.048199	0.0106651	0.122215	0.0153825	0.158396
-40	0.0011204	0.0198337	-0.000488	-0.048688	0.0067141	0.128929	0.0134144	0.171811
-39	0.0034677	0.0233015	-0.00696	-0.055647	0.0049624	0.133892	0.0049249	0.176736
-38	-0.007375	0.0159269	0.0029596	-0.052688	0.0117282	0.14562	0.0152681	0.192004
-37	0.000122	0.0160488	0.0016072	-0.051081	-0.002117	0.143503	0.009044	0.201048
-36	0.0025998	0.0186487	0.0027452	-0.048335	0.0038877	0.147391	0.0075846	0.208632
-35	0.0054191	0.0240678	-0.001963	-0.050298	0.0023927	0.149784	0.0033049	0.211937
-34	-0.008805	0.0152631	-0.006976	-0.057274	0.0107592	0.160543	0.0129848	0.224922
-33	0.0030605	0.0183236	-0.000291	-0.057565	0.0100611	0.170604	0.0083253	0.233247
-32	0.0013559	0.0196795	-0.003194	-0.060759	0.0070482	0.177652	0.0051018	0.238349
-31	0.0021683	0.0218478	-0.000494	-0.061253	0.0175825	0.195235	0.0082035	0.246553
-30	0.0007913	0.0226391	0.0052725	-0.055981	0.0076019	0.202837	-0.000852	0.2457
-29	-0.004618	0.0180207	-0.004251	-0.060231	0.008677	0.211514	0.0029449	0.248645
-28	-0.001782	0.0162391	-0.002436	-0.062667	0.0020309	0.213544	0.009094	0.257739
-27	-0.001024	0.0152156	0.0047707	-0.057897	-0.003901	0.209643	0.0012945	0.259034
-26	-0.006665	0.0085511	-0.000524	-0.058421	0.0022441	0.211887	0.0068336	0.265867
-25	0.0011563	0.0097074	-0.004707	-0.063128	0.0101006	0.221988	0.0081789	0.274046
-24	-0.002457	0.0072503	-0.008903	-0.07203	0.0065726	0.228561	0.0046168	0.278663
-23	-0.004304	0.002946	0.0005787	-0.071452	0.0038128	0.232374	0.0111066	0.28977
-22	-0.004824	-0.001878	0.006866	-0.064586	-0.0071	0.225273	0.0021356	0.291905
-21	0.0015738	-0.000304	0.0086855	-0.0559	-0.000802	0.224471	0.0024569	0.294362
-20	0.0011768	0.0008731	0.007747	-0.048153	0.0007167	0.225188	-0.004712	0.28965
-19	0.0018443	0.0027174	0.0025472	-0.045606	0.007648	0.232835	0.0011404	0.290791
-18	0.0015955	0.0043129	-0.003142	-0.048748	0.0017247	0.23456	0.0047527	0.295543
-17	0.0001014	0.0044143	-0.001128	-0.049876	0.0022628	0.236823	0.0158096	0.311353
-16	0.0121982	0.0166125	0.0012966	-0.04858	-0.002876	0.233947	0.0071659	0.318519
-15	-0.004653	0.0119591	-0.001053	-0.049633	0.0054214	0.239368	0.012167	0.330686
-14	-0.000445	0.0115142	-0.000117	-0.04975	0.0008594	0.240227	0.0042764	0.334962

Days	AAK Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAK Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-13	-0.00529	0.0062241	0.0040717	-0.045679	0.006626	0.246853	0.006924	0.341886
-12	-0.005477	0.0007474	-0.000904	-0.046583	0.0046151	0.251469	0.0085256	0.350412
-11	0.0043198	0.0050672	-0.002128	-0.048711	0.0058857	0.257354	-0.000104	0.350308
-10	0.0026813	0.0077485	-0.000135	-0.048846	0.0031372	0.260491	0.0081632	0.358471
-9	0.0092909	0.0170394	0.0029249	-0.045921	0.0078167	0.268308	0.0023683	0.36084
-8	0.0047802	0.0218196	0.010784	-0.035137	0.0032005	0.271509	0.0061882	0.367028
-7	-0.002191	0.0196289	0.0055171	-0.02962	0.0000226	0.271531	0.0040064	0.371034
-6	-0.000843	0.0187858	0.0096859	-0.019934	-0.004569	0.266962	0.0041907	0.375225
-5	0.0073204	0.0261061	0.0018235	-0.01811	0.0055525	0.272515	0.0029888	0.378214
-4	0.0029693	0.0290754	-0.007029	-0.025139	0.0005423	0.273057	-0.002659	0.375555
-3	0.0000483	0.0291237	-0.003813	-0.028952	-0.003804	0.269253	-0.000056	0.375498
-2	0.0022544	0.0313781	-0.003021	-0.031973	0.0002085	0.269461	0.0039648	0.379463
-1	0.0058472	0.0372253	0.0031859	-0.028787	-0.00483	0.264632	-0.000107	0.379356
0	-0.000865	0.03636	0.0045144	-0.024273	-0.00242	0.262212	0.0046964	0.384053
1	-0.009204	0.0271564	-0.00161	-0.025882	-0.001245	0.260968	0.0037053	0.387758
2	-0.001134	0.0260224	0.0001135	-0.025769	0.0021944	0.263162	0.001286	0.389044
3	-0.001448	0.0245749	-0.000774	-0.026543	0.0034184	0.266581	-0.00407	0.384974
4	-0.00102	0.0235544	0.0010428	-0.0255	-0.00771	0.258871	-0.002912	0.382062
5	0.0033762	0.0269306	0.0036152	-0.021885	0.0015704	0.260441	0.0008853	0.382947
6	0.0012632	0.0281938	0.0024454	-0.019439	0.0063729	0.266814	-0.002044	0.380904
7	0.0028289	0.0310227	0.005192	-0.014247	0.0011171	0.267931	0.0050302	0.385934
8	0.0021122	0.0331349	0.0015404	-0.012707	-0.005534	0.262397	0.0017233	0.387657
9	0.0059088	0.0390437	-0.002229	-0.014936	-0.00565	0.256747	0.003186	0.390843
10	0.0010536	0.0400973	-0.002429	-0.017365	-0.005755	0.250992	-0.003123	0.38772
11	-0.002515	0.0375823	0.000873	-0.016492	-0.002535	0.248458	0.0003837	0.388104
12	-0.003135	0.0344469	-0.002164	-0.018655	0.0005846	0.249043	0.000416	0.38852
13	-0.000098	0.0343492	-0.002108	-0.020763	-0.002752	0.246291	-0.001927	0.386593
14	0.0022256	0.0365748	0.0073406	-0.013422	-0.00306	0.24323	0.0064333	0.393026
15	-0.00254	0.0340346	0.0008269	-0.012595	0.0036976	0.246928	-0.001182	0.391845
16	-0.004351	0.0296841	0.0005539	-0.012041	-0.000865	0.246063	0.0072692	0.399114
17	-0.004863	0.0248212	0.0043345	-0.007707	0.0020885	0.248151	-0.000999	0.398115
18	-0.005209	0.0196117	-0.003661	-0.011368	-0.001994	0.246157	-0.000036	0.398079
19	0.0030054	0.0226171	0.0058465	-0.005522	0.0016258	0.247783	-0.002206	0.395874
20	-0.000684	0.0219334	0.0026977	-0.002824	0.0019472	0.24973	0.0007315	0.396605

Cg = Control Group

Eg = Experimental Group



**Appendix D Table D.2**  
**Raw Return Model (RRM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Financial Sector**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	-0.001302	-0.001302	-0.000618	-0.000618	-0.00731	-0.00731	0.002378	0.002378
-59	0.0062	-0.001302	-0.007672	-0.00829	0.0059791	-0.001331	-0.000142	0.002236
-58	0.0091606	0.007859	0.004182	-0.004108	0.00123	-0.001331	0.006155	0.008391
-57	-0.008772	-0.000913	-0.015575	-0.019683	-0.007342	-0.008673	0.0044386	0.01283
-56	0.0200277	0.019114	-0.001094	-0.020777	-0.0062	-0.008673	0.0069216	0.019752
-55	0.0150697	0.034184	-0.007236	-0.028013	-0.0054	-0.008673	0.0058314	0.025583
-54	0.0171568	0.051341	0.0042487	-0.023764	-0.0032	-0.008673	0.005731	0.031314
-53	0.0197123	0.071053	-0.002423	-0.026187	-0.0027	-0.008673	0.0130148	0.044329
-52	0.0166667	0.08772	-0.00682	-0.033007	-0.002899	-0.011572	0.0106255	0.054954
-51	0.0126799	0.1004	-0.007274	-0.040281	0.0013333	-0.010238	0.0171166	0.072071
-50	0.0161128	0.116513	-0.000053	-0.040335	-0.005982	-0.01622	0.0043387	0.076409
-49	0.0334613	0.149974	0.0002117	-0.040123	0.0075008	-0.008719	0.0098179	0.086227
-48	-0.000352	0.149622	-0.000027	-0.04015	0.00524	-0.008719	-0.005954	0.080273
-47	0.0062657	0.155888	-0.004551	-0.044702	0.0013228	-0.007397	0.0094425	0.089716
-46	-0.031163	0.124725	0.0049067	-0.039795	0.0089286	0.001532	-0.00813	0.081585
-45	-0.016017	0.108708	0.0057483	-0.034047	0.00654	0.001532	0.0155384	0.097124
-44	-0.007352	0.101356	0.0037753	-0.030271	0.00266	0.001532	-0.000229	0.096895
-43	0.0141883	0.115544	-0.005362	-0.035633	-0.002899	-0.001367	0.0139382	0.110833
-42	0.0155583	0.131103	0.0022798	-0.033353	0.0058997	0.004533	0.0164034	0.127237
-41	-0.013333	0.117769	0.0096866	-0.023667	-0.00731	-0.002777	0.0156854	0.142922
-40	0.0027778	0.120547	-0.002151	-0.025818	0.0014948	-0.001282	0.0159594	0.158881
-39	-0.018096	0.102451	0.0025489	-0.023269	0.0072464	0.005964	0.0028678	0.161749
-38	-0.010595	0.091855	0.0007619	-0.022507	0.0014184	0.007383	0.0185332	0.180282
-37	0.0137239	0.105579	0.0091467	-0.01336	0.0086259	0.016009	-0.001721	0.178562
-36	0.0037028	0.109282	0.0110824	-0.002278	0.0069444	0.022953	0.0093146	0.187876
-35	0.00234	0.109282	0.0071413	0.0048633	0.0068027	0.029756	-0.004322	0.183554
-34	-0.014407	0.094875	-0.006459	-0.001596	0.0476364	0.077392	-0.000833	0.182721
-33	-0.015785	0.07909	-0.001166	-0.002762	0.0333848	0.110777	0.006164	0.188885
-32	-0.006312	0.072778	0.0013716	-0.001391	0.0229469	0.133724	-0.00655	0.182335
-31	0.0178713	0.09065	0.0086344	0.0072436	0.0413793	0.175103	0.0127112	0.195046
-30	-0.006131	0.084519	0.0125868	0.0198303	0.0056497	0.180753	-0.014244	0.180803
-29	-0.003114	0.081405	-0.000852	0.0189789	-0.001023	0.17973	0.0033743	0.184177
-28	-0.004831	0.076574	-0.004577	0.0144022	-0.010684	0.169047	0.0139848	0.198162
-27	0.0012821	0.077856	-0.002378	0.0120245	-0.019368	0.149679	0.0045153	0.202677
-26	0.0009804	0.078836	-0.001933	0.0100914	-0.008551	0.141127	0.0025237	0.205201
-25	0.0078201	0.086656	-0.003906	0.0061851	0.0358574	0.176985	0.0038151	0.209016
-24	-0.007271	0.079385	-0.004296	0.0018888	0.0091181	0.186103	0.0062006	0.215217
-23	0.0022645	0.08165	0.0058458	0.0077346	0.0011299	0.187233	0.0112898	0.226506
-22	-0.002564	0.079086	-0.006586	0.0011492	-0.025821	0.161411	0.0059028	0.232409
-21	-0.000975	0.078111	0.0107116	0.0118607	-0.00223	0.159182	0.0000358	0.232445
-20	0.001292	0.079403	-0.001425	0.010436	0.000818	0.16	-0.021899	0.210546
-19	0.00132	0.079403	-0.005359	0.0050776	0.00712	0.16	0.0001757	0.210722
-18	-0.000978	0.078425	0.0030099	0.0080875	0.0055556	0.165555	0.0007805	0.211502
-17	0.001287	0.079712	0.0043839	0.0124714	-0.0113	0.154256	0.0300887	0.241591
-16	-0.002941	0.076771	0.0188137	0.0312851	-0.001	0.154256	0.0051552	0.246746
-15	-0.008206	0.068565	-0.00974	0.0215448	-0.001093	0.153163	0.0041674	0.250914
-14	-0.035323	0.033242	-0.013398	0.008147	0.0045322	0.157695	-0.002745	0.248169
-13	-0.001292	0.03195	-0.000555	0.0075919	0.0071839	0.164879	0.0053703	0.253539
-12	0.0051282	0.037079	0.0009223	0.0085142	0.021235	0.186114	0.0006546	0.254194
-11	0.0171717	0.05425	-0.000842	0.0076724	0.0002801	0.186394	0.0013155	0.255509

Days	AAK Cg 1990	CAR Cg 1990	AAK Eg 1990	CAR Eg 1990	AAK Cg 1991	CAR Cg 1991	AAK Eg 1991	CAR Eg 1991
-10	0.0150334	0.069284	0.0039051	0.0115775	-0.012245	0.174149	0.0092644	0.264774
-9	-0.004151	0.065133	0.0070719	0.0186494	0.0028249	0.176974	0.0013396	0.266113
-8	0.0087198	0.073853	0.0056497	0.0242991	-0.00403	0.172944	0.0197414	0.285855
-7	-0.004632	0.069221	-0.009253	0.0150461	0.0047149	0.177659	0.0115637	0.297418
-6	-0.005886	0.063335	0.0041149	0.0191611	-0.005291	0.172368	-0.000362	0.297057
-5	0.0106584	0.073993	-0.006738	0.0124232	-0.006789	0.165579	-0.005968	0.291089
-4	-0.009796	0.064198	-0.008511	0.0039126	-0.005747	0.159832	-0.001703	0.289386
-3	-0.008543	0.055655	0.0022422	0.0061548	-0.002837	0.156995	-0.004157	0.285228
-2	-0.007449	0.048206	-0.000559	0.0055958	-0.0013	0.156995	-0.006184	0.279045
-1	0.0151948	0.063401	-0.015444	-0.009848	-0.017293	0.139702	0.0060029	0.285048
0	-0.013013	0.050388	-0.009492	-0.01934	-0.004444	0.135257	-0.002462	0.282585
1	-0.017983	0.032405	-0.008585	-0.027925	-0.014908	0.12035	-0.00169	0.280895
2	-0.002755	0.02965	-0.003687	-0.031612	-0.0121	0.12035	-0.003967	0.276928
3	-0.029564	0.000087	-0.007923	-0.039535	0.0028941	0.123244	-0.014473	0.262455
4	-0.015351	-0.015264	0.000811	-0.038724	0.0121212	0.135365	0.0066212	0.269076
5	0.0042553	-0.011009	-0.00131	-0.040034	-0.005684	0.129681	-0.001617	0.267459
6	0.0028011	-0.008208	-0.009852	-0.049885	0.0122625	0.141943	0.0092869	0.276746
7	0.0222919	0.014084	0.0075669	-0.042318	0.0011416	0.143085	0.0022909	0.279037
8	0.0163935	0.030478	-0.007044	-0.049362	-0.018969	0.124116	0.0094569	0.288494
9	0.0135417	0.044019	-0.010556	-0.059918	-0.006993	0.117123	0.0060481	0.294542
10	-0.002384	0.041635	-0.00923	-0.069148	-0.002299	0.114824	-0.013073	0.281469
11	0.0102056	0.051841	0.0063896	-0.062758	-0.009259	0.105565	0.0060743	0.287543
12	0.0001	0.051841	-0.010722	-0.07348	0.0059524	0.111517	-0.000698	0.286845
13	0.0005543	0.052395	-0.006642	-0.080122	0.0088783	0.120396	0.0056241	0.292469
14	0.0021	0.052395	0.0143643	-0.065758	-0.012702	0.107694	0.0113401	0.303809
15	0.0023928	0.054788	0.001439	-0.064319	0.00082	0.108514	-0.008921	0.294888
16	0.0068197	0.061608	0.0167291	-0.04759	0.0006156	0.109129	0.0098264	0.304715
17	-0.000426	0.061182	0.0151244	-0.032465	0.0021309	0.11126	-0.003687	0.301028
18	-0.005689	0.055493	-0.005141	-0.037607	-0.004546	0.106715	-0.000393	0.300635
19	0.00435	0.055493	0.0053384	-0.032268	-0.006985	0.09973	-0.004329	0.296306
20	0.0077973	0.06329	0.0059497	-0.026319	0.0011223	0.100852	-0.000027	0.296279

Cg = Control Group

Eg = Experimental Group

**Appendix E Table E.3**  
**Raw Return Model (RRM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Services Sector**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	0.021237	0.021237	-0.030439	-0.030439	-0.000897	-0.000897	0.0000478	0.000048
-59	0.016633	0.03787	-0.00727	-0.037709	0.0050093	0.004113	0.0208656	0.020913
-58	0.0157918	0.053662	-0.017943	-0.055651	0.0232339	0.027347	-0.002043	0.01887
-57	0.0098398	0.063502	-0.01286	-0.068512	0.0009904	0.028337	0.0205034	0.039374
-56	0.0043465	0.067848	0.0170419	-0.05147	0.0110627	0.0394	0.0037439	0.043118
-55	0.0288357	0.096684	0.0166808	-0.034789	0.0194958	0.058895	0.0181387	0.061256
-54	-0.012645	0.084039	0.0143547	-0.020434	0.0068912	0.065787	0.0109415	0.072198
-53	-0.009006	0.075033	0.0096368	-0.010797	0.0102788	0.076065	0.0172785	0.089476
-52	0.004339	0.079372	0.0042633	-0.006534	0.0091629	0.085228	0.0152339	0.10471
-51	0.0070873	0.08646	0.0027661	-0.003768	0.0197045	0.104933	0.0153988	0.120109
-50	-0.002441	0.084019	0.0119464	0.008178	0.0103874	0.11532	0.030321	0.15043
-49	-0.01073	0.073289	0.0163995	0.024578	-0.00161	0.11371	0.0171676	0.167598
-48	-0.004934	0.068355	0.006788	0.031366	0.0005128	0.114223	0.0154998	0.183097
-47	-0.011825	0.056531	0.0113768	0.042743	0.0085418	0.122765	0.0150096	0.198107
-46	-0.000577	0.055953	0.006798	0.049541	0.0089233	0.131688	-0.006576	0.191531
-45	-0.006011	0.049942	0.0132245	0.062765	0.0076127	0.139301	-0.008396	0.183136
-44	-0.010058	0.039884	-0.001962	0.060803	0.0138333	0.153134	0.0172766	0.200412
-43	-0.003354	0.03653	-0.014465	0.046338	0.0068027	0.159937	0.0218418	0.222254
-42	0.0101695	0.0467	0.0127119	0.05905	0.0123857	0.172322	0.0213992	0.243653
-41	-0.008532	0.038168	0.0009875	0.060037	0.0110589	0.183381	0.0124978	0.256151
-40	-0.000631	0.037537	-0.005039	0.054998	0.0105848	0.193966	0.0098417	0.265993
-39	0.0120237	0.04956	-0.00163	0.053368	0.00132	0.195286	0.00135	0.267343
-38	-0.006004	0.043556	0.0167456	0.070113	0.0188235	0.214109	0.0405028	0.307846
-37	-0.016978	0.026578	-0.002452	0.067662	-0.000993	0.213117	0.009185	0.317031
-36	0.0199211	0.046499	0.02082	0.088482	-0.001966	0.211151	-0.024078	0.292953
-35	0.0111423	0.057641	-0.011747	0.076735	-0.00381	0.207341	-0.008456	0.284496
-34	-0.003516	0.054125	-0.016667	0.060069	-0.004945	0.202396	0.0131893	0.297686
-33	0.0145633	0.068688	-0.015388	0.044681	0.0040389	0.206435	0.0106952	0.308381
-32	-0.000763	0.067925	-0.013369	0.031313	-0.000908	0.205527	0.0102564	0.318637
-31	-0.008802	0.059123	0.0003265	0.031639	0.0162197	0.221747	-0.007389	0.311248
-30	-0.000766	0.058357	-0.013682	0.017957	0.0082874	0.230034	-0.003018	0.308231
-29	0.0036692	0.062026	-0.011302	0.006655	0.0126321	0.242666	0.0056818	0.313913
-28	0.0053927	0.067419	0.0008254	0.007481	0.0067973	0.249463	0.0061111	0.320024
-27	-0.002233	0.065186	0.0050329	0.012513	-0.00834	0.241124	0.0022567	0.32228
-26	-0.009482	0.055704	-0.023647	-0.011133	-0.003512	0.237611	-0.004371	0.317909
-25	-0.020312	0.035392	-0.008755	-0.019888	0.0005521	0.238164	0.0067103	0.32462
-24	-0.009631	0.025761	0.0012354	-0.018653	-0.002573	0.23559	0.0092047	0.333824
-23	-0.013981	0.01178	0.0084746	-0.010178	-0.004722	0.230869	0.0100087	0.343833
-22	-0.020648	-0.008867	0.0300653	0.019887	-0.010694	0.220174	0.0000871	0.34392
-21	0.0111003	0.002233	-0.00995	0.009938	-0.006161	0.214013	-0.003769	0.340151
-20	-0.008715	-0.006482	0.0213996	0.031337	-0.010479	0.203534	0.016427	0.356578
-19	0.0080158	0.001534	0.0089599	0.040297	0.0067787	0.210313	-0.012529	0.34405
-18	0.00681	0.001534	-0.036875	0.003423	0.0005452	0.210858	0.0213161	0.365366
-17	0.0017711	0.003305	0.0221035	0.025526	0.0176989	0.228557	0.021557	0.386923
-16	0.0107955	0.014101	-0.013924	0.011602	-0.003983	0.224575	0.0098903	0.396813
-15	-0.011644	0.002457	-0.005165	0.006438	0.017802	0.242377	0.0230691	0.419882
-14	0.0287734	0.03123	0.0006422	0.00708	0.0080959	0.250473	-0.005465	0.414417
-13	-0.00235	0.02888	0.0003	0.00708	0.0251407	0.275613	-0.000704	0.413713
-12	-0.004306	0.024574	0.0019461	0.009026	0.0076106	0.283224	0.0105741	0.424287
-11	0.0029267	0.027501	-0.00148	0.007546	0.0178379	0.301062	0.0006142	0.424901

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-10	-0.00511	0.022391	0.0089418	0.016488	0.0157884	0.31685	0.0190643	0.443966
-9	0.0038322	0.026223	0.0171209	0.033609	0.0130637	0.329914	0.002551	0.446517
-8	0.0141204	0.040344	0.0285813	0.06219	0.0208108	0.350725	0.0022894	0.448806
-7	0.0075315	0.047875	0.011234	0.073424	-0.002938	0.347786	0.0076136	0.45642
-6	0.0072575	0.055133	0.0321924	0.105616	-0.011436	0.33635	-0.000614	0.455806
-5	0.0126813	0.067814	0.0122804	0.117897	0.0111864	0.347537	0.0106299	0.466435
-4	0.003498	0.071312	0.0169374	0.134834	0.0038835	0.35142	-0.002073	0.464362
-3	0.0094421	0.080754	-0.027076	0.107758	-0.00319	0.34823	0.0120722	0.476434
-2	0.0159549	0.096709	-0.008125	0.099633	0.0096493	0.357879	0.0162117	0.492646
-1	-0.003738	0.092971	0.0215661	0.121199	0.0083051	0.366184	-0.032924	0.459722
0	0.0143126	0.107283	0.0188419	0.140041	0.0119303	0.378114	-0.000087	0.459635
1	-0.004166	0.103117	-0.012469	0.127573	0.0151813	0.393296	0.0201613	0.479796
2	-0.002052	0.101065	0.0008151	0.128388	0.0147	0.393296	-0.011127	0.468669
3	0.001668	0.102734	0.0041128	0.132501	0.0156611	0.408957	0.0037194	0.472388
4	0.0007668	0.1035	0.012313	0.144814	-0.020329	0.388628	0.0028138	0.475202
5	-0.000187	0.103314	0.0076531	0.152467	0.0059221	0.39455	0.0048077	0.48001
6	0.0010611	0.104375	0.0079303	0.160397	0.0135084	0.408059	-0.011077	0.468933
7	-0.003307	0.101068	-0.008066	0.152331	0.0038756	0.411934	0.0089744	0.477908
8	0.0044065	0.105474	0.024542	0.176873	-0.001471	0.410463	-0.003867	0.47404
9	0.0155896	0.121064	-0.006802	0.170071	-0.002917	0.407546	0.0043879	0.478428
10	-0.001231	0.119833	-0.0077	0.170071	-0.010464	0.397082	-0.003727	0.474701
11	-0.008775	0.111058	-0.008616	0.161456	0.0031033	0.400185	0.0127551	0.487456
12	-0.007299	0.103759	0.0097846	0.17124	-0.007618	0.392568	-0.000753	0.486703
13	0.0005256	0.104285	-0.013686	0.157554	-0.013748	0.37882	-0.003968	0.482734
14	0.0128406	0.117125	-0.003463	0.154091	0.0035754	0.382396	-0.001581	0.481153
15	-0.009639	0.107487	-0.008256	0.145835	0.0030078	0.385403	-0.005816	0.475337
16	-0.001482	0.106005	-0.008085	0.13775	-0.005128	0.380275	-0.000049	0.475288
17	0.0009187	0.106924	-0.006917	0.130834	0.0094181	0.389693	0.009226	0.484514
18	-0.01257	0.094353	-0.008866	0.121968	0.0037459	0.393439	0.0051878	0.489702
19	-0.008434	0.085919	0.0153752	0.137343	0.0110383	0.404478	-0.009026	0.480676
20	-0.007138	0.078781	0.0183346	0.155678	0.0014169	0.405894	-0.006969	0.473707

Cg = Control Group

Eg = Experimental Group

**Appendix E Table E.4**  
**Raw Return Model (RRM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Industrial Sector**

Days	AAR C <sub>σ</sub> 1990	CAR C <sub>σ</sub> 1990	AAR F <sub>σ</sub> 1990	CAR F <sub>σ</sub> 1990	AAR C <sub>σ</sub> 1991	CAR C <sub>σ</sub> 1991	AAR F <sub>σ</sub> 1991	CAR F <sub>σ</sub> 1991
-60	-0.0012411	-0.0012411	0.0025151	0.002515	-0.003424	-0.003424	0.0062708	0.006271
-59	-0.0060435	-0.0072846	-0.0005445	0.001971	-0.000379	-0.003803	0.006008	0.012279
-58	-0.0051182	-0.0124028	-0.0014978	0.000473	-0.000422	-0.004225	0.0036509	0.01593
-57	0.0007588	-0.0116441	-0.0148498	-0.014377	0.0128145	0.008589	0.0026209	0.018551
-56	-0.0129964	-0.0246404	0.0001999	-0.014177	0.0093065	0.017896	0.0023879	0.020939
-55	-0.0044887	-0.0291292	-0.0052702	-0.019447	-0.001542	0.016354	0.002057	0.022996
-54	0.0125139	-0.0166152	-0.00529	-0.024737	0.0048609	0.021215	0.0048283	0.027824
-53	0.0064112	-0.010204	-0.0110976	-0.035835	0.0107907	0.032005	0.0003418	0.028166
-52	-0.003477	-0.0136811	-0.0033796	-0.039214	0.002034	0.034039	0.0110562	0.039222
-51	-0.0008135	-0.0144945	-0.0011759	-0.04039	0.0097165	0.043756	0.0021724	0.041394
-50	0.0028704	-0.0116242	0.0057239	-0.034666	0.0044901	0.048246	0.0062105	0.047605
-49	-0.0048154	-0.0164396	-0.0091076	-0.043774	0.009224	0.05747	-0.002464	0.045141
-48	-0.0058729	-0.0223125	0.0031287	-0.040645	0.0124201	0.06989	0.0108005	0.055941
-47	0.0021827	-0.0201298	-0.0073885	-0.048034	0.0162439	0.086134	0.0119605	0.067902
-46	0.004946	-0.0151837	-0.0052728	-0.053307	0.0049101	0.091044	0.0118684	0.07977
-45	-0.0027554	-0.0179391	-0.0116803	-0.064987	0.0139999	0.105044	0.0130038	0.092774
-44	-0.0030115	-0.0209507	0.0059026	-0.059084	-0.000328	0.104717	0.0118907	0.104565
-43	-0.0011333	-0.022084	-0.0157319	-0.074816	0.005906	0.110623	0.0063541	0.111019
-42	-0.0051586	-0.0272425	-0.003146	-0.077962	0.0028375	0.11346	0.0157899	0.126809
-41	0.0021292	-0.0251133	-0.0007709	-0.078733	0.016438	0.129898	0.0158942	0.142703
-40	0.0015409	-0.0235724	0.0009947	-0.077738	0.0063034	0.136201	0.0133628	0.156066
-39	0.0059025	-0.0176699	-0.0110844	-0.088823	0.0062247	0.142426	0.0063271	0.162393
-38	-0.0070622	-0.0247322	0.0007513	-0.088072	0.0112229	0.153649	0.0089244	0.171317
-37	0.0050881	-0.019644	0.0000807	-0.087991	-0.006322	0.147327	0.0124157	0.183731
-36	-0.0073907	-0.0270347	-0.0036928	-0.091684	0.006121	0.153448	0.0137041	0.197435
-35	0.0040459	-0.0229889	-0.0027778	-0.094461	0.0043684	0.157817	0.0081895	0.205625
-34	-0.0098751	-0.032864	-0.0050994	-0.099561	0.0071913	0.165008	0.0173054	0.22293
-33	0.0029517	-0.0299123	0.0031638	-0.096397	0.0056322	0.17064	0.0085089	0.231439
-32	0.0050891	-0.0248232	-0.002493	-0.09889	0.006169	0.176809	0.0076962	0.239135
-31	0.0030285	-0.0217946	-0.0035498	-0.10244	0.0104073	0.187216	0.0100627	0.249198
-30	0.0039638	-0.0178309	0.006953	-0.095487	0.0078718	0.195088	0.0038321	0.25303
-29	-0.009724	-0.0275549	-0.0038398	-0.099326	0.0097128	0.204801	0.0022331	0.255263
-28	-0.0047509	-0.0323058	-0.0024467	-0.101773	0.0036211	0.208422	0.0081775	0.263441
-27	-0.0011202	-0.033426	0.0069728	-0.0948	0.0037203	0.212142	0.0000749	0.263515
-26	-0.0076476	-0.0410735	0.0047887	-0.090012	0.0090406	0.221183	0.0105535	0.274069
-25	0.010862	-0.0302115	-0.0041077	-0.094119	0.0068197	0.228003	0.0098661	0.283935
-24	0.0031331	-0.0270784	-0.0124914	-0.106611	0.0108051	0.238808	0.0031508	0.287086
-23	-0.0011181	-0.0281965	-0.0027469	-0.109358	0.0094485	0.248256	0.0112798	0.298366
-22	0.0032146	-0.0249819	0.0062298	-0.103128	0.0011365	0.249393	0.0013772	0.299743
-21	-0.0028692	-0.0278511	0.0119689	-0.091159	0.0026507	0.252044	0.0045322	0.304275
-20	0.0066336	-0.0212175	0.007769	-0.08339	0.0069027	0.258946	-0.003735	0.30054
-19	-0.0009695	-0.022187	0.0036936	-0.079696	0.0106802	0.269626	0.0043227	0.304863
-18	0.0033395	-0.0188475	0.0020172	-0.077679	0.0011031	0.27073	0.00252	0.307383
-17	-0.0012215	-0.020069	-0.0077599	-0.085439	-0.001792	0.268937	0.0100904	0.317473
-16	0.018024	-0.002045	-0.0010307	-0.08647	-0.00322	0.265717	0.0072273	0.324701
-15	0.0004145	-0.0016305	0.0025554	-0.083914	0.0007147	0.266432	0.012398	0.337099
-14	-0.0050513	-0.0066818	0.0039166	-0.079998	-0.004385	0.262046	0.0085444	0.345643
-13	-0.0082563	-0.0149381	0.00639	-0.073608	-0.003846	0.2582	0.0090206	0.354664

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-12	-0.0096619	-0.0245999	-0.0020814	-0.075689	-0.002589	0.255612	0.01058	0.365244
-11	0.0008098	-0.0237901	-0.0026699	-0.078359	0.0011141	0.256726	-0.000703	0.364541
-10	0.0028921	-0.020898	-0.0033218	-0.081681	0.0012361	0.257962	0.0055206	0.370061
-9	0.016804	-0.004094	-0.0013734	-0.083054	0.0065656	0.264527	0.0026547	0.372716
-8	-0.0017219	-0.0058159	0.0086586	-0.074396	-0.004173	0.260355	0.0027291	0.375445
-7	-0.0067782	-0.0125941	0.0089778	-0.065418	0.0001035	0.260458	0.0008605	0.376305
-6	-0.0036627	-0.0162568	0.006707	-0.058711	-0.000513	0.259945	0.0066399	0.382945
-5	0.0032294	-0.0130274	0.0023257	-0.056385	0.0065363	0.266482	0.0042085	0.387154
-4	0.0069305	-0.0060969	-0.0116067	-0.067992	0.0007826	0.267264	-0.003084	0.38407
-3	-0.0023067	-0.0084036	-0.0008277	-0.06882	-0.004468	0.262796	-0.001315	0.382755
-2	-0.0021226	-0.0105262	-0.0027234	-0.071543	-0.004967	0.257829	0.0045913	0.387346
-1	0.0080566	-0.0024696	0.0051995	-0.066344	-0.007972	0.249857	0.0048727	0.392219
0	-0.0052481	-0.0077177	0.0059212	-0.060422	-0.009717	0.24014	0.0079641	0.400183
1	-0.0090759	-0.0167936	0.0028791	-0.057543	-0.005816	0.234325	0.0019447	0.402128
2	-0.0000839	-0.0168775	0.0011659	-0.056378	0.004145	0.23847	0.0055583	0.407686
3	0.0061937	-0.0106839	0.0004548	-0.055923	-0.003208	0.235261	-0.002425	0.405261
4	0.0027635	-0.0079204	-0.0012567	-0.057179	-0.00731	0.227952	-0.007127	0.398133
5	0.0050624	-0.002858	0.0043203	-0.052859	0.0015711	0.229523	0.0008497	0.398983
6	0.0008629	-0.0019951	0.005174	-0.047685	0.0004454	0.229969	-0.00372	0.395263
7	-0.00025	-0.0022451	0.0072332	-0.040452	-0.000424	0.229545	0.005065	0.400328
8	-0.0039229	-0.006168	-0.0005911	-0.041043	-0.003313	0.226232	0.000458	0.400786
9	-0.0020137	-0.0081817	0.0013632	-0.03968	-0.006721	0.219511	0.0020292	0.402815
10	0.0034685	-0.0047131	-0.0007924	-0.040472	-0.004291	0.215221	0.0001461	0.402962
11	-0.0032774	-0.0079905	0.0011286	-0.039344	-0.003425	0.211796	-0.004018	0.398944
12	-0.0018673	-0.0098578	-0.0019762	-0.04132	0.0033523	0.215148	0.001014	0.399958
13	-0.0006613	-0.0105191	0.0017619	-0.039558	-0.00052	0.214628	-0.003881	0.396076
14	-0.0029298	-0.0134489	0.007397	-0.032161	-0.003533	0.211095	0.006571	0.402647
15	-0.000241	-0.0136899	0.0025458	-0.029615	0.0050401	0.216135	0.0022378	0.404885
16	-0.0096678	-0.0233577	-0.0027354	-0.03235	0.0010101	0.217145	0.0080024	0.412888
17	-0.0095539	-0.0329117	0.0032958	-0.029055	-0.001998	0.215148	-0.002303	0.410585
18	-0.0009601	-0.0338718	-0.0020984	-0.031153	-0.004333	0.210815	-0.001023	0.409562
19	0.0103627	-0.0235091	0.0040009	-0.027152	-0.000733	0.210081	-0.000099	0.409463
20	0.0000749	-0.0234342	-0.0016212	-0.028773	0.0025168	0.212598	0.002592	0.412055

Cg = Control Group

Eg = Experimental Group



**Appendix E Table E.5**  
**Raw Return Model (RRM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Low Traded Firms**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	0.0102279	0.0102279	-0.00125	-0.00125	-0.012036	-0.012036	0.0006657	0.000666
-59	0.0062054	0.0164333	0.0079145	0.006664	-0.003036	-0.015072	0.0067089	0.007375
-58	0.0105189	0.0269522	0.0005992	0.007263	0.008555	-0.006517	0.0018209	0.009196
-57	0.0012357	0.0281879	-0.010321	-0.003058	-0.005246	-0.011763	0.0011345	0.01033
-56	0.0085805	0.0367684	-0.010995	-0.014053	0.0011478	-0.010615	-0.002458	0.007872
-55	0.0160854	0.0528538	-0.00377	-0.017823	0.0039011	-0.006714	0.0014706	0.009343
-54	0.0014563	0.05431	0.0038813	-0.013942	0.0012296	-0.005485	0.0008799	0.010223
-53	0.0006562	0.0549662	-0.006034	-0.019976	0.0028947	-0.00259	-0.003168	0.007055
-52	0.0084516	0.0634178	-0.008267	-0.028243	0.0024511	-0.000139	0.0062605	0.013316
-51	0.0063824	0.0698002	-0.011196	-0.039439	0.0067865	0.006648	-0.002125	0.011191
-50	0.0128303	0.0826305	0.0126018	-0.026837	0.0029886	0.009636	0.0010197	0.01221
-49	0.0034933	0.0861238	0.0004675	-0.02637	-0.000985	0.008651	-0.001575	0.010636
-48	-0.00315	0.0829736	-0.000086	-0.026456	-0.001101	0.00755	0.0108591	0.021495
-47	-0.005912	0.0770612	-0.005173	-0.031629	0.0028783	0.010428	0.0035582	0.025053
-46	-0.009269	0.0677926	-0.012405	-0.044034	0.0017724	0.012201	0.0022585	0.027312
-45	-0.007186	0.0606066	-0.01066	-0.054694	-0.000284	0.011917	0.001504	0.028816
-44	-0.007957	0.0526495	0.0129364	-0.041758	0.0028606	0.014777	0.0069338	0.03575
-43	0.0023885	0.0550379	0.0043353	-0.037422	0.0035285	0.018306	-0.000791	0.034959
-42	0.0101268	0.0651647	-0.00551	-0.042932	0.0057819	0.024088	0.0123853	0.047344
-41	-0.007912	0.0572524	-0.014282	-0.057214	0.0050845	0.029172	0.0035051	0.050849
-40	0.0009879	0.0582403	-0.005824	-0.063037	0.0005241	0.029696	0.0072788	0.058128
-39	0.0026297	0.06087	-0.008598	-0.071635	0.0015164	0.031213	0.0043149	0.062443
-38	-0.008232	0.0526379	0.003021	-0.068614	0.0175011	0.048714	-0.00278	0.059663
-37	-0.005304	0.0473336	-0.00852	-0.077134	-0.005721	0.042993	-0.000044	0.059619
-36	0.0095166	0.0568502	-0.00195	-0.079084	-0.000098	0.042895	0.0042024	0.063821
-35	0.0055712	0.0624213	-0.006201	-0.085285	-0.007295	0.0356	-0.003044	0.060777
-34	-0.00401	0.0584117	-0.01082	-0.096105	0.0090781	0.044678	0.006482	0.067259
-33	0.0036452	0.0620569	0.0000294	-0.096076	0.0024871	0.047165	0.0023966	0.069656
-32	-0.004432	0.0576248	-0.004704	-0.10078	0.00414	0.051305	0.0018729	0.071529
-31	0.002965	0.0605898	-0.002279	-0.103059	0.0256985	0.077003	0.008466	0.079995
-30	-0.002611	0.0579786	0.00281	-0.100249	0.0031073	0.080111	0.0063135	0.086308
-29	0.0001252	0.0581038	-0.001837	-0.102085	0.0042818	0.084393	-0.001729	0.08458
-28	-0.003883	0.0542206	-0.005157	-0.107242	0.0012403	0.085633	0.0097038	0.094284
-27	-0.001387	0.0528335	-0.010785	-0.118027	-0.004954	0.080679	-0.000398	0.093886
-26	-0.004763	0.0480702	0.0008968	-0.117131	0.0040989	0.084778	0.0002243	0.09411
-25	-0.00781	0.0402601	0.0022324	-0.114898	0.0098566	0.094634	0.0077616	0.101872
-24	-0.004643	0.0356168	-0.008589	-0.123488	0.0018055	0.09644	0.0073594	0.109231
-23	-0.006697	0.0289196	-0.009775	-0.133262	0.0020861	0.098526	0.005645	0.114876
-22	-0.009237	0.0196828	0.0145972	-0.118665	-0.013146	0.08538	-0.002091	0.112786
-21	0.0052578	0.0249405	0.0156415	-0.103024	0.0008982	0.086278	0.0076911	0.120477
-20	-0.004357	0.0205832	-0.000323	-0.103347	-0.005866	0.080412	-0.007009	0.113468
-19	0.0045996	0.0251828	-0.005113	-0.10846	0.0014177	0.08183	0.0031912	0.116659
-18	-0.000293	0.0248896	0.0065505	-0.10191	0.0001905	0.082021	-0.000176	0.116484
-17	-0.00019	0.0246998	0.0002286	-0.101681	0.0024259	0.084446	0.0191261	0.13561
-16	0.0045154	0.0292152	0.0128434	-0.088838	-0.001082	0.083365	0.0040685	0.139678
-15	-0.007899	0.0213161	-0.000862	-0.0897	0.00731	0.090675	0.0066194	0.146298
-14	0.0041759	0.025492	-0.0002	-0.0899	0.002677	0.093352	-0.006916	0.139382
-13	-0.006234	0.0192583	0.011741	-0.078159	0.0107463	0.104098	-0.005982	0.1334
-12	-0.003341	0.0159174	0.0044648	-0.073694	-0.000241	0.103857	-0.002655	0.130745
-11	0.0066149	0.0225323	0.0004122	-0.073282	0.0121992	0.116056	0.0011095	0.131855

Days	Cg 1990	Cg 1990	Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-10	0.0029813	0.0255136	-0.001594	-0.074876	0.004299	0.120355	-0.005499	0.126356
-9	0.002085	0.0275986	-0.001035	-0.075911	0.0037207	0.124076	-0.001278	0.125078
-8	0.011295	0.0388936	0.0006724	-0.075239	-0.003895	0.120181	-0.000972	0.124105
-7	-0.001533	0.0373604	0.0093508	-0.065888	-0.000188	0.119993	-0.00527	0.118835
-6	-0.001106	0.0362542	0.007571	-0.058317	-0.005573	0.11442	0.0012556	0.120091
-5	0.0103164	0.0465706	-0.006557	-0.064874	0.0075068	0.121927	-0.004491	0.1156
-4	-0.002811	0.0437595	-0.01335	-0.078224	0.0027619	0.124689	-0.004863	0.110737
-3	0.0027831	0.0465425	-0.011161	-0.089385	-0.003335	0.121354	-0.005753	0.104984
-2	0.004154	0.0506965	0.0075696	-0.081815	0.0003464	0.121701	0.0063385	0.111323
-1	0.0059201	0.0566166	-0.000373	-0.082188	0.0076884	0.129389	0.0034445	0.114767
0	0.0032524	0.059869	-0.00074	-0.082928	0.0053849	0.134774	0.0053088	0.120076
1	-0.004285	0.0555845	-0.002801	-0.085729	-0.000756	0.134018	0.0026151	0.122691
2	-0.001323	0.0542611	0.0033243	-0.082405	-0.002323	0.131695	-0.001788	0.120903
3	-0.005531	0.0487298	0.0035529	-0.078852	0.0066403	0.138335	-0.006212	0.114691
4	-0.005623	0.0431071	-0.007352	-0.086204	-0.005713	0.132622	-0.006386	0.108305
5	-0.000219	0.0428882	0.0044944	-0.08171	0.0023085	0.13493	0.0014971	0.109803
6	0.0000231	0.0429112	-0.003135	-0.084845	0.0156275	0.150558	0.0011105	0.110913
7	0.0058085	0.0487198	0.0068717	-0.077973	0.0049685	0.155526	0.0037067	0.11462
8	0.0072941	0.0560139	0.0016583	-0.076315	-0.009202	0.146325	0.0046432	0.119263
9	0.0118573	0.0678712	-0.001284	-0.077598	-0.005658	0.140667	0.0000827	0.119346
10	-0.000601	0.0672698	0.0067363	-0.070862	-0.010185	0.130482	-0.003879	0.115466
11	-0.000489	0.0667808	0.0029527	-0.067909	-0.001454	0.129028	-0.001528	0.113939
12	-0.004799	0.0619818	-0.005776	-0.073685	-0.00267	0.126358	-0.009553	0.104386
13	0.0007276	0.0627094	-0.001268	-0.074953	-0.006328	0.12003	-0.001139	0.103247
14	0.0080229	0.0707323	0.0033444	-0.071608	-0.002547	0.117483	0.009567	0.112814
15	-0.004841	0.0658916	-0.002859	-0.074468	0.0028898	0.120373	0.0012171	0.114031
16	0.0013052	0.0671968	-0.00341	-0.077878	-0.002448	0.117925	0.0057281	0.119759
17	-0.001145	0.0660516	0.0099207	-0.067957	0.0049503	0.122875	-0.002648	0.117111
18	-0.007992	0.0580597	0.0022371	-0.06572	0.0028231	0.125698	0.0067763	0.123887
19	-0.004862	0.0531973	0.0005863	-0.065134	0.0036005	0.129299	-0.003337	0.120551
20	-0.002393	0.0508047	0.0013031	-0.063831	0.0032272	0.132526	-0.003439	0.117112

Cg = Control Group

Eg = Experimental Group



**Appendix E Table E.6**  
**Raw Return Model (RRM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Heavily Traded Firms**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	-0.001596	-0.001596	-0.005877	-0.005877	0.0047578	0.004758	0.0061232	0.006123
-59	-0.004754	-0.00635	-0.009102	-0.014979	0.0070164	0.011774	0.0068132	0.012936
-58	-0.006402	-0.012752	-0.004198	-0.019177	0.0024128	0.014187	0.0035033	0.01644
-57	0.0024793	-0.010273	-0.015592	-0.03477	0.0192927	0.03348	0.0053455	0.021785
-56	-0.01728	-0.027552	0.005391	-0.029379	0.014839	0.048319	0.0050395	0.026825
-55	-0.001695	-0.029247	-0.003986	-0.033365	0.0009502	0.049269	0.0050963	0.031921
-54	0.0123299	-0.016917	-0.001302	-0.034666	0.0090299	0.058299	0.0074984	0.039419
-53	0.0093211	-0.007596	-0.006242	-0.040908	0.014528	0.072827	0.0085859	0.048005
-52	-0.006302	-0.013898	-0.002417	-0.043325	0.0013729	0.0742	0.0119694	0.059975
-51	0.000333	-0.013565	0.000342	-0.042983	0.0140264	0.088226	0.0092064	0.069181
-50	-0.009477	-0.023042	0.0041533	-0.038829	0.0026401	0.090866	0.0097356	0.078917
-49	-0.004505	-0.027547	-0.004531	-0.04336	0.0136075	0.104474	0.0033713	0.082288
-48	-0.006725	-0.034272	0.0049201	-0.03844	0.0159687	0.120443	0.0054309	0.087719
-47	0.0054916	-0.02878	-0.003589	-0.042029	0.020885	0.141328	0.0132634	0.100982
-46	0.005832	-0.022948	0.002583	-0.039446	0.0101395	0.151467	0.0045704	0.105553
-45	-0.004435	-0.027383	-0.000252	-0.039698	0.0150981	0.166565	0.0120906	0.117643
-44	-0.00284	-0.030223	0.0004359	-0.039262	-0.000421	0.166144	0.008665	0.126308
-43	-0.001184	-0.031407	-0.017494	-0.056755	0.0035071	0.169651	0.0128508	0.139159
-42	-0.007168	-0.038575	-0.000087	-0.056843	0.0036482	0.173299	0.0170606	0.15622
-41	0.0022321	-0.036343	0.0071107	-0.049732	0.0122103	0.18551	0.0173898	0.173609
-40	0.0013097	-0.035033	-0.000492	-0.050224	0.005859	0.191369	0.0124729	0.186082
-39	0.0046649	-0.030368	-0.005315	-0.055538	0.0051743	0.196543	0.0044492	0.190532
-38	-0.00615	-0.036518	0.0042731	-0.051265	0.0000365	0.196579	0.0200177	0.210549
-37	0.0078737	-0.028644	0.0021949	-0.04907	0.0006713	0.197251	0.0110617	0.221611
-36	-0.007281	-0.035925	0.0005727	-0.048498	0.0050921	0.202343	0.0070506	0.228661
-35	0.0052019	-0.030723	0.000786	-0.047712	0.0056166	0.207959	0.0023862	0.231048
-34	-0.015655	-0.046378	-0.004825	-0.052537	0.0063265	0.214286	0.0127591	0.243807
-33	0.0022252	-0.044153	0.0030598	-0.049477	0.0162639	0.23055	0.0100764	0.253883
-32	0.0096244	-0.034528	-0.001879	-0.051356	0.0079315	0.238481	0.0049086	0.258792
-31	0.0010301	-0.033498	0.001296	-0.05006	0.002181	0.240662	0.0046214	0.263413
-30	0.0056521	-0.027846	0.0048362	-0.045224	0.0041989	0.244861	-0.004355	0.259058
-29	-0.011395	-0.039241	-0.006584	-0.051808	0.0066863	0.251547	0.0049199	0.263978
-28	0.0012206	-0.03802	-0.003211	-0.055019	-0.00544	0.246108	0.0086078	0.272586
-27	-0.000504	-0.038524	0.0084948	-0.046524	-0.005243	0.240865	0.0015199	0.274106
-26	-0.009381	-0.047905	0.0011229	-0.045401	-0.002452	0.238413	0.005749	0.279855
-25	0.0139654	-0.033939	-0.007502	-0.052903	0.0041462	0.242559	0.0067486	0.286603
-24	0.000666	-0.033273	-0.010112	-0.063015	0.0067929	0.249352	0.0024671	0.28907
-23	-0.000886	-0.034159	0.0029279	-0.060087	0.0049707	0.254323	0.0120262	0.301097
-22	0.0014813	-0.032678	0.0045755	-0.055511	0.0042446	0.258567	0.0046851	0.305782
-21	-0.003689	-0.036367	0.0088521	-0.046659	-0.001518	0.257049	-0.000246	0.305535
-20	0.0090826	-0.027284	0.0100833	-0.036576	0.0074681	0.264517	-0.002908	0.302627
-19	-0.002092	-0.029376	0.0037417	-0.032834	0.0143752	0.278892	-0.000315	0.302312
-18	0.0042937	-0.025082	-0.005286	-0.038121	0.0020647	0.280957	0.0057748	0.308087
-17	0.0005172	-0.024565	-0.001591	-0.039712	0.0002932	0.28125	0.015088	0.323175
-16	0.0231737	-0.001391	-0.001649	-0.041361	-0.004141	0.27711	0.0101195	0.333294
-15	-0.000017	-0.001408	-0.000997	-0.042358	0.0022416	0.279351	0.0146204	0.347914
-14	-0.007046	-0.008454	0.0012425	-0.041116	-0.003593	0.275758	0.0075084	0.355423
-13	-0.003942	-0.012396	0.0023158	-0.0388	-0.001866	0.273892	0.0101372	0.36556
-12	-0.008528	-0.020924	-0.001046	-0.039845	0.0097375	0.28363	0.0127964	0.378357
-11	0.0010412	-0.019883	-0.00435	-0.044195	-0.000862	0.282767	-0.000865	0.377492

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-10	0.0022526	-0.01763	-0.000132	-0.044327	-0.000594	0.282173	0.0143214	0.391813
-9	0.0195849	0.0019547	0.0040965	-0.04023	0.0096522	0.291826	0.0037334	0.395547
-8	-0.004527	-0.002572	0.0101178	-0.030113	0.0118107	0.303636	0.0074458	0.402993
-7	-0.00313	-0.005702	0.0035057	-0.026607	-0.001067	0.302569	0.0064592	0.409452
-6	-0.000467	-0.006169	0.0093264	-0.01728	-0.002163	0.300406	0.0050508	0.414503
-5	0.0030403	-0.003129	0.0045585	-0.012722	0.0033342	0.30374	0.0064034	0.420906
-4	0.0112271	0.0080982	-0.005133	-0.017855	-0.004044	0.299696	-0.002227	0.41868
-3	-0.003859	0.0042395	-0.002907	-0.020762	-0.006786	0.292909	0.0009757	0.419655
-2	-0.000459	0.0037803	-0.005081	-0.025843	-0.001735	0.291175	0.0043902	0.424045
-1	0.0057429	0.0095233	0.0065956	-0.019248	-0.021336	0.269839	-0.002732	0.421314
0	-0.006748	0.0027757	0.0040479	-0.0152	-0.014374	0.255465	0.0052256	0.426539
1	-0.016231	-0.013455	-0.002744	-0.017944	-0.00559	0.249876	0.0038891	0.430429
2	-0.000864	-0.014319	-0.001122	-0.019066	0.0053293	0.255205	0.001584	0.432013
3	0.0043865	-0.009932	0.0007062	-0.01836	-0.001619	0.253586	-0.00329	0.428722
4	0.0055543	-0.004378	0.0042573	-0.014103	-0.009398	0.244188	-0.002019	0.426704
5	0.008512	0.0041341	0.0045943	-0.009508	0.0013706	0.245559	0.0005686	0.427272
6	0.0030348	0.0071689	0.0044141	-0.005094	-0.007281	0.238278	-0.003739	0.423533
7	-0.001428	0.0057411	0.006413	0.0013189	-0.00471	0.233568	0.0042834	0.427816
8	-0.005291	0.0004506	0.0024172	0.0037361	-0.002428	0.23114	0.0021842	0.43
9	-0.002589	-0.002138	-0.003171	0.0005657	-0.006708	0.224432	0.0053719	0.435372
10	0.0034178	0.0012793	-0.004806	-0.00424	0.0020593	0.226491	-0.001765	0.433608
11	-0.005409	-0.00413	0.0023903	-0.00185	-0.004404	0.222087	0.0014519	0.435059
12	-0.000759	-0.004889	0.0013051	-0.000545	0.0044788	0.226566	0.0031925	0.438252
13	-0.001277	-0.006165	-0.002827	-0.003372	0.0025694	0.229135	-0.000588	0.437664
14	-0.006056	-0.012222	0.008097	0.0047249	-0.003899	0.225237	0.0037391	0.441403
15	0.0007461	-0.011476	0.0021802	0.0069051	0.0045289	0.229765	-0.001058	0.440345
16	-0.01243	-0.023906	0.0000617	0.0069668	0.0000117	0.229777	0.0047759	0.445121
17	-0.010174	-0.03408	0.0013724	0.0083393	-0.00127	0.228507	0.0009543	0.446075
18	-0.001234	-0.035314	-0.006225	0.0021143	-0.007519	0.220988	-0.002217	0.443858
19	0.0142451	-0.021069	0.0067767	0.008891	-0.002259	0.218729	-0.00225	0.441608
20	0.0017575	-0.019311	0.0033988	0.0122898	0.0019253	0.220654	0.0010766	0.442685

Cg = Control Group

Eg = Experimental Group

**Appendix E Table E.7**  
**Raw Return Model (RRM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Small Size Firms**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	0.0076974	0.0076974	-0.005928	-0.005928	-0.003548	-0.003548	0.0033314	0.003331
-59	0.0047934	0.0124907	-0.005617	-0.011545	0.0020835	-0.001465	0.0072876	0.010619
-58	0.0032895	0.0157802	-0.002056	-0.0136	0.0035252	0.002061	0.004103	0.014722
-57	0.0038491	0.0196293	-0.014826	-0.028426	0.0050347	0.007095	0.0040565	0.018779
-56	-0.007732	0.0118973	0.0000485	-0.028378	0.0054004	0.012496	0.0027418	0.02152
-55	0.0093113	0.0212086	-0.004313	-0.032691	0.0059272	0.018423	0.0040201	0.02554
-54	0.0061211	0.0273297	0.001177	-0.031514	0.0078205	0.026243	0.005547	0.031087
-53	0.0010204	0.0283501	-0.007472	-0.038986	0.0066869	0.03293	0.0037577	0.034845
-52	-0.002847	0.0255034	-0.004636	-0.043622	-0.000117	0.032813	0.0105522	0.045397
-51	0.0029347	0.0284381	-0.002128	-0.04575	0.0088988	0.041712	0.0070267	0.052424
-50	0.0013629	0.029801	0.0085264	-0.037223	0.0143585	0.056071	0.0084206	0.060845
-49	-0.009206	0.0205954	-0.003064	-0.040287	0.0102169	0.066288	0.0033579	0.064203
-48	-0.008	0.0125951	0.0050552	-0.035232	0.0116672	0.077955	0.0110805	0.075283
-47	-0.004319	0.0082764	-0.005214	-0.040446	0.0158702	0.093825	0.0136222	0.088905
-46	0.0021878	0.0104641	-0.003122	-0.043569	0.0121969	0.106022	0.0087458	0.097651
-45	-0.004576	0.005888	-0.006753	-0.050322	0.0202535	0.126275	0.0114365	0.109088
-44	-0.00774	-0.001852	0.0060841	-0.044238	0.0081358	0.134411	0.0117339	0.120821
-43	-0.004778	-0.006629	-0.012915	-0.057153	0.0068035	0.141215	0.0116463	0.132468
-42	0.000442	-0.006187	-0.00064	-0.057792	0.0076099	0.148824	0.0184918	0.15096
-41	-0.00235	-0.008537	0.0027407	-0.055052	0.0166574	0.165482	0.0180412	0.169001
-40	-0.000443	-0.00898	-0.000652	-0.055704	0.0058403	0.171322	0.0139436	0.182944
-39	0.0113241	0.002344	-0.006952	-0.062656	0.0055469	0.176869	0.0058317	0.188776
-38	-0.009846	-0.007502	0.0048638	-0.057792	0.0147124	0.191581	0.0117694	0.200545
-37	-0.004439	-0.011941	0.0013068	-0.056486	-0.003701	0.18788	0.010208	0.210753
-36	0.0037129	-0.008228	0.001244	-0.055242	0.0028977	0.190778	0.0086845	0.219438
-35	0.0073685	-0.000859	0.0005	-0.054742	0.0025325	0.19331	0.001428	0.220866
-34	-0.011015	-0.011875	-0.007939	-0.062681	0.007946	0.201256	0.0134358	0.234302
-33	0.0093212	-0.002554	0.0003298	-0.062351	0.0094238	0.21068	0.0076359	0.241938
-32	0.0041985	0.001645	-0.004359	-0.06671	0.0035075	0.214188	0.0057405	0.247678
-31	-0.000949	0.0006962	-0.001177	-0.067888	0.0136883	0.227876	0.0088112	0.256489
-30	0.004298	0.0049942	0.0054366	-0.062451	0.0096829	0.237559	0.0022497	0.258739
-29	-0.005429	-0.000434	-0.00364	-0.066091	0.0108875	0.248446	0.0051346	0.263874
-28	-0.000695	-0.001129	-0.00296	-0.069052	0.0048907	0.253337	0.0083813	0.272255
-27	-0.003878	-0.005007	0.0037145	-0.065337	-0.003208	0.250129	0.0020882	0.274343
-26	-0.010739	-0.015746	-0.000207	-0.065544	-0.001438	0.248691	0.0076893	0.282032
-25	-0.00038	-0.016126	-0.005286	-0.07083	0.0063373	0.255028	0.0093008	0.291333
-24	-0.000859	-0.016985	-0.009854	-0.080683	0.0073987	0.262427	0.003506	0.294839
-23	-0.008853	-0.025838	-0.000536	-0.081219	0.0052733	0.2677	0.008333	0.303172
-22	0.0008461	-0.024992	0.005827	-0.075392	-0.006283	0.261418	0.0046899	0.307862
-21	0.0038607	-0.021131	0.0119193	-0.063473	0.0000521	0.26147	0.0023266	0.310189
-20	0.0031078	-0.018023	0.0080963	-0.055376	0.0045951	0.266065	-0.002903	0.307286
-19	0.0022504	-0.015773	0.0030754	-0.052301	0.0088843	0.274949	0.0008626	0.308149
-18	0.00476	-0.011013	-0.001487	-0.053788	-0.001011	0.273938	0.0054434	0.313592
-17	0.0026472	-0.008366	-0.001212	-0.055	0.0064226	0.280361	0.0179212	0.331513
-16	0.0177717	0.0094061	0.0035641	-0.051436	-0.002593	0.277768	0.0101406	0.341654
-15	-0.005937	0.0034693	0.000757	-0.050679	0.0037629	0.281531	0.0159567	0.357611
-14	0.0041637	0.007633	0.0041863	-0.046493	0.0001671	0.281698	0.004906	0.362517
-13	-0.009862	-0.002229	0.0058278	-0.040665	0.0116952	0.293393	0.0070717	0.369588
-12	-0.010849	-0.013078	0.0008143	-0.039851	0.0063871	0.29978	0.0100342	0.379623
-11	0.002313	-0.010765	-0.002681	-0.042531	0.0099297	0.30971	0.0008075	0.38043

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-10	-0.000073	-0.010838	-0.001608	-0.044139	0.0096642	0.319374	0.0094461	0.389876
-9	0.0176092	0.0067714	0.0028446	-0.041295	0.0127846	0.332159	0.0030457	0.392922
-8	0.0007129	0.0074843	0.0095796	-0.031715	0.0113558	0.343515	0.004657	0.397579
-7	-0.002293	0.0051916	0.0066284	-0.025087	-0.001376	0.342139	0.0025448	0.400124
-6	-0.003213	0.0019789	0.009489	-0.015598	-0.004287	0.337852	0.0042585	0.404382
-5	0.0061889	0.0081677	0.0047853	-0.010812	0.0133806	0.351233	0.0048818	0.409264
-4	0.0092065	0.0173743	-0.00763	-0.018442	-0.00105	0.350182	-0.002605	0.406659
-3	0.0048268	0.0222011	-0.005874	-0.024316	0.0001882	0.350371	-0.002399	0.40426
-2	0.0041208	0.0263219	-0.003564	-0.02788	0.0056981	0.356069	0.0035413	0.407802
-1	0.0105643	0.0368862	0.0028391	-0.025041	-0.003022	0.353046	0.0010794	0.408881
0	0.0029361	0.0398223	0.0043449	-0.020696	0.0018008	0.354847	0.0065577	0.415439
1	-0.001499	0.0383234	-0.001377	-0.022073	0.0031824	0.35803	0.0039528	0.419391
2	-0.002536	0.0357871	0.0016184	-0.020454	0.0036041	0.361634	0.0027678	0.422159
3	0.0075505	0.0433376	0.0018521	-0.018602	0.005438	0.367072	-0.003308	0.418852
4	0.0015797	0.0449172	0.0014679	-0.017134	-0.014112	0.35296	-0.003607	0.415245
5	0.0064236	0.0513409	0.0030611	-0.014073	0.0048802	0.35784	0.0009398	0.416184
6	0.001401	0.0527419	0.0027673	-0.011306	0.00601	0.36385	-0.002852	0.413333
7	-0.00137	0.0513722	0.004109	-0.007197	0.0040606	0.367911	0.0047327	0.418066
8	-0.000747	0.0506252	0.0024059	-0.004791	-0.004435	0.363475	0.0020632	0.420129
9	0.0066122	0.0572374	-0.001141	-0.005931	-0.007708	0.355767	0.0040322	0.424161
10	0.0018494	0.0590868	-0.000622	-0.006553	-0.008958	0.346809	-0.000786	0.423375
11	-0.006201	0.0528859	0.0035393	-0.003014	0.0001452	0.346954	-0.000573	0.422802
12	-0.004181	0.0487051	-0.002472	-0.005486	-0.003929	0.343026	-0.001754	0.421048
13	-0.001353	0.0473524	-0.002078	-0.007564	-0.006683	0.336342	-0.00207	0.418978
14	0.0059641	0.0533164	0.0061163	-0.001448	-0.000892	0.33545	0.0066146	0.425593
15	-0.004499	0.0488174	0.0001858	-0.001262	0.0039919	0.339442	-0.000954	0.424639
16	-0.007716	0.0411012	-0.002204	-0.003466	-0.002564	0.336878	0.0063401	0.430979
17	-0.006944	0.0341577	0.0043755	0.0009092	0.0062277	0.343106	-0.001543	0.429436
18	-0.006644	0.0275141	-0.002521	-0.001612	-0.001409	0.341697	0.0013593	0.430796
19	0.0063502	0.0338643	0.0069816	0.0053701	0.003204	0.344901	-0.002494	0.428301
20	0.0005406	0.0344049	0.0030191	0.0083893	0.0041214	0.349022	0.0002575	0.428559

Cg = Control Group

Eg = Experimental Group

**Appendix E Table E.8**  
**Raw Return Model (RRM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Large Size Firms**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	0.0020193	0.0020193	0.0080392	0.008039	-0.003107	-0.003107	0.010914	0.010914
-59	-0.002737	-0.000718	0.006931	0.01497	0.0026765	-0.00043	0.0045045	0.015418
-58	0.003926	0.0032081	-0.00491	0.01006	0.0110167	0.010587	-0.000952	0.014467
-57	-0.001254	0.001954	-0.007934	0.002127	0.0068442	0.017431	0.008906	0.023373
-56	0.006024	0.007978	0.004717	0.006844	0.0121525	0.029583	0.0069617	0.030335
-55	0.0079823	0.0159603	-0.002233	0.00461	0.0034758	0.033059	0.0095208	0.039855
-54	0.005666	0.0216263	-0.0054	-0.000789	0.0001	0.033059	0.0093406	0.049196
-53	0.0088008	0.0304271	0.0010198	0.000231	0.011663	0.044722	0.0172971	0.066493
-52	0.0098383	0.0402654	-0.002666	-0.002436	0.0080849	0.052807	0.0166279	0.083121
-51	0.0052583	0.0455237	-0.00956	-0.011996	0.0144262	0.067233	0.008061	0.091182
-50	0.0069055	0.0524292	-0.003205	-0.015201	-0.009883	0.05735	0.0054577	0.09664
-49	0.013636	0.0660652	-0.003072	-0.018272	-0.000672	0.056678	-0.006574	0.090066
-48	0.0002034	0.0662686	-0.013895	-0.032168	-0.000332	0.056346	-0.012756	0.07731
-47	0.003215	0.0694836	0.0025251	-0.029643	0.0048815	0.061227	-0.001866	0.075445
-46	-0.010534	0.0589495	0.01	-0.019643	-0.000911	0.060316	-0.018534	0.05691
-45	-0.008163	0.0507864	0.010955	-0.008688	-0.005496	0.05482	0.0054365	0.062347
-44	-0.003151	0.0476355	-0.006329	-0.015017	-0.002163	0.052658	0.0000247	0.062372
-43	0.0090534	0.0566889	0.0017986	-0.013218	0.001491	0.054149	0.0002	0.062372
-42	0.0066678	0.0633567	0.0064935	-0.006725	0.0041523	0.058301	0.0017426	0.064114
-41	-0.005714	0.0576424	-0.002864	-0.009588	0.0021047	0.060406	0.0024262	0.06654
-40	0.0033539	0.0609963	0.0001	-0.009588	0.0079623	0.068368	0.011779	0.078319
-39	-0.007756	0.0532407	-0.006339	-0.015927	0.0041275	0.072495	0.0003008	0.07862
-38	-0.003844	0.0493967	-0.011843	-0.027771	0.007465	0.07996	0.0263481	0.104968
-37	0.0066371	0.0560338	-0.00192	-0.029691	0.0001476	0.080108	-0.003335	0.101633
-36	0.0010098	0.0570436	-0.0015	-0.031191	0.0053021	0.08541	-0.003632	0.098001
-35	0.0026343	0.0596778	-0.014555	-0.045746	0.002193	0.087603	0.0059885	0.10399
-34	-0.005646	0.0540314	-0.0102	-0.045746	0.0147779	0.102381	0.00314	0.10399
-33	-0.005883	0.048148	-0.005859	-0.051606	0.0109715	0.113352	0.0035714	0.107561
-32	-0.002705	0.0454429	0.0032051	-0.048401	0.0121065	0.125459	-0.001761	0.105801
-31	0.0066214	0.0520643	0.0093784	-0.039022	0.0231456	0.148604	-0.0013	0.105801
-30	-0.004218	0.047846	-0.003073	-0.042095	0.004629	0.153233	-0.008865	0.096935
-29	-0.003461	0.0443851	-0.0024	-0.042095	0.0055191	0.158753	-0.003697	0.093239
-28	-0.003335	0.0410505	0.0015823	-0.040513	-0.002055	0.156698	0.0130702	0.106309
-27	0.003055	0.0441055	0.0019841	-0.038529	-0.004892	0.151806	-0.001525	0.104784
-26	-0.000844	0.0432614	-0.002403	-0.040932	0.0075044	0.159311	-0.001884	0.1029
-25	0.0033515	0.0466129	0.00168	-0.040932	0.0154768	0.174787	0.0109848	0.113885
-24	-0.00474	0.0418728	0.0019685	-0.038963	0.0053926	0.18018	0.0146429	0.128528
-23	0.002193	0.0440658	0.00123	-0.038963	0.0017265	0.181907	0.0271987	0.155727
-22	-0.012923	0.0311429	0.0136719	-0.025291	-0.008269	0.173638	-0.011544	0.144182
-21	-0.001693	0.0294497	-0.004747	-0.030038	-0.002023	0.171615	0.0052083	0.149391
-20	-0.001582	0.0278678	0.0031	-0.030038	-0.004824	0.166791	-0.013454	0.135937
-19	0.0012642	0.029132	-0.012963	-0.043001	0.0058818	0.172673	0.0017606	0.137697
-18	-0.002925	0.0262068	0.00157	-0.043001	0.0056328	0.178306	-0.005227	0.132471
-17	-0.003536	0.0226713	0.00312	-0.043001	-0.00368	0.174626	0.0057659	0.138237
-16	0.004236	0.0269073	-0.001021	-0.044022	-0.003281	0.171345	-0.002403	0.135834
-15	-0.00282	0.0240874	-0.012747	-0.056768	0.0077907	0.179135	-0.00358	0.132253
-14	-0.007029	0.0170589	-0.021924	-0.078693	0.0018484	0.180984	-0.006425	0.125828
-13	0.0012413	0.0183001	0.002752	-0.075941	-0.000616	0.180368	-0.001748	0.12408
-12	0.0021978	0.0204979	-0.000086	-0.076026	0.0020837	0.182452	-0.002475	0.121605
-11	0.0071868	0.0276847	0.0077468	-0.06828	0.0001086	0.18256	-0.007782	0.113823

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-10	0.0066156	0.0343003	0.0061414	-0.062138	-0.006187	0.176373	0.0010719	0.114895
-9	-0.002593	0.0317078	0.000742	-0.061396	0.0007198	0.177093	-0.000995	0.1139
-8	0.0105908	0.0422986	0.0021008	-0.059295	-0.00845	0.168643	0.0114139	0.125314
-7	-0.002045	0.0402536	-0.002083	-0.061379	0.0020207	0.170664	0.0035715	0.128885
-6	0.002542	0.0427956	0.0061724	-0.055206	-0.004972	0.165692	-0.002697	0.126188
-5	0.0089368	0.0517324	-0.013817	-0.069023	-0.005631	0.160061	-0.00346	0.122728
-4	-0.005941	0.0457913	0.0021368	-0.066886	0.0028171	0.162879	0.0033978	0.126126
-3	-0.006778	0.0390131	-0.004237	-0.071124	-0.009508	0.15337	0.0092469	0.135373
-2	-0.000412	0.0386012	0.0021552	-0.068968	-0.007634	0.145737	0.008062	0.143435
-1	-0.000892	0.0377097	0.0039338	-0.065035	-0.007411	0.138326	-0.008344	0.135091
0	-0.006296	0.0314139	-0.008915	-0.07395	-0.008449	0.129877	0.000081	0.135172
1	-0.02021	0.0112036	-0.002101	-0.07605	-0.007569	0.122308	0.0001818	0.135354
2	0.0008691	0.0120728	-0.008785	-0.084836	0.0001806	0.122489	-0.010668	0.124686
3	-0.014302	-0.002229	-0.006849	-0.091685	0.0005332	0.123022	-0.008498	0.116188
4	-0.004735	-0.006964	-0.004873	-0.096558	0.0014365	0.124458	0.0058835	0.122072
5	-0.000977	-0.007941	0.0029964	-0.093562	-0.003158	0.1213	0.0066193	0.128691
6	0.0010663	-0.006875	-0.002239	-0.0958	0.0068912	0.128191	0.0044329	0.133124
7	0.0088269	0.001952	0.0124972	-0.083303	-0.003088	0.125104	0.0006969	0.133821
8	0.0061967	0.0081487	-0.005072	-0.088375	-0.007104	0.118	-0.001433	0.132388
9	0.004904	0.0130526	-0.003333	-0.091708	-0.00271	0.11529	0.0023585	0.134746
10	-0.000083	0.0129694	-0.00085	-0.092559	-0.001179	0.114111	-0.018598	0.116148
11	0.0027507	0.0157201	-0.007992	-0.10055	-0.006363	0.107749	0.0041115	0.12026
12	-0.001642	0.0140781	0.0021552	-0.098395	0.0070327	0.114781	0.001873	0.122133
13	0.0016953	0.0157733	-0.004693	-0.103088	0.0028643	0.117646	0.00157	0.122133
14	-0.003115	0.0126582	0.01426	-0.088828	-0.006158	0.111488	-0.000598	0.121535
15	0.0002581	0.0129163	0.0035887	-0.085239	0.0032773	0.114765	0.0004876	0.122022
16	0.0004576	0.0133739	0.0084785	-0.076761	0.0015625	0.116327	0.0060199	0.128042
17	-0.001891	0.0114833	0.0055132	-0.071248	-0.003825	0.112503	0.0031735	0.131216
18	-0.003161	0.0083227	-0.010721	-0.081969	-0.002831	0.109672	-0.004	0.127216
19	-0.001773	0.0065498	-0.004739	-0.086707	-0.000629	0.109043	-0.001786	0.12543
20	-0.002433	0.004117	0.0015717	-0.085136	-0.001159	0.107884	-0.004414	0.121017

Cg = Control Group

Eg = Experimental Group



**Appendix E Table E.9**  
**Raw Return Model (RRM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Domestic Ownership Firms**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	0.0097981	0.0097981	-0.004693	-0.004693	-0.000988	-0.000988	0.0025723	0.002572
-59	0.0079321	0.0177301	-0.005997	-0.010689	-0.009253	-0.010241	-0.001996	0.000576
-58	0.0034018	0.0211319	-0.006329	-0.017019	-0.000485	-0.010727	-0.001735	-0.001159
-57	0.0000325	0.0211644	-0.013307	-0.030325	0.0045437	-0.006183	0.0025191	0.00136
-56	-0.004001	0.0171634	0.0054061	-0.024919	0.003019	-0.003164	0.0015011	0.002861
-55	0.0112159	0.0283792	0.0049448	-0.019974	-0.009613	-0.012777	-0.000485	0.002376
-54	0.0000854	0.0284646	0.0028852	-0.017089	0.0013774	-0.0114	0.0007855	0.003162
-53	-0.003238	0.0252268	-0.001633	-0.018722	0	-0.0114	0.0048754	0.008037
-52	-0.000109	0.0251182	-0.001156	-0.019878	-0.002478	-0.013878	0.0132559	0.021293
-51	0.0052887	0.0304069	-0.002083	-0.021961	0.0023637	-0.011514	0.0178997	0.039193
-50	0.0042553	0.0346622	0.004152	-0.017809	-0.00447	-0.015984	0.0063629	0.045556
-49	-0.005642	0.0290205	-0.002314	-0.020123	0.005784	-0.0102	0.0076851	0.053241
-48	-0.011077	0.0179433	0.0062044	-0.013919	0.0049376	-0.005262	0.0084261	0.061667
-47	-0.003926	0.0140171	-0.002608	-0.016527	0.0027711	-0.002491	0.0142257	0.075893
-46	-0.000525	0.0134927	-0.000541	-0.017068	0.0076272	0.005136	0.0043916	0.080284
-45	-0.002628	0.0108649	-0.003887	-0.020954	0.0032855	0.008422	0.0227316	0.103016
-44	-0.008254	0.0026115	0.0049494	-0.016005	-0.001048	0.007373	0.0076073	0.110623
-43	-0.001874	0.000737	-0.008177	-0.024182	-0.002657	0.004716	0.0055165	0.11614
-42	-0.001214	-0.000477	-0.003745	-0.027927	0.000211	0.004927	0.006899	0.123039
-41	-0.000945	-0.001423	0.0027648	-0.025162	0.0016803	0.006608	0.0117346	0.134773
-40	0.0010531	-0.000369	-0.00054	-0.025702	0.0045274	0.011135	0.0059034	0.140677
-39	0.0065994	0.0062301	-0.003468	-0.02917	0.0045382	0.015673	0.0008368	0.141514
-38	-0.003798	0.0024323	0.003962	-0.025208	0.0169802	0.032653	-0.000968	0.140546
-37	0.0007327	0.003165	-0.005583	-0.030791	-0.003224	0.029429	0.0056297	0.146176
-36	0.0097435	0.0129085	-0.000275	-0.031066	0.003079	0.032508	0.0101183	0.156294
-35	0.0066065	0.019515	-0.003571	-0.034637	0.002383	0.034891	0.0007753	0.157069
-34	-0.006427	0.0130879	-0.004034	-0.038671	0.0231668	0.058058	0.0102261	0.167295
-33	0.0041689	0.0172568	0.0015849	-0.037086	0.0109758	0.069034	0.0057026	0.172998
-32	0.0024394	0.0196963	-0.006382	-0.043468	0.0010482	0.070082	0.0083355	0.181334
-31	-0.00041	0.0192859	-0.002383	-0.045851	0.0276599	0.097742	0.0193596	0.200693
-30	0.0031168	0.0224027	0.0026367	-0.043214	0.0098408	0.107583	0.0051456	0.205839
-29	-0.003914	0.0184884	-0.00555	-0.048764	0.0080113	0.115594	-0.002791	0.203047
-28	0.0054793	0.0239677	-0.003782	-0.052546	-0.00489	0.110705	0.0076485	0.210696
-27	0.0003466	0.0243142	0.0010301	-0.051516	-0.012119	0.098586	0.0004915	0.211187
-26	-0.005808	0.0185058	0.0006199	-0.050896	0.0035893	0.102175	0.0136514	0.224839
-25	-0.005048	0.0134578	-0.006257	-0.057153	0.0201474	0.122322	0.0119632	0.236802
-24	-0.003728	0.0097294	-0.010624	-0.067777	0.0085086	0.130831	0.0174737	0.254276
-23	-0.006581	0.003148	-0.000049	-0.067825	0.0009311	0.131762	0.0158614	0.270137
-22	-0.010393	-0.007245	0.0077384	-0.060087	-0.014062	0.1177	0.0022148	0.272352
-21	0.0026981	-0.004547	0.0078555	-0.052231	0.0060685	0.123769	0.0032803	0.275632
-20	0.0000233	-0.004524	0.0072316	-0.045	-0.00287	0.120899	-0.005133	0.270499
-19	0.0023768	-0.002147	0.0044749	-0.040525	0.0021696	0.123069	0.011314	0.281813
-18	0.0036744	0.0015272	-0.001197	-0.041722	0.0006995	0.123768	0.0083417	0.290155
-17	0.0012591	0.0027863	-0.000231	-0.041952	0.0003876	0.124156	0.0177685	0.307923
-16	0.0170043	0.0197907	-0.001965	-0.043917	-0.000975	0.123181	-0.001014	0.306909
-15	-0.005861	0.0139298	0.0004871	-0.04343	0.0000302	0.123212	0.002735	0.309644
-14	0.0023149	0.0162447	0.0040098	-0.03942	-0.00561	0.117602	0.0136236	0.323267
-13	-0.007217	0.0090281	0.0084999	-0.03092	0.003592	0.121194	0.0056511	0.328919
-12	-0.008916	0.0001124	0.002384	-0.028536	0.0082919	0.129485	0.001544	0.330463
-11	0.0021027	0.0022151	-0.003814	-0.03235	-0.004578	0.124907	-0.001591	0.328872

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-10	-0.001023	0.001192	0.0017746	-0.030576	-0.004188	0.120719	0.0078268	0.336699
-9	0.0123143	0.0135063	0.0071889	-0.023387	0.00387	0.124589	0.0029225	0.339621
-8	0.0075517	0.021058	0.0114573	-0.01193	-0.003646	0.120943	0.002454	0.342075
-7	-0.001461	0.0195967	0.0101864	-0.001743	0.00217	0.123113	-0.004443	0.337632
-6	-0.002713	0.0168836	0.0103504	0.0086071	-0.004561	0.118552	-0.001443	0.33619
-5	0.0108378	0.0277213	0.0055018	0.0141089	0.0053265	0.123879	0.0107619	0.346952
-4	0.0026533	0.0303747	-0.004354	0.0097549	-0.003683	0.120195	0.0006621	0.347614
-3	0.001977	0.0323517	-0.006429	0.0033256	-0.009515	0.110681	0.0023202	0.349934
-2	0.0090823	0.041434	-0.002899	0.0004266	-0.001184	0.109496	0.0004901	0.350424
-1	0.0060668	0.0475008	0.0021852	0.0026117	-0.014358	0.095138	0.0008973	0.351321
0	0.005485	0.0529858	0.0011206	0.0037323	-0.012038	0.0831	0.0083014	0.359623
1	-0.003547	0.0494389	-0.006455	-0.002723	-0.000359	0.082741	-0.000404	0.359218
2	-0.002191	0.0472478	0.0036906	0.0009679	-0.001264	0.081477	0.0025519	0.36177
3	0.0020968	0.0493446	0.0022667	0.0032346	-0.010408	0.071069	-0.009836	0.351934
4	0.001855	0.0511996	0.0040209	0.0072556	-0.002467	0.068602	0.0035745	0.355508
5	0.0036363	0.0548358	0.0029742	0.0102298	-0.006888	0.061714	0.0004651	0.355973
6	0.0021077	0.0569435	-0.000321	0.0099088	-0.005273	0.056441	-0.0038	0.352173
7	-0.000694	0.0562493	0.003178	0.0130869	-0.000477	0.055963	-0.004866	0.347307
8	0.0005777	0.056827	0.0061839	0.0192708	0.0013008	0.057264	-0.002402	0.344905
9	0.0060111	0.0628381	-0.005383	0.0138881	-0.003803	0.053461	0.0021181	0.347023
10	0.0017441	0.0645822	-0.004621	0.0092668	-0.00342	0.050041	-0.006938	0.340085
11	-0.0045	0.0600826	0.0031401	0.0124069	-0.00442	0.045621	0.0010455	0.341131
12	-0.002951	0.0571315	-0.001064	0.0113433	0.0097813	0.055402	-0.001367	0.339764
13	0.0006615	0.057793	0.0007606	0.0121039	0.0048568	0.060259	-0.002958	0.336806
14	0.0018961	0.0596891	0.0017614	0.0138653	-0.000216	0.060043	0.003609	0.340415
15	-0.004208	0.0554807	-0.002295	0.0115707	0.0043146	0.064358	-0.002272	0.338143
16	-0.006141	0.0493399	-0.000582	0.010989	-0.000927	0.063431	0.0074213	0.345565
17	-0.005444	0.043896	-0.002749	0.0082404	0.0021211	0.065552	-0.003473	0.342092
18	-0.007858	0.0360382	-0.00547	0.0027704	-0.003303	0.062249	0.002797	0.344889
19	0.0013351	0.0373733	0.0085403	0.0113107	-0.002174	0.060075	0.0034752	0.348364
20	-0.005747	0.0316267	0.004934	0.0162447	-0.001895	0.05818	-0.003293	0.345071

Cg = Control Group

Eg = Experimental Group



**Appendix E Table E.10**  
**Raw Return Model (RRM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Foreign Ownership Firms**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	-0.002778	-0.002778	-0.002935	-0.002935	-0.000988	-0.000988	0.0025723	0.002572
-59	-0.009747	-0.012525	0.0002005	-0.002735	-0.009253	-0.010241	-0.001996	0.000576
-58	0.0038262	-0.008699	0.0057779	0.003043	-0.000485	-0.010727	-0.001735	-0.001159
-57	0.0048925	-0.003806	-0.01526	-0.012216	0.0045437	-0.006183	0.0025191	0.00156
-56	0.0014765	-0.00233	-0.009335	-0.021552	0.003019	-0.003164	0.0015011	0.002861
-55	0.0042692	0.0019395	-0.022924	-0.044475	-0.009613	-0.012777	-0.000485	0.002376
-54	0.0166556	0.018595	-0.005041	-0.049516	0.0013774	-0.0114	0.0007855	0.003162
-53	0.0179043	0.0364993	-0.016337	-0.065853	0	-0.0114	0.0048754	0.008037
-52	0.0069328	0.0434321	-0.011157	-0.07701	-0.002478	-0.013878	0.0132559	0.021293
-51	0.0013299	0.044762	-0.005195	-0.082204	0.0023637	-0.011514	0.0178997	0.039193
-50	0.0025265	0.0472884	0.0130199	-0.069184	-0.00447	-0.015984	0.0063629	0.045556
-49	0.010909	0.0581974	-0.00464	-0.073824	0.005784	-0.0102	0.0076851	0.053241
-48	0.0072118	0.0654092	-0.004938	-0.078763	0.0049376	-0.005262	0.0084261	0.061667
-47	0.0037509	0.0691601	-0.007593	-0.086356	0.0027711	-0.002491	0.0142257	0.075893
-46	-0.007682	0.0614781	-0.003295	-0.08965	0.0076272	0.005136	0.0043916	0.080284
-45	-0.012333	0.0491451	-0.00569	-0.09534	0.0032855	0.008422	0.0227316	0.103016
-44	-0.001444	0.0477012	0.0035016	-0.091838	-0.001048	0.007373	0.0076073	0.110623
-43	0.0060357	0.0537369	-0.016979	-0.108817	-0.002657	0.004716	0.0055165	0.11614
-42	0.0107421	0.064479	0.0087336	-0.100084	0.000211	0.004927	0.006899	0.123039
-41	-0.00885	0.0556289	0.0004484	-0.099635	0.0016803	0.006608	0.0117346	0.134773
-40	0.0012437	0.0568727	-0.000628	-0.100263	0.0045274	0.011135	0.0059034	0.140677
-39	-0.002274	0.054599	-0.014024	-0.114286	0.0045382	0.015673	0.0008368	0.141514
-38	-0.013932	0.0406669	0.0000746	-0.114212	0.0169802	0.032653	-0.000968	0.140546
-37	-0.000998	0.0396692	0.014485	-0.099727	-0.003224	0.029429	0.0056297	0.146176
-36	-0.010497	0.0291724	0.0033368	-0.09639	0.003079	0.032508	0.0101183	0.156294
-35	0.0032422	0.0324146	0.0030261	-0.093364	0.002383	0.034891	0.0007753	0.157069
-34	-0.013164	0.019251	-0.012964	-0.106328	0.0231668	0.058058	0.0102261	0.167295
-33	0.0010283	0.0202793	-0.004782	-0.111109	0.0109758	0.069034	0.0057026	0.172998
-32	-0.000631	0.0196486	0.0029134	-0.108196	0.0010482	0.070082	0.0083355	0.181334
-31	0.0068958	0.0265444	0.0055772	-0.102619	0.0276599	0.097742	0.0193596	0.200693
-30	-0.003472	0.0230724	0.0079126	-0.094706	0.0098408	0.107583	0.0051456	0.205839
-29	-0.005909	0.0171633	0.0018269	-0.092879	0.0080113	0.115594	-0.002791	0.203047
-28	-0.015093	0.0020701	0.000581	-0.092298	-0.00489	0.110705	0.0076485	0.210696
-27	-0.003535	-0.001465	0.0086598	-0.083638	-0.012119	0.098586	0.0004915	0.211187
-26	-0.008234	-0.009699	-0.002822	-0.08646	0.0035893	0.102175	0.0136514	0.224839
-25	0.0125308	0.0028317	-0.001132	-0.087592	0.0201474	0.122322	0.0119632	0.236802
-24	-0.000126	0.0027053	-0.003507	-0.091099	0.0085086	0.130831	0.0174737	0.254276
-23	-0.00013	0.0025757	-0.001345	-0.092444	0.0009311	0.131762	0.0158614	0.270137
-22	0.005388	0.0079636	0.004951	-0.087493	-0.014062	0.1177	0.0022148	0.272352
-21	-0.000487	0.0074763	0.0137869	-0.073706	0.0060685	0.123769	0.0032803	0.275632
-20	0.0032915	0.0107678	0.0066737	-0.067032	-0.00287	0.120899	-0.005133	0.270499
-19	0.0008681	0.0116358	-0.006279	-0.073311	0.0021696	0.123069	0.011314	0.281813
-18	-0.002216	0.00942	-0.001502	-0.074813	0.0006995	0.123768	0.0083417	0.290155
-17	-0.002021	0.0073988	-0.002788	-0.077601	0.0003876	0.124156	0.0177685	0.307923
-16	0.003387	0.0107858	0.0133412	-0.06426	-0.000975	0.123181	-0.001014	0.306909
-15	-0.00244	0.0083462	-0.004078	-0.068338	0.0000302	0.123212	0.002735	0.309644
-14	-0.005505	0.0028417	-0.005887	-0.074225	-0.00561	0.117602	0.0136236	0.323267
-13	-0.001758	0.0010835	-0.001014	-0.075239	0.003592	0.121194	0.0056511	0.328919
-12	0.000828	0.0019115	-0.002842	-0.078081	0.0082919	0.129485	0.001544	0.330463
-11	0.0083846	0.0102961	0.00387	-0.074211	-0.004578	0.124907	-0.001591	0.328872

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-10	0.0094726	0.0197687	-0.005611	-0.079821	-0.004188	0.120719	0.0078268	0.336699
-9	0.003748	0.0235166	-0.00712	-0.086941	0.00387	0.124589	0.0029225	0.339621
-8	-0.000301	0.0232158	0.0026448	-0.084296	-0.003646	0.120943	0.002454	0.342075
-7	-0.003528	0.0196878	-0.004328	-0.088624	0.00217	0.123113	-0.004443	0.337632
-6	0.0025852	0.0222731	0.0063533	-0.082271	-0.004561	0.118552	-0.001443	0.33619
-5	0.0008718	0.0231449	-0.00416	-0.086431	0.0053265	0.123879	0.0107619	0.346952
-4	0.0035486	0.0266935	-0.010602	-0.097034	-0.003683	0.120195	0.0006621	0.347614
-3	-0.003488	0.0232057	-0.004054	-0.101087	-0.009515	0.110681	0.0023202	0.349934
-2	-0.010263	0.0129423	-0.002672	-0.103759	-0.001184	0.109496	0.0004901	0.350424
-1	0.0054444	0.0183867	0.0046503	-0.099108	-0.014358	0.095138	0.0008973	0.351321
0	-0.012507	0.0058794	0.0058121	-0.093296	-0.012038	0.0831	0.0083014	0.359623
1	-0.019574	-0.013695	0.0089978	-0.084299	-0.000359	0.082741	-0.000404	0.359218
2	0.0008038	-0.012891	-0.006895	-0.091193	-0.001264	0.081477	0.0025519	0.36177
3	-0.007945	-0.020836	-0.002499	-0.093692	-0.010408	0.071069	-0.009836	0.351934
4	-0.006292	-0.027128	-0.00643	-0.100122	-0.002467	0.068602	0.0035745	0.355508
5	0.0028993	-0.024229	0.0032177	-0.096905	-0.006888	0.061714	0.0004651	0.355973
6	-0.000285	-0.024514	0.0072503	-0.089654	-0.005273	0.056441	-0.0038	0.352173
7	0.0092879	-0.015226	0.0094192	-0.080235	-0.000477	0.055963	-0.004866	0.347307
8	0.0049254	-0.010301	-0.008519	-0.088754	0.0013008	0.057264	-0.002402	0.344905
9	0.0057213	-0.004579	0.0068912	-0.081863	-0.003803	0.053461	0.0021181	0.347023
10	-0.000212	-0.004792	0.0076865	-0.074177	-0.00342	0.050041	-0.006938	0.340085
11	0.0011234	-0.003668	-0.000235	-0.074411	-0.00442	0.045621	0.0010455	0.341131
12	-0.003473	-0.007142	-0.00358	-0.077991	0.0097813	0.055402	-0.001367	0.339764
13	-0.001489	-0.008631	-0.009085	-0.087077	0.0048568	0.060259	-0.002958	0.336806
14	0.0028295	-0.005802	0.018519	-0.068558	-0.000216	0.060043	0.003609	0.340415
15	0.0005182	-0.005283	0.0067558	-0.061802	0.0043146	0.064358	-0.002272	0.338143
16	-0.001068	-0.006352	-0.001339	-0.06314	-0.000927	0.063431	0.0074213	0.345565
17	-0.003798	-0.010149	0.0197912	-0.043349	0.0021211	0.065552	-0.003473	0.342092
18	-0.000354	-0.010504	0.0003928	-0.042956	-0.003303	0.062249	0.002797	0.344889
19	0.0060676	-0.004436	-0.00098	-0.043936	-0.002174	0.060075	0.0034752	0.348364
20	0.0085982	0.0041623	-0.001581	-0.045517	-0.001895	0.05818	-0.003293	0.345071

Cg = Control Group

Eg = Experimental Group

**Appendix E Table E.11**  
**Raw Return Model (RRM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Winner Firms**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	0.0028377	0.0028377	-0.000754	-0.000754	-0.004716	-0.004716	0.0040679	0.004068
-59	-0.000283	0.0025552	-0.000888	-0.001641	-0.000918	-0.005634	0.0051572	0.009225
-58	0.0032892	0.0058443	-0.001586	-0.003227	0.0086212	0.002988	0.0014366	0.010662
-57	0.0031713	0.0090156	-0.012949	-0.016176	0.0031749	0.006163	0.0002323	0.010894
-56	-0.000425	0.0085906	0.0015601	-0.014616	0.007208	0.013371	0.0012538	0.012148
-55	0.0085409	0.0171316	-0.006511	-0.021127	0.0025084	0.015879	0.0005349	0.012683
-54	0.0052506	0.0223822	-0.002892	-0.024019	0.0027202	0.018599	0.0044629	0.017146
-53	0.0062176	0.0285998	-0.008324	-0.032343	0.005238	0.023837	0.0014983	0.018644
-52	0.0059002	0.0345	-0.006016	-0.038359	0.0056752	0.029512	0.0102061	0.02885
-51	0.0037843	0.0382842	-0.004585	-0.042944	0.0114952	0.041007	0.005593	0.034443
-50	0.0058727	0.044157	0.0040492	-0.038895	0.0017699	0.042777	0.0054209	0.039864
-49	0.0046063	0.0487633	-0.006201	-0.045096	0.0020676	0.044845	0.0003714	0.040235
-48	-0.001756	0.0470072	0.0021624	-0.042934	0.0033673	0.048212	0.0104331	0.050668
-47	0.000473	0.0474802	-0.00303	-0.045964	0.0099635	0.058176	0.0099536	0.060622
-46	-0.002067	0.045413	-0.001605	-0.047569	0.0044804	0.062656	0.0059978	0.06662
-45	-0.00573	0.0396828	-0.007872	-0.05544	0.0083014	0.070957	0.009397	0.076017
-44	-0.006055	0.0336274	0.0042114	-0.051229	0.0014295	0.072387	0.0101594	0.086176
-43	0.0021991	0.0358265	-0.006258	-0.057487	0.0058111	0.078198	0.0060645	0.09224
-42	0.0057662	0.0415927	-0.001686	-0.059173	0.005691	0.083889	0.0156184	0.107859
-41	-0.00301	0.0385828	-0.004183	-0.063356	0.0089734	0.092862	0.0152204	0.123079
-40	-0.001846	0.0367374	-0.00083	-0.064185	0.011118	0.103981	0.0143524	0.137432
-39	0.0015491	0.0382865	-0.00878	-0.072966	0.0087325	0.112713	0.0080206	0.145452
-38	-0.007783	0.0305033	-0.003019	-0.075984	0.0103508	0.123064	0.0123566	0.157809
-37	-0.00334	0.0271633	-0.000918	-0.076903	-0.003928	0.119136	0.0097989	0.167608
-36	-0.001014	0.0261494	-0.003708	-0.08061	0.0034802	0.122616	0.007318	0.174926
-35	0.0024754	0.0286248	-0.002513	-0.083123	0.0027118	0.125328	0.0045654	0.179491
-34	-0.014643	0.0139819	-0.004358	-0.087481	0.0121937	0.137522	0.0112264	0.190717
-33	-0.002692	0.0112904	0.0024237	-0.085057	0.010233	0.147755	0.0110376	0.201755
-32	-0.001638	0.0096524	-0.002225	-0.087282	0.0084289	0.156184	0.0059181	0.207673
-31	0.0009025	0.0105549	0.0012022	-0.08608	0.0191331	0.175317	0.0060593	0.213732
-30	0.0024472	0.0130021	0.0064536	-0.079626	0.0052256	0.180542	0.0014001	0.215133
-29	-0.002255	0.0107477	-0.002468	-0.082094	0.0096845	0.190227	0.0016722	0.216805
-28	-0.002561	0.0081869	0.0007047	-0.081389	0.0036505	0.193878	0.0085573	0.225362
-27	-0.001673	0.0065142	0.0028724	-0.078517	-0.003896	0.189981	-0.000381	0.224981
-26	-0.007044	-0.00053	0.0027183	-0.075799	0.0036015	0.193583	0.0069883	0.23197
-25	-0.002279	-0.002809	-0.002499	-0.078298	0.0109097	0.204492	0.0098178	0.241788
-24	-0.003271	-0.006081	-0.007388	-0.085686	0.0089485	0.213441	0.0055091	0.247297
-23	-0.003912	-0.009993	-0.00556	-0.091246	0.0028032	0.216244	0.0113316	0.258628
-22	-0.005957	-0.01595	0.007356	-0.08389	-0.009013	0.207231	-0.001313	0.257316
-21	0.001297	-0.014653	0.0094517	-0.074438	-0.000795	0.206436	0.0022196	0.259535
-20	0.0018168	-0.012836	0.0054166	-0.069022	0.0039193	0.210355	-0.006085	0.25345
-19	0.0016036	-0.011232	0.0014472	-0.067574	0.0077153	0.21807	-0.00031	0.25314
-18	-0.001573	-0.012806	0.0048541	-0.06272	0.0002583	0.218329	-0.001498	0.251642
-17	-0.003104	-0.015909	-0.007078	-0.069798	-0.000138	0.21819	0.0137048	0.265347
-16	0.0103159	-0.005593	0.0047152	-0.065083	-0.001232	0.216958	0.0073532	0.2727
-15	-0.004857	-0.01045	0.0033795	-0.061704	0.0025406	0.219499	0.0104207	0.283121
-14	0.0015922	-0.008858	0.0009919	-0.060712	-0.001315	0.218184	0.0043757	0.287496
-13	-0.004264	-0.013122	0.0049549	-0.055757	0.0036827	0.221867	0.0063017	0.293798
-12	-0.005318	-0.01844	0.0005065	-0.05525	0.0015599	0.223426	0.0099781	0.303776
-11	0.0062472	-0.012193	0.0012662	-0.053984	0.0066705	0.230097	-0.001039	0.302737

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-10	0.0016595	-0.010533	-0.004266	-0.05825	0.0004168	0.230514	0.0032751	0.306012
-9	0.0078269	-0.002706	0.0010197	-0.057231	0.0053502	0.235864	0.0010784	0.30709
-8	0.0062834	0.003577	0.0020341	-0.055197	0.0014335	0.237297	0.0012986	0.308389
-7	-0.001606	0.0019713	0.0059069	-0.04929	-0.00003	0.237268	-0.002157	0.306232
-6	-0.000067	0.0019047	0.0079896	-0.0413	-0.002662	0.234606	0.0032194	0.309452
-5	0.0082964	0.0102011	-0.000669	-0.041969	0.0049856	0.239591	0.0032916	0.312743
-4	0.0020139	0.012215	-0.007263	-0.049232	0.0017842	0.241375	-0.001869	0.310874
-3	0.0018207	0.0140356	-0.002815	-0.052047	-0.00248	0.238895	-0.001742	0.309132
-2	0.002555	0.0165907	0.0007596	-0.051287	-0.00037	0.238526	0.0022678	0.3114
-1	0.0057198	0.0223104	0.0027694	-0.048518	-0.00187	0.236656	0.0036044	0.315004
0	-0.000981	0.0213298	0.0037362	-0.044782	-0.001509	0.235146	0.0061399	0.321144
1	-0.010878	0.0104517	-0.000704	-0.045486	-0.000593	0.234553	0.0015071	0.322651
2	-0.00173	0.0087219	-0.00043	-0.045916	-0.001022	0.233532	0.0039858	0.326637
3	-0.001641	0.0070815	0.00261	-0.043306	0.0012075	0.234739	-0.004213	0.322425
4	-0.000274	0.006808	-0.002331	-0.045637	-0.003108	0.231631	-0.002021	0.320404
5	0.0029315	0.0097394	0.0048822	-0.040755	0.0023643	0.233995	0.00271	0.323114
6	0.0009901	0.0107295	0.0007611	-0.039994	0.0079149	0.24191	-0.001433	0.321681
7	0.0032061	0.0139356	0.0070721	-0.032922	0.0026719	0.244582	0.0053653	0.327046
8	0.003271	0.0172066	-0.000463	-0.033384	-0.001505	0.243077	0.0006405	0.327686
9	0.0075855	0.0247922	0.0009252	-0.032459	-0.006403	0.236673	0.0051619	0.332848
10	0.0011941	0.0259862	0.0010874	-0.031371	-0.007363	0.229311	-0.002102	0.330747
11	-0.00285	0.0231359	0.0015633	-0.029808	-0.002148	0.227163	-0.000761	0.329986
12	-0.003103	0.0200329	-0.001935	-0.031743	0.0028604	0.230023	-0.004828	0.325157
13	-0.000111	0.0199222	0.0016813	-0.030061	-0.001824	0.228199	-0.003139	0.322019
14	0.0047899	0.0247121	0.0078768	-0.022185	-0.001293	0.226906	0.0052028	0.327222
15	-0.003348	0.0213637	0.0010146	-0.02117	0.003524	0.23043	-0.00144	0.325782
16	-0.001667	0.0196966	-0.001721	-0.022891	-0.00098	0.22945	0.0085513	0.334333
17	-0.001542	0.0181542	0.0057034	-0.017188	0.0024821	0.231932	-0.001046	0.333287
18	-0.004278	0.0138762	-0.003083	-0.020271	-0.001345	0.230586	0.000303	0.33359
19	0.0007834	0.0146596	0.0026834	-0.017587	-0.000591	0.229996	-0.000678	0.332911
20	-0.000224	0.0144357	0.0009135	-0.016674	-0.001271	0.228725	0.0008609	0.333772

Cg = Control Group

Eg = Experimental Group

**Appendix E Table E.12**  
**Raw Return Model (RRM)**  
**Average Abnormal returns (AAR) and Cumulative Abnormal Returns (CAR)**  
**Loser Firms**

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-60	0.0242719	0.024272	-0.021544	-0.021544	0.0067568	0.006757	0.0087901	0.00879
-59	0.0165056	0.040777	-0.015322	-0.036866	0.0266667	0.033423	0.0143088	0.023099
-58	0.0055195	0.046297	-0.009351	-0.046218	-0.008475	0.024949	0.0084417	0.031541
-57	-0.008929	0.037368	-0.023369	-0.069587	0.0253164	0.050265	0.0197517	0.051292
-56	-0.014389	0.02298	-0.000447	-0.070034	0.0154757	0.065741	0.0153013	0.066594
-55	0.0104377	0.033418	0.0052811	-0.064753	0.0229885	0.08873	0.0256811	0.092275
-54	0.0110567	0.044474	0.0155793	-0.049174	0.0187006	0.10743	0.0159944	0.108269
-53	-0.010727	0.033747	-0.003618	-0.052791	0.0349702	0.1424	0.018865	0.127134
-52	-0.024051	0.009696	0.001567	-0.051224	-0.014852	0.127549	0.0160448	0.143179
-51	0.0046956	0.014392	0.0003049	-0.050919	0.0087719	0.136321	0.0136899	0.156869
-50	-0.013062	0.00133	0.0117845	-0.039135	0.0239268	0.160248	0.0257468	0.182616
-49	-0.03285	-0.031519	-0.005663	-0.044798	0.0332271	0.193475	0.0058476	0.188463
-48	-0.026119	-0.057638	0.0095241	-0.035274	0.0319183	0.225393	0.004423	0.192886
-47	-0.013889	-0.071527	-0.011886	-0.04716	0.0217102	0.247103	0.0184548	0.211341
-46	-0.010427	-0.081954	-0.013034	-0.060194	0.0241935	0.271297	0.0018858	0.213227
-45	-0.008475	-0.090428	0.0016991	-0.058495	0.0197706	0.291067	0.0158157	0.229043
-44	-0.00431	-0.094739	0.0114694	-0.047025	0.022388	0.313455	0.0164345	0.245477
-43	-0.008696	-0.103434	-0.037738	-0.084763	-0.004348	0.309108	0.0326742	0.278151
-42	-0.017699	-0.121134	0.0173635	-0.0674	0.0098998	0.319007	0.0194141	0.297565
-41	-0.009174	-0.130308	0.0339547	-0.033445	0.023353	0.34236	0.0185267	0.316092
-40	0.0233645	-0.106943	0.0093211	-0.024124	-0.026316	0.316045	0.0200917	0.336184
-39	0.0178571	-0.089086	-0.000097	-0.024222	-0.023314	0.292731	0.0118072	0.347991
-38	-0.00431	-0.093397	0.0152066	-0.009015	0.0220588	0.31479	0.0143253	0.362316
-37	0.026087	-0.06731	-0.000251	-0.009266	0.0114671	0.326257	0.009294	0.37161
-36	0.029703	-0.037607	0.005814	-0.003452	0.0069444	0.333201	0.013492	0.385102
-35	0.0274967	-0.01011	0.011077	0.007625	0	0.333201	0.0055452	0.390647
-34	0.0349824	0.024872	-0.009946	-0.002321	0	0.333201	0.0211753	0.411823
-33	0.0462001	0.071073	-0.005291	-0.007612	0.0087719	0.341973	-0.013154	0.398669
-32	0.0238095	0.094882	-0.007019	-0.014631	-0.003307	0.338667	0.0018676	0.400536
-31	0.0116619	0.106544	0.0027352	-0.011896	0.0059524	0.344619	0.0126112	0.413147
-30	-0.011628	0.094916	-0.012842	-0.024738	0.0254238	0.370043	-0.000533	0.412614
-29	-0.022348	0.072569	-0.009881	-0.034618	0.00112	0.371163	0.0124777	0.425092
-28	0.004062	0.076631	-0.015047	-0.049665	-0.010116	0.361047	0.0162088	0.4413
-27	0.0038462	0.080477	0.0125493	-0.037116	-0.003937	0.35711	0.0064567	0.447757
-26	-0.003817	0.07666	-0.018433	-0.055549	-0.007937	0.349173	-0.002194	0.445564
-25	0.0269231	0.103583	-0.009466	-0.065015	0.0040323	0.353205	0.0163775	0.461941
-24	0.0036496	0.107233	-0.009564	-0.074579	-0.011246	0.341959	0.0027488	0.46469
-23	-0.007246	0.099986	0.0276498	-0.046929	0.0113852	0.353344	0.0139715	0.478661
-22	0.0036765	0.103663	0.0022069	-0.044722	0.0072464	0.360591	0.015971	0.494632
-21	0.0036496	0.107312	0.0089804	-0.035741	-0.000857	0.359733	0.0046937	0.499326
-20	-0.003623	0.103689	0.0187253	-0.017016	-0.023302	0.336431	0.0073586	0.506685
-19	0.0036496	0.107339	0.0048978	-0.012118	0.0071429	0.343574	0.01101	0.517695
-18	0.0253623	0.132701	-0.03447	-0.046588	0.0127234	0.356297	0.0320556	0.54975
-17	0.0241379	0.156839	0.0272565	-0.019332	0.0202703	0.376568	0.0227524	0.572503
-16	0.0263158	0.183155	0.0015575	-0.017774	-0.015207	0.361361	0.0152502	0.587753
-15	-0.003125	0.18003	0.0009665	-0.016807	0.027027	0.388388	0.0276953	0.615448
-14	-0.015723	0.164307	0.0084708	-0.008337	0.0171665	0.405554	0.0074235	0.622871
-13	-0.012987	0.15132	0.0167411	0.0084045	0.0287006	0.434255	0.0053005	0.628172
-12	-0.006667	0.144653	0.0036767	0.0120812	0.0275293	0.461784	0.0018843	0.630056
-11	-0.010135	0.134518	-0.012103	-0.000022	0	0.461784	0.0000257	0.630082

Days	AAR Cg 1990	CAR Cg 1990	AAR Eg 1990	CAR Eg 1990	AAR Cg 1991	CAR Cg 1991	AAR Eg 1991	CAR Eg 1991
-10	0.0103448	0.144863	0.0061569	0.0061349	0.0235405	0.485324	0.0196965	0.649778
-9	0.0202703	0.165133	0.0004257	0.0065607	0.0263158	0.51164	-0.003091	0.646687
-8	-0.006494	0.158639	0.0333598	0.0399205	0.016453	0.528093	0.0227927	0.66948
-7	-0.006579	0.15206	0.0137731	0.0536935	0.0004141	0.528507	0.0107504	0.68023
-6	-0.006667	0.145394	0.0107002	0.0643938	-0.018868	0.509639	0.0006355	0.680866
-5	0	0.145394	0.0200833	0.084477	0.0098039	0.519443	0.010662	0.691528
-4	0.0101351	0.155529	0.007275	0.0917521	-0.008772	0.510671	0.0036548	0.695183
-3	-0.013245	0.142284	-0.016969	0.0747828	-0.013736	0.496935	0.0093922	0.704575
-2	0	0.142284	-0.023469	0.0513138	0.0045455	0.501481	0.0111612	0.715736
-1	0.0068027	0.149087	0.0118304	0.0631443	-0.027027	0.474453	-0.007149	0.708587
0	0	0.149087	0.0050122	0.0681565	-0.009246	0.465207	0.0120638	0.720651
1	0.0033557	0.152442	-0.000466	0.0676909	-0.006132	0.459075	0.015059	0.73571
2	0.0033333	0.155776	-0.002481	0.0652101	0.0263158	0.485391	-0.006502	0.729208
3	0	0.155776	-0.007753	0.0574576	0.02	0.505391	-0.000868	0.72834
4	-0.006623	0.149153	0.0092007	0.0666584	-0.04222	0.463171	-0.008236	0.720104
5	0.0067114	0.155865	-0.003121	0.0635378	-0.004384	0.458787	-0.002189	0.717914
6	0.0033113	0.159176	0.0142889	0.0778266	-0.005192	0.453595	-0.013256	0.704659
7	0	0.159176	-0.005544	0.0722828	-0.010544	0.443051	0.0042058	0.708864
8	-0.006579	0.152597	0.0093728	0.0816556	-0.03575	0.407301	0.0049359	0.7138
9	-0.006667	0.14593	-0.004351	0.0773047	0	0.407301	0.006194	0.719994
10	0	0.14593	0	0.0773047	0.0063034	0.413604	-0.007179	0.712815
11	0	0.14593	-0.004202	0.073103	-0.005435	0.408169	-0.000213	0.712602
12	-0.003378	0.142552	-0.003117	0.0699863	-0.016484	0.391686	0.0110593	0.723661
13	0	0.142552	-0.016482	0.0535038	-0.009709	0.381977	0.0049903	0.728652
14	-0.017007	0.125545	0.0042098	0.0577136	-0.016314	0.365663	0.004039	0.732691
15	0.0035211	0.129066	-0.000999	0.0567146	0.005	0.370663	-0.002802	0.729888
16	-0.024476	0.104591	0.0011495	0.0578641	0	0.370663	-0.00223	0.727658
17	-0.029768	0.074823	-0.010293	0.047571	-0.000864	0.3698	0.0063299	0.733988
18	-0.012195	0.062628	-0.005983	0.0415884	-0.006863	0.362937	0.0002127	0.734201
19	0.0196706	0.082299	0.0093849	0.0509734	0.0182478	0.381185	-0.014804	0.719397
20	-0.004132	0.078166	0.0059258	0.0568991	0.026084	0.407269	-0.005693	0.713705

Cg = Control Group

Eg = Experimental Group

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