

**THE MARKET IMPACT OF EUROPEAN  
MERGERS AND JOINT VENTURES ON  
SHARE PRICES OF U.K. PLCs**

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***TO MY BELOVED PARENTS, WHO WITHOUT THEIR PRAYERS AND SUPPORT I  
COULD NOT HAVE OBTAIN THIS DEGREE. MAY ALLAH BLESS THEM BOTH.***

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## ABSTRACT

This study analyses the announcements of European mergers and joint ventures as forms of intra-European direct investment that affect the share prices of U.K. plcs. From a review of the theories of multinational enterprise and foreign direct investment in the context of European economic integration, the study emphasized the importance of the single market and its implications on foreign direct investment. A comparison is made between mergers and joint ventures as forms of foreign direct investment based on their theories and empirical evidences. The effects of the integration on European mergers and joint ventures are then examined by analysing the announcement effects.

Using event study methodology, the study investigates the effects of announcements of UK plc acquisitions of European firms and their involvement in European joint ventures on the share prices of UK plcs. Both parametric and non-parametric techniques are used to measure the impact of these announcements in terms of abnormal returns and volatility of returns.

The results show positive significant market reaction to the merger announcements on the announcement day for the abnormal return and on the day before the announcement for the volatility. However a significantly negative post announcement cumulative abnormal return is found. A shift of the market reaction after U.K.'s entry into the Exchange Rate Mechanism (ERM) is also found.

The market reaction to the joint venture announcements is not significant on the day of announcement. However a significant positive cumulative abnormal return is found a few days prior to the announcement of the joint venture. A positive significant relationship between cumulative market reaction and U.K.'s entry into ERM is also established. Profile analysis of the significant announcements also shows the relevance of certain factors that could explain the market impact of joint ventures.

## GLOSSARY

<b>ECLECTIC PARADIGM</b>	The paradigm links the location, ownership and internalization advantages in explaining foreign direct investment
<b>ECONOMIC INTEGRATION</b>	Economic integration involve the process of removing tariff, non-tariff and fiscal barriers between nations
<b>EVENT STUDY</b>	It is an emprirical investigation between security prices and economic events
<b>EXCHANGE RATE MECHANISM (ERM)</b>	A mechanism which links the exchange rate of domestic currencies to a central rate.
<b>FOREIGN DIRECT INVESTMENT (FDI)</b>	Investment with a controlling interest in a foreign country
<b>INTERNALIZATION</b>	A process of replacing external market with an internal market of the firm
<b>JOINT VENTURE (JV)</b>	A form of organisation which involve two or more parties that cooperate and could either be contractual or equity in nature.
<b>LOCATION ADVANTAGES</b>	These advantages arise from market imperfections in the host country where foreign direct investment occur.
<b>MERGER</b>	An activity where one firm takes control of another or where both firms dissolve and form a new entity.
<b>MULTINATIONAL ENTERPRISE (MNE)</b>	A firm which adds value in more than one national economy
<b>OWNERSHIP ADVANTAGES</b>	These advantages also known as competitive or firm specific advantages are due to unique features of the firm relative to its competitors.

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# CHAPTER 1

## INTRODUCTION

### 1.1 Background of Study

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In recent decades factor mobility in the international business environment has been facilitated by advances in transportation and telecommunication technologies. With the increasing opportunities for factor mobility, foreign direct investment activity becomes more attractive. An interesting phenomenon that also influence foreign direct investment activity particularly in Europe is the process of *economic integration*. A basic axiom of foreign direct investment is to internalize a foreign activity when the market transactions are costly. With European economic integration there is an increased opportunity to internalize and thus increases the level of FDI. This study addresses the question of how economic integration has affected FDI which is effected through mergers and joint ventures in Europe. Its main focus is to analyse the market



impact of European mergers and joint ventures as forms of FDI on the share prices of U.K. firms.

## 1.2 Rationale of Study

The basis of this study is the assumption that corporate expansion or restructuring affects shareholder wealth. In foreign direct investment mergers and joint ventures have a common characteristic, that is, to expand by acquiring or sharing existing assets or resources<sup>1</sup>. The process of expansion however differ between mergers and joint ventures. In mergers the acquiring firm has full control over the assets or resources, whilst joint ventures allow for cooperative agreements amongst partners to share control over resources. It has also been shown that where mergers are not possible joint ventures become the alternative choice (Hladik, 1985). The recent developments of European economic integration which encourage factor mobility through the removal of non-tariff and fiscal barriers could influence intra-European direct investment. Under these circumstances the announcements of European mergers and joint ventures as forms of corporate integration could send interesting signals to the market.

## 1.3 Purpose of Study

The primary concerns of this study are to understand intra-European direct investment in the form of mergers and

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<sup>1</sup> This characteristic differ from greenfield investments which develops or replicate new assets.

joint ventures in the context of European economic integration and to examine the effects of the integration on the share prices of U.K. firms. These concerns are then translated into the following purpose of study.

- i. To review the theoretical approaches of multinational enterprise (MNE) and foreign direct investment (FDI) and discuss the effects of European economic integration on them.*
- ii. A comparative review of mergers and joint ventures as forms of FDI is also to be done in this study.*
- iii. Using Event Study Methodology, this study investigates the market impact of announcements of European mergers and joint ventures on the share prices of U.K. acquiring firms.*
- iv. With the occurrence of economic integration, possible factors that could affect the impact of the announcements are also to be identified and investigated.*
- v. The distinguishing features of joint ventures are also to be identified and where possible compared with that of mergers.*

#### **1.4 Framework of Study**

The framework of this study comprises the theoretical discussions of foreign direct investment (FDI) and multinational enterprise (MNE), the theories and empirical evidence of mergers and joint ventures, a literature review

of European economic integration and its implications for FDI, a review of event study methodology and its relevance to the study, followed by results and analysis. The synopsis of the following chapters are stated below.

The theoretical approaches of explaining FDI and MNE are the main emphasis of chapter 2. The importance of this review is to understand the major approaches, their derivatives and economic arguments as well as their inter-relationships in explaining the effects of European economic integration on FDI. A diagrammatic representation also provides a basis for understanding these effects.

A theoretical review of mergers and joint ventures as forms of corporate expansion is the subject of chapter 3. The underlying economic arguments in favour of each form of activity and their empirical evidence are also mentioned. A comparison is also made between them based on certain distinct features and characteristics.

The impact of European economic integration on foreign direct investment is addressed in chapter 4. The background and nature of the integration is discussed with a view to explaining its likely effects on FDI. A brief review of mergers and joint ventures in Europe is also mentioned in the chapter. A theoretical analysis of intra-European direct investment in relation to mergers and joint ventures is then presented.

The event study methodology employed in this study is explained in chapter 5. The nature and problems of the methodology particularly in relation to daily data is emphasized. The sample and data description, the methodology used, as well as the hypotheses tested are also described.

The results and analysis of European merger and joint venture announcements by U.K. firms are discussed in chapter 6, where significant market reactions were found for both types of announcements. Analysis made based on certain factors also show different market reactions. A profile analysis of individual joint venture is also included in the chapter. The conclusion and suggestions for future research is then mentioned in chapter 7.

## CHAPTER 2

# A THEORETICAL REVIEW OF MULTINATIONAL ENTERPRISE AND FOREIGN DIRECT INVESTMENT

### 2.1 Introduction

---

Recent economic trends towards global coordination and economic integration due to rapid technological developments in telecommunication and transportation have made the multinational enterprise (MNE) and foreign direct investment (FDI) to be increasingly important. This chapter discusses the theories of FDI and MNE concurrently as they explained the *theory of international production*. The theory of FDI is concerned with the motives and the means by which international production is financed while the theory of MNE discusses MNE as the main institutional agent of international production (Aliber 1970, 1971; Rugman

1980).<sup>2</sup>Although several theories have been put forward to explain MNE and FDI, this chapter focus on four main approaches which are then presented in a diagrammatic model. The discussion of the organisational models are also explained in relation to market forces. The diagrammatic model presented in this chapter is an attempt to synthesize the various approaches into a coherent framework. This framework will be the basis for discussing FDI and MNE in the European economic environment particularly in relation to shareholders wealth in the following chapters.

## 2.2 Understanding MNE : The Four Approaches

The established theory of MNE has evolved from differences in ideology as well as three other reasons namely, different forms of international production<sup>3</sup>, several branches of economic theory<sup>4</sup> and analysis that could be made from macro-, meso- and micro-economic

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<sup>2</sup> A statutory definition stipulates that foreign direct investment (FDI) occurs when a controlling interest is owned, directly or indirectly, by one person of the voting securities of a corporation or an equivalent interest of an unincorporated entity (International Investment Survey Act of 1976). A multinational enterprise (MNE) however is defined as 'a firm which adds value in more than one national economy' (Casson, 1985, p.31).

<sup>3</sup> The different forms of international production : resource-based, export substituting, export platform or globally integrated raises distinctive considerations that affect home and host countries in different ways.

<sup>4</sup> The six branches of economic theory are theory of international capital market, theory of trade, theory of location, theory of industrial organisation, theory of innovation and theory of firm (Cantwell et al, 1986).

perspectives<sup>5</sup> (Cantwell, 1991). The four main approaches as suggested by Cantwell (1991) are not mutually exclusive and are used to discuss the theories. These approaches range from a micro-economic theory of the firm to an international or a macro-economic approach each with a distinctive emphasis as shown in Figure 1. The figure depicts the four main approaches with each having a particular emphasis. Dunning's (1988a) eclectic paradigm is shown in the figure to encompass the three inter-related approaches.

#### 2.2.1 *The Market Power Approach*

The market power approach views the firm as a means by which producers increase the extent of their market power (Hymer, 1976). Market power is defined by Sanjaya Lall '*...as the ability of particular firms, acting singly or in collusion, to dominate their respective markets can so earn higher profits, to be more secure, or even to be less efficient than in a situation with more effective competition...The concept may be applied to both buyers as well as sellers*' (Lall 1976:1343)

The primary causal link of this approach is that the conduct of firms affect the market structure and not vice-

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<sup>5</sup> The three level analysis are macro-economic which looks at national and international trends, meso-economic which analyses the interaction between firms at industry level and microeconomic which analyses the international growth of individual firms.

FOUR APPROACHES IN EXPLAINING MNE	
<u>APPROACH</u>	<u>EMPHASIS</u>
<p>Market Power or Hymer's theory of the firm</p>	<p>Market share dominance and power</p>
<p>Coasion theory of the firm :</p> <ul style="list-style-type: none"> <li>- Internalisation approach</li> <li>- Market-Hierarchies approach</li> </ul>	<p>Replacement of external with internal markets</p>
<p>Competitive international industry approaches</p> <ul style="list-style-type: none"> <li>- Vernon's PCM (1966,1974)</li> <li>- Graham's exchange of threats (1975)</li> <li>- Pavitt (1987) technological accumulation approach</li> <li>- Jenkin's (1984, 1987) internationalization capital approach</li> </ul>	<p>International industrial structure and technology</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto; margin-right: auto;"> <p>Dunning's Eclectic Paradigm</p> </div>
<p>Macroeconomic developmental approaches</p> <ul style="list-style-type: none"> <li>- Kojima-Ozawa (1985) approach</li> <li>- Dunning's (1982, 1986) development cycle</li> <li>- Cantwell and Tolentino's (1987) synthesis</li> <li>- Aliber's (1971, 1972) theory of FDI</li> </ul>	<p>National level of economic development and other macro-economic factors</p>

Source : Adapted from Cantwell (1991)

Figure 1

versa. Consequently the firm as an active agent tends to



increase the barriers of entry and collude with other firms. The approach clearly rejects possible internal efficiency that increase profits. It was extended to include foreign operations by Kindleberger (1969) who considered the MNE as a function of market structure characterized by monopolistic competition between differentiated products rather than as an agent in oligopolistic interaction with other firms.

Cowling and Sugden (1987) also contended that internationalisation not only increased the market power of MNEs but also raised their share of profits in two ways. Firstly, the strength of the bargaining power of MNEs in negotiations over wages and conditions of work increases with the greater ability of MNEs to shift production between alternative locations. Secondly, by 'putting out' work within the firm to a network of dependent subcontractors, both locally and internationally, the position of collectively organised trade unions in large plants is weakened. Thus a combination of a rising share of profits and an increasing market power (decreased incentive to invest) will eventually lead to a slower growth of demand and secular stagnation at an international level (Baran and Sweezy 1966, Steindl 1952).

The welfare issue emphasized by this approach is on

the distribution of income and wages and not on technological efficiency. Though this approach recognize a potential wealth effect to shareholders its emphasis is not a particular concern of this study.

### 2.2.2 The Transaction Cost Approach

This approach rationalise the existence of MNE as an extension of the explanation of the *raison d'etre* of the firm (theory of the firm) itself. A firm possessing an advantage can either use the advantage itself or can sell or lease the advantage to other firms. This approach is based on Coase's (1937) criticism of neo-classical economics where he introduced the transaction costs of an administered exchange. The decision rule is if transaction costs of the administered exchange are lower than those of market exchange, the market is internalized. As a result of internalization the collective efficiency of the group is thereby increased due to the benefits derived from economies of scope and reduced costs (Caves, 1982).

A dynamic transaction cost approach to compare internal and external market-related cost which was proposed by Casson (1981) assumed two types of market-related costs. The first type of cost is *set-up cost* which is incurred in bringing buyers and sellers together. The second type is *variable cost* which is associated with

negotiating and enforcing each transaction and is directly proportional to the quantity traded. Under the assumptions that the set-up cost is greater in the internal market and the variable cost is greater in the external market, a proper choice of market to produce could be made based on the optimal quantity of production, that is, when external market transaction costs exceed internal market transaction costs, production will be for the internal market. The approach suggests that the propensity to internalise is greater if the volume of trade associated with a high frequency of transactions is higher in the external market between the two plants.

According to transaction cost theory, market conditions and the organisation of firms are interdependent. This leads to the need to examine the differential costs of location. The firm will seek to reduce its overall costs by locating its various activities at points where the immobile inputs to those activities are cheapest. The network that arises from the least cost location points which are linked by the flow of goods, services, mobile inputs and information in internal markets is a multinational firm. Thus the lower the fixed capital requirement the greater will be the incentive to relocate especially in response to either government incentives or in low interference economies. Specifically, several forces

are at work on location policies as shown in Table I. There are five forces affecting location decisions namely, large firm dominance, non-routine activities, imperfect markets, government intervention and communication costs. Each of these forces are described in the table below.

**Table I**

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**FORCES AFFECTING LOCATION DECISIONS**

**(1) Large Firm Dominance**

There are increasing returns to scale in many activities and this will affect location strategy and bias these activities towards large firm dominance.

**(2) Non-Routine Activities**

The performance of many non-routine activities, such as research and development and marketing by modern firms means that such activities will exercise a locational 'pull' on production. The inputs to these activities and the scale economies in their performance may dictate centralisation within the firm.

**(3) Imperfect Markets**

Many (multinational) firms operate in imperfect markets and cannot be considered as price takers. Consequently large firms can often force down input or factor prices and will concentrate their activities in countries or regions intensive in these inputs. Such distortions will have an important effect on the opportunities for local firms to compete with or supply such monopsonistic multinationals.

**(4) Government Intervention**

Avoidance of government intervention at home or in the host country will affect location. Biases towards low interference countries and to the use of transfer pricing will distort the location policies of multinationals away from what would be, in the absence of Government interference, least cost location.

**(5) Communication Costs**

Communication costs within the firm dictate the centralisation of high communication intensive activities and the decentralisation of routine, low communication cost activities.

*Source : Adapted from Dunning (1981)*

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The appropriate choice of institutional arrangement where markets are internalized through common ownership and control of groups involved in exchange with each other are also suggested by this approach. These range from a decentralised network regulated by transfer prices which involved internalising an externality where a previous external market had existed (Casson, 1986) to a centralised and hierarchial structure of globally integrated multinationals (Williamson, 1975).

Based on the choice of institutional arrangement, the approach evolved into two types, namely, the *internalisation approach* (Coase 1937, McManus 1972, Buckley and Casson 1976 1985, Rugman 1981 and Hennart 1986) and the *markets and hierarchies approach* (Williamson 1975 and Teece 1983). These approaches attach fundamental importance to the role of transaction costs in the development of multinational firms and hence distinguish themselves from the work of Hymer (1976) who did not separate market structure problems from those relating to transaction costs. In this respect the MNE was also defined as the controller and coordinator of an international network of production or income generating assets (Cowling and Sugden, 1987). The transaction cost approach could be further classified into three other approaches namely, the internalising approach, the market and hierarchies approach

and the eclectic paradigm.

*(i) Internalisation Approach*

The basic approach of internalisation is marginalist (Buckley 1992c pp 63) and its motive is profit. The *purist internalisation view* is that the internal organisation of the multinational firm is an approximation to a perfect market whereby the firm's internal processes are designed to transmit shadow prices to key decision makers who optimise the firm's overall profit (Buckley and Casson 1976, 1985). It is thus a device for reducing transaction costs by buying or creating assets in different nations and integrating their operations within a single unit of control. Hennart (1986) adopts a parallel view which states that there will be a decentralised organisation and decentralised decision making given the internal prices. The internalisation approach also has strong links with the *resource dependence approach* to organisational design (Pfeffer and Salancik, 1978) where the role of management is seen as reducing or loosening dependencies, deemed as the extent to which the organisation depends on an external source for a large proportion of its output or input.

The *theory of industrial organisation* adopt a similar approach, contending that direct investment is motivated by market imperfections which permit MNEs to exploit their

advantages in foreign markets. The internal market is a substitute for goods and factor market imperfections (Kindelberger, 1968). The basic axiom of the theory is that a firm exists when an organisational solution to an allocation problem is superior to the market solution and its growth is a replacement of markets or creation of an internal market where none previously existed (Buckley, 1987).

*(ii) Market and Hierarchies Approach*

The market and hierarchies approach to the internal organisation of firms envisages the organisation as a substitute for policing the settlement of disputes, that is, as a privatised (or internalised) legal system. Thus the view of firm as a production function has shifted to that of 'the firm as governance structure if the ramifications of internal organisation are to be accurately assessed' (Williamson 1981, p. 1539). The governance costs arise because of incomplete contracting due to the inability of formal contracts to capture tacit knowledge (Williamson 1979, Teece 1983). The approach is founded on the twin behavioral assumptions of 'bounded rationality' and 'opportunism'<sup>6</sup>. These assumptions are subject to the

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<sup>6</sup> Bounded rationality refers to the limited capability of human beings to hold a wide variety of options to complex problem-solving situations. Opportunism recognises that individuals may act in their own interest rather than the organisation's and this gives rise to potential costs of monitoring and enforcing agreements and contracts.

constraint that many assets are specific and are difficult to translate across tasks. Though the problem of *asset specificity* could be resolved through hierarchy Hennart (1986) suggests that internal markets are more powerful and less costly than the former.

Both internalisation and hierarchial approaches share the view that organisations economise on transaction costs and they require the use of supporting assumptions to give empirical content. Contributions by Casson (1985), Teece (1983), Buckley (1987) Nicholas (1986) and others have shown that the incidence of transaction costs are particularly high in vertically integrated process industries, knowledge-intensive industries, quality assurance dependent products and communication intensive industries. But problems do arise in the definition and measurement of transaction costs, that is, the magnitude of costs in relation to transport costs, production costs, marketing and distribution costs which must be specified as well as the spatial configuration of their incidence (Buckley, 1987).

Another way of giving operational consent to the approach is to invoke a dynamic *deus ex machina* usually known as entrepreneurs, who identify the potential for improving situations in efficiency terms or in



redistributing rewards towards themselves (McGuinness, 1970). The risks faced by the entrepreneurs which arise from changing situations, can be reduced by the compilation and assimilation of relevant information on which to base their forecast. This links closely the economics of information to bounded rationality and to 'learning by doing' arguments.

A valid criticism of the internalisation rubric is that market imperfections are taken as exogenous to the (internalising) firm. This gives determinacy to the theory but unduly restricts it. Many of the imperfections are the result of interaction between the firm and the market, for example, product differentiation.

Unlike the market power approach, the transaction cost approach consider the structure of the final product market to be only of secondary interest. The emphasis is on achieving profit maximization through the efficient exchange of intermediate products rather than through the exclusion of (potential) rivals in the final product market. Despite their different emphasis they are not mutually exclusive or competing theories but could be combined to give a full and rich explanation on market power. Hymer (1968) explained that internalisation decisions determine the number of firms in a given (fixed)

industry. Market structures generally provide opportunities for horizontal expansion, that is, highly concentrated industries will encourage diversification. Certain market structures result in imperfection which induce price distortion which are incentives for forward and backward integration. These market outcomes are forms of feedback to internalising decisions. In a static or slowly evolving world this interaction is likely to converge to an equilibrium.

The welfare impact of multinationals could be positive or negative as recognised by the synthesis of both theories. Gains will result if an imperfect external market is replaced by superior allocation of resources in the internal market and losses if multinationals maximise monopoly profits by restricting output of goods and services. Sherer et al (1975) also emphasize the dynamic element in the welfare effects of the internal market which allows greater inter-plant integration and cross-functional integration within the firm thus stimulating R&D and effective implementation in production and marketing.

*(iii) The eclectic paradigm*

The process of internalisation was refined when Dunning (1977) stated that MNEs have ownership specific advantages in the form of intangible capital such as

goodwill, patents, trademarks, marketing and distribution skills or organisational abilities. Later he linked firm specific asset advantages to location factors and combined ownership, location specific and internalization (OLI) advantages in an 'eclectic paradigm' (Dunning, 1981). According to him, there are three conditions which explains FDI as shown in table II, namely the possession of competitive advantage, matching competitive advantages to location advantages and internalising the advantages. Each advantage is described in the table.

**Table II**

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**THREE CONDITIONS EXPLAINING FDI**

**(a) Possession of Competitive Advantage**

Firms setting to supply foreign markets must possess certain competitive advantage over national firms in these markets, which at least, for a period of time, are exclusive or specific to them; and these advantages must be sufficient to outweigh the disadvantages of penetrating an unfamiliar or uncongenial market;

**(b) Matching competitive advantages to location advantages**

The choice to exploit its ownership specific advantages should match with country specific endowments of the alternative possible locations;

**(c) Internalizing the advantages**

Firms should internalize its advantages rather than externalize them by selling these advantages such as licensing, management contracts, technical service agreements and portfolio investment. Internalisation is favoured if the market is imperfect or there exist government fiat.

Source : Dunning's (1981) eclectic theory of international production

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The paradigm's focus of interest was on explaining the level and pattern of foreign value-added activities of firms and/or countries (Dunning, 1991). The paradigm did not intend to provide a complete synthesis of theories nor is itself a theory. However it was meant to provide 'an overall analytical framework for empirical investigations' which would draw the attention of the analyst to the most important theories of the problem at hand. It also provided a framework for a comparison between theories, by establishing a common ground or points of contact between them and clarifying the relationship between different levels of analysis and the different questions which theorists have been concerned to address (Cantwell, 1991).

In the eclectic paradigm, MNEs have 'competitive' or 'ownership' advantages<sup>7</sup> vis-a-vis their major rivals, which they utilize in establishing production in sites that are attractive owing to their 'location' advantages. The two types of competitive advantages identified by Dunning are those attributable to ownership of unique intangible assets (asset kind) and those due to joint-ownership of

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<sup>7</sup> The discussion of ownership advantages is central to the growth of the firm and the MNE. The primary concern of the theory of the growth of firm is internally generated growth which is associated with firm-specific ownership advantages (Penrose, 1959). In the context of the final product market (oligopolistic), ownership specific advantages are those that lower unit costs and raise profit margins of given firms relative to others in the same industry.

complementary assets such as the ability to create new technologies (transaction cost minimizing kind). MNEs also benefit from control over their networks of assets due to '*internalization*' advantages which arise from the greater ease with which an integrated firm is able to appropriate a full return on its ownership of distinctive assets such as its own technology, as well as directly from the coordination of the use of complementary assets, subject to the costs of managing a more complex network. The advantages that arise from the coordination of the use of complementary benefits are described by Dunning (1988b) as '*transactional benefits*' which could be gained only through coordination within the firm due to transactional market failure<sup>8</sup>. Thus while particular ownership advantages and internalization advantages of appropriating rents are attributed to structural market failure, collective ownership advantages and the internalization advantages of coordinating the use of complementary assets are said to be due to transactional market failure.

Although some writers claimed that ownership advantages are not necessary for the existence of MNEs except advantages created by internalization (Buckley and

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<sup>8</sup> The three reasons attributed to the transactional market failure are firstly, increased risk and uncertainty of transactions across national boundaries. Secondly, where there are externalities, benefits external to the transactions concerned may not be captured by parties transacting at arm's length. Finally gains could be reaped from economies of scope.

Casson, 1976; Casson, 1987) especially with reference to intermediate product markets, this can be refuted. This is because at least one of the combining firms must have an ownership advantage which is passed to the MNE. In a dynamic perspective, the generation of ownership advantages, achieved mainly through innovation, is necessary for the competitive success and indeed survival of the firm. Ownership advantages determines the level and rate of market share and they relate to the costs of production while internalization relate to transaction costs. Thus internalization complements and does not substitute ownership advantages (Cantwell, 1991).

While internalisation decisions determine the growth of the firm '*relative to markets*', that is, by replacing or creating neighbouring markets (Buckley and Casson, 1976 1985; Buckley 1983; Casson 1987; Buckley 1988), competitive advantage (CA) is the advantage of one firm '*relative to another firm*' (Dunning 1981, Porter 1980, 1985 & 1986). The nature of these concepts also differs both from an analytical and strategic point of view. Internalisation emphasizes the long-run nature of benefits whilst competitive advantage has a fixed time period beyond which different competitors may take the lead. The imperfections in CA is not explicit and much emphasis is on superior technology or superiority of firms' management. In the case

of technology additional assumptions are required by the CA model on nature of diffusion of technical know how a key strand in the element of CA. In this respect the firm may slow down the rate of diffusion (Johnson 1970) or become an appropriator of technological rent (Magee 1977a, 1977b). In the marketing function competitive advantages are a measure of net wealth arising from past entrepreneurial activity and at a point of time are differentially available to individual firms.

The concept of ownership advantages is open to two opposing theoretical interpretations. The market power theory view these advantages as principally anti-competitive devices which act as barriers to entry against other firms.<sup>9</sup> However these should be thought of as oligopolistic and not monopolistic advantages because as firms accumulate differentiated but overlapping technologies to produce identical or different final products, they become involved in technological competition in an international oligopoly (Cantwell, 1991). In contrast another dynamic view consider ownership advantages as competitive weapons which sustain a process of competition between rivals. These are also known as competitive or monopolistic advantages (Dunning, 1988b). The different

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<sup>9</sup> Ownership advantages are also described as monopolistic advantages by Kindleberger (1969) who recast Hymer's work to associate MNC with the existence of particular market structure, that of monopolistic competition.

views are due to different emphasis, the former on market structure and the latter on the dynamic process. Despite the priority given to internalization, the eclectic paradigm is not synonymous to it. According to Dunning (1988b) *'The theory of foreign owned production stands at the cross-roads between a macro-economic theory of international trade and a micro-economic theory of the firm'*.

With regard to Dunning's (1981) *location advantages*, these have either been considered as exogenous or to be influenced by the growth of the firm. Internalization theorists have tended to consider location advantages and technological ownership advantages as given and exogenous in order to focus on linkages and coordination. On the contrary, neo-classical trade and location theorists have assumed technological ownership advantages as given and focus purely on locational factors. The market power school consider technological advantages as barriers to entry and location advantages as exogenous. Macro-economic theories of international production propound location advantages to depend on macro-economic factors related to countries and their level of development, while meso-economic approaches emphasize the locational factors to be specific to an international industry (Gray, 1982).



Cantwell (1991) further emphasized the importance of extending theories to take into account the evolution of international production that are linked to the cumulative development of technology through the international network of MNCs. He suggested extensions of the internalisation theory by examining relationships between the growth of the firm and changing location of production and combining the theory with a theory of entrepreneurship, innovation or the changing technology and organization of production within the firm. An empirical investigation of competition between the worlds' large firms confirm that companies whose share of international patenting is greater than their international market share in their industry, experience a faster rate of growth and hence a rising market share in the ensuing period (Cantwell and Sanna Randaccio, 1989). In a competitive environment, the relative strength of technological ownership advantages are the principal determinants of variations in unit costs or productivity which in turn explain why certain firms grow faster than their competitors in a given final product market.

The need to integrate non-traditional concepts from political science, sociology or geography and social anthropology (Buckley and Casson 1989, Casson 1988) is essential to expand beyond the narrow economic approach. The concept of entrepreneurship, a crucial aspect of

decision making which has long played a role in growth and development theory (Schumpeter 1934), is also at the heart of business strategy. In the medium term, the developments in strategic trade theory make full integration with the economic theory of the MNE much easier (Rugman 1986, Buckley 1992b, Ethier 1986, Helpman and Krugman 1985). The focus of the core theory should then be on dynamics and disequilibrium at the levels of the firm, markets and international competitors.

### 2.2.3 *Competitive international industry approach*

The competitive international industry approach adopts the view that in general the growth of international production tends to be associated with rivalry and the need to sustain the process of technological competition among MNCs. The approach also known as *meso-economic approach* and focuses on the interaction between firms and the progress of industrial development rather than examining the implications of behaviour inherent in the nature of the firm itself (Cantwell, 1991). Its emphasis is on technological development. The approach comprises Vernon's (1966, 1974) product cycle model, Graham's (1975) exchange of threats, Pavitt's (1987) technological accumulation approach and Jenkin's (1984, 1987) internalisation capital approach as shown in figure 1.

The early development of this approach can be traced to Vernon's Product Life Cycle Theory (PLCT) (1966). The theory considered foreign direct investment as a defensive strategy especially when domestic competition is severe with 'price cutting' and foreign operations will lower the cost due to cheap labour from less well developed countries. This theory which was developed based on US experience represented a defensive reaction to rivalry. Later Vernon (1979), emphasized the necessity of an oligopolistic market structure and classified three different competitive devices used by MNEs in order to create and maintain oligopoly by raising the barriers of entry<sup>10</sup>. When Vernon (1974) introduced oligopolistic considerations in the *Product Cycle Model* (PCM), the reason for relocating abroad shifted from that of simple profit maximization to security, a risk minimizing strategy, on the assumption that MNE's have high operating leverage. Thus cross-investment was expected to reduce the threat of subsidiary price-cutting in the domestic market of each large firm, despite the potential cost-minimizing benefits

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<sup>10</sup> The three forms of oligopoly are the innovation-based, mature and senescent. The first form of oligopoly is the *innovation-based oligopoly*, where companies invest heavily in research to develop new products and differentiate existing ones. A *mature oligopoly* takes the second form, where mature MNEs benefit from economies of large scale production. They may preserve their strength by following the leader behaviour, joint ventures among oligopolist, tacit price collusion or cross investment. Finally, *senescent oligopoly*, arises through geographical and product diversification with a motive to form cartels so as to resist the increased standardisation of products, widespread dissemination of technology base and decreased barriers to entry.

of concentrating production in just one or few locations.

This model however is less applicable with new forms of European or Japanese MNEs in the non homogenous nature of markets of developed countries in terms of tastes and income of consumers (Rugman et al, 1985). On the contrary it is still relevant in situations of changing market conditions, that is the MNE is likely to gain advantage when market changes of the host country lagged those of the home country. As a defensive form of FDI, the MNE could also be involved in direct investment in response to foreign investment by competitors in an oligopolistic host country market structure (Knickerbocker, 1973).

Among the various critics of Vernon's (1974) PLCT include Hymers(1976) and Kindleberger (1969) who postulated that MNEs possess advantages over domestic companies which explains why they invest abroad. Giddy (1978) in his article 'The Demise of the Product Cycle Model in International Business Theory' stated that most MNEs are oligopolists and a '*national oligopolist*' becomes a '*global oligopolist*' by transferring the source of their domestic advantages to overseas markets. The process according to him is '*internalising markets across national boundaries*' as discussed earlier in the eclectic approach. They emphasize the advantages of FDI and disagree with its

defensive strategy.

The idea of an intra-industry production as an 'exchange of threats'<sup>11</sup> became crucial to the work of Graham (1975, 1978, 1985). Although the notion of the search for security is at the heart of the market power theory of the firm which is achieved through monopolization and collusion (Cowlen and Sugden 1987), Graham's (1975) historical account show that since 1960 MNE activity is non collusive and is a means of reducing risk. With an exchange of threats, competition is preserved, but in a stable rather than a cut throat form. To distinguish from market power Graham (1985) suggests that intra-industry production involve cross-investments of MNE's in the same sector which will accelerate new product development and introduction. In contrast to market power theory, he viewed that the interpenetration of national markets by MNEs, assuming no merger of major arrivals, will reduce the likelihood that collusion can be successfully undertaken globally. Cantwell (1989) shares Graham's view that increasing internationalisation of manufacturing production has helped to sustain technological competition between MNEs.

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<sup>11</sup> This arise from increasing oligopolistic interaction between firms in an industry as firms grow where there is increasing capital-intensity of production and importance of economies of scale especially as a product matures. Rivals will adopt damaging price cutting strategies that may cause a trade-off between security and profitability.

MNC expansion can also be linked to a process of *technological accumulation*<sup>12</sup> within the firm (Pavitt, 1987). It is a process where innovation and the growth of international production are seen as mutually supportive. The *technological accumulation* approach differs from the PCM in that it views technology not only to be diffused abroad but also in new environments where the use of technology is a feedback into fresh adaptation and new innovation. This occurs in integrated MNCs who have become global cybernetic organizers of economic systems, including systems for allied technological development in different parts of the world. The advantage of the international network is its ability to appropriate a full return on its technological advantage.

Furthermore, if technological accumulation is continuous in each firm, in order to be more productive or cost efficient along a given line of technological development, the firm will rather extend its network than abandon its existing pattern of innovation and buy technology from a competitor. The effect of extending the network through the use of its own line of technological development in a new environment increases the complexity of its development. This explains the increase in intra-

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<sup>12</sup> Technological accumulation encapsulates the view that the development of technology within a firm is a cumulative process of continual adjustment and refinement sensitive to new environments.

industry production in the industrialized countries (Cantwell, 1987b) which is founded on the belief that innovation is location-specific as well as firm-specific (Cantwell, 1989).

The technological accumulation approach thus suggests two major reasons why the growth of international production has been associated with sustained technological competition. Firstly, internationalisation has supported technological diversification since the form of technological development varies between location as well as firms. Secondly, there are a growing number of connections between technologies which were formerly quite separate. This greater technological interrelatedness has brought more firms especially MNCs into competition with one another (Cantwell 1987a).

In the *Internationalization of capital approach* the growth of international production is viewed as one aspect of a trend towards a more integrated world economy where each industry's products and processes become increasingly standardized (Jenkins 1984, 1987). Thus firms safeguard their competitive position through the continuing differentiation of products and technology. This approach also emphasize innovation and only in certain circumstances will collusion occur in a competitive environment. Thus the

international industry approach which focus on intra-industry competition and innovation has emphasized that technology could have both the ownership and location advantages of FDI.

The competitive international industry approaches consider inward investment to have either competitive or anti-competitive effects on host country industries (Cantwell 1989). Where indigenous firms enjoy a strong technological tradition in the sector in question, the growth of international production provides a competitive stimulus which encourages an increase in local research activity. However where such a tradition is weak the research of local firms may be displaced by simpler, assembly type soft production organized by foreign MNCs. These approaches are particularly relevant in explaining intra-European direct investment due to the heterogeneity of the member countries increasing opportunities for technological development among developed countries as well as between the more and the less developed countries which arise from economic integration. Its relevance and application is further discussed in chapter 4.

#### 2.2.4 : *Macroeconomic developmental approaches*

The earlier macroeconomic theories relied on extended trade theories to explain FDI, such as the Hecksler-Ohlin-



Samuelson Model (HOS) which propounded dissimilar proportional factor endowments as important determinants of capital movements. Later, with increased factor mobility, Vernon's (1979) PCM approach used competitive lead<sup>13</sup> to explain exports which is then followed by import substituting investment. The demise of the PCM is due to the evolution of the triad, namely US, Europe and Japan instead of only US as leaders in technology, and the increasing global integration of the affiliates within MNCs instead of import-substituting investment. The macro-economic development approach emphasize macro-economic factors such as the national level of economic development. These approaches include the Kojima-Ozawa (1985) approach, Dunning's (1982, 1986) investment development cycle, Cantwell and Tolentino's (1987) synthesis of competitive international industry and macro-economic approach, and Aliber's (1970,1971) theory of FDI.

The Kojima-Ozawa (1985) approach distinguishes export platform investment from import substituting investment. By relocating import substituting investments of mature lines into a host country that lags the home country, it allows the home country to focus on higher value added investments. Ozawa (1979, 1982) also stated that countries

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<sup>13</sup> The competitive lead arise from a 'technology gap' where learning and innovation is faster in a high income and high demand economy (Posner 1961).

experiencing rapid industrial growth but are lacking in natural resources are also involved in resource-based investments. He concluded that the different levels of industrial growth of the nation and the technological edge of the MNE are factors influencing FDI.

Dunning's (1982, 1986) *investment-development cycle* also proposed that the level of inward or outward investments and their balance depend on the national stage of development. The character and composition (OLI configuration) of the outward direct investment of a country's firm and inward direct investment of foreign firm depends on the stage of national development. This represent a dynamic view of interactive changes in the OLI configuration. At this stage the macro-economic developmental approach has considered the level of industrial growth, national development and technological edge of the MNE as important factors in addition to comparative advantage in explaining FDI. However comparative advantage remain crucial in the absence of technological edge (Cantwell 1991).

Furthermore, Cantwell and Tolentino (1987) and more recently Ozawa (1990) have established a link between competitive international industry and macroeconomic approaches in order to explain the growth of international

production. They suggested that the types of industry involved in international expansion vary with the characteristics of a country and the stage of development which it has reached. Thus the industrial composition of international production influences its macroeconomic consequences.

In addition to the above factors, the strength of domestic currency also provides an additional motive for outward direct investment when long term movements in exchange rates reflect trends in industrial competitiveness, thereby reinforcing the effect of real influences on the growth of international production (Cantwell 1991). Aliber's (1970, 1971) theory of FDI emanates from strong currency areas. His view is confined to the unique feature of the MNE in its ability to dominate its geographically dispersed assets in different countries. Thus it is able to take advantage of structural or transactional imperfections in international capital and foreign exchange markets. Dunning (1988b) argues that events in international currency markets can affect the timing of FDI but not its long term trend. However, it has been criticized to be an extension of the traditional portfolio capital theory to incorporate market failure than a theory of FDI *per se*. (Dunning, 1988)

The importance of the relative level of national development in determining MNE activity is interrelated with industrial competitiveness and the technological age of the MNE in these approaches. It thus emphasize the significance of macro-economic phenomenon like European economic integration and its effect on the heterogenous EC members.

The above approaches in explaining MNE have discussed the firm as an organisation in an international environment. The OLI paradigm as the essence of the MNE is particularly illustrated in the transaction cost approaches. With the increasing importance of technological developments and competition as well as the recognition of the relative level of national development the significance of MNE activity will be felt more in an intergrating economic environment. The next section will discuss the motives of FDI which provide another perspective on international investment activity.

### 2.3 Motives of FDI

The theory of foreign direct investment (FDI) has been mostly explained by its forms and motives. FDI could be of three forms, namely, the establishment of a new enterprise in a foreign country also known as *greenfield investment*, the expansion of an existing foreign branch or subsidiary

and the acquisition of a business enterprise or assets. The choice for FDI as compared to other operations according to Caves (1971) is made if the firms' specific advantage is an organisational advantage that requires adaptation and knowledge of particular processes to export or license. The motives of FDI which also relate to the nature of MNEs are classified as strategic, behavioral and economic (Cooke, 1988). These could be complementary and not mutually exclusive of one another.

### 2.3.1 *The Strategic Motives*

The *strategic motives* arise mainly from the existence of market imperfections and locational factors as well as opportunities for diversification. There is a symmetrical relationship between the regular markets of free trade and internal markets within MNE under conditions of market imperfection (Rugman, Lecraw and Booth 1985). From the strategic perspective the two types of market imperfection are government imposed regulations and natural market imperfections<sup>14</sup>. The former include tariffs on imports and the latter arise from the pricing of knowledge<sup>15</sup> and

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<sup>14</sup> Both of these imperfections explain the structural and transactional market failures discussed earlier in the eclectic paradigm.

<sup>15</sup> As a form of natural market imperfection, the problem of the pricing of knowledge like firm-specific information, skill, technique or technology arise from the difficulty to price such *knowledge* as it is a form of an intermediate good and is an intangible asset. Knowledge cannot be priced efficiently in an external competitive market since it is a public good as the costs would be excessive. A public good is defined as one where consumption of it by one party does not prevent consumption of it by other parties. In

circumstances which lead to transaction costs which are buyer-seller uncertainty, quality control and difficulty in making a sales contract in a situation of uncertainty and imperfect information. These imperfections which block free trade and reduce gains from trade encourage the use of internal markets of MNEs. These could eventually be translated into *location-specific advantages (country specific factors)* and *ownership-specific advantages (firm specific factors)*. These advantages are then considered in MNEs strategic decision when entering foreign markets as illustrated in figure 2. The figure illustrate the importance of both environmental and corporate factors that affect strategic planning which are then operationalised in tactical action plans.

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addition to this, public good such as research discovery which are subsidized by the government could serve as an incentive to internalise and therefore earn perpetual earnings of excess profits (Johnson, 1970).

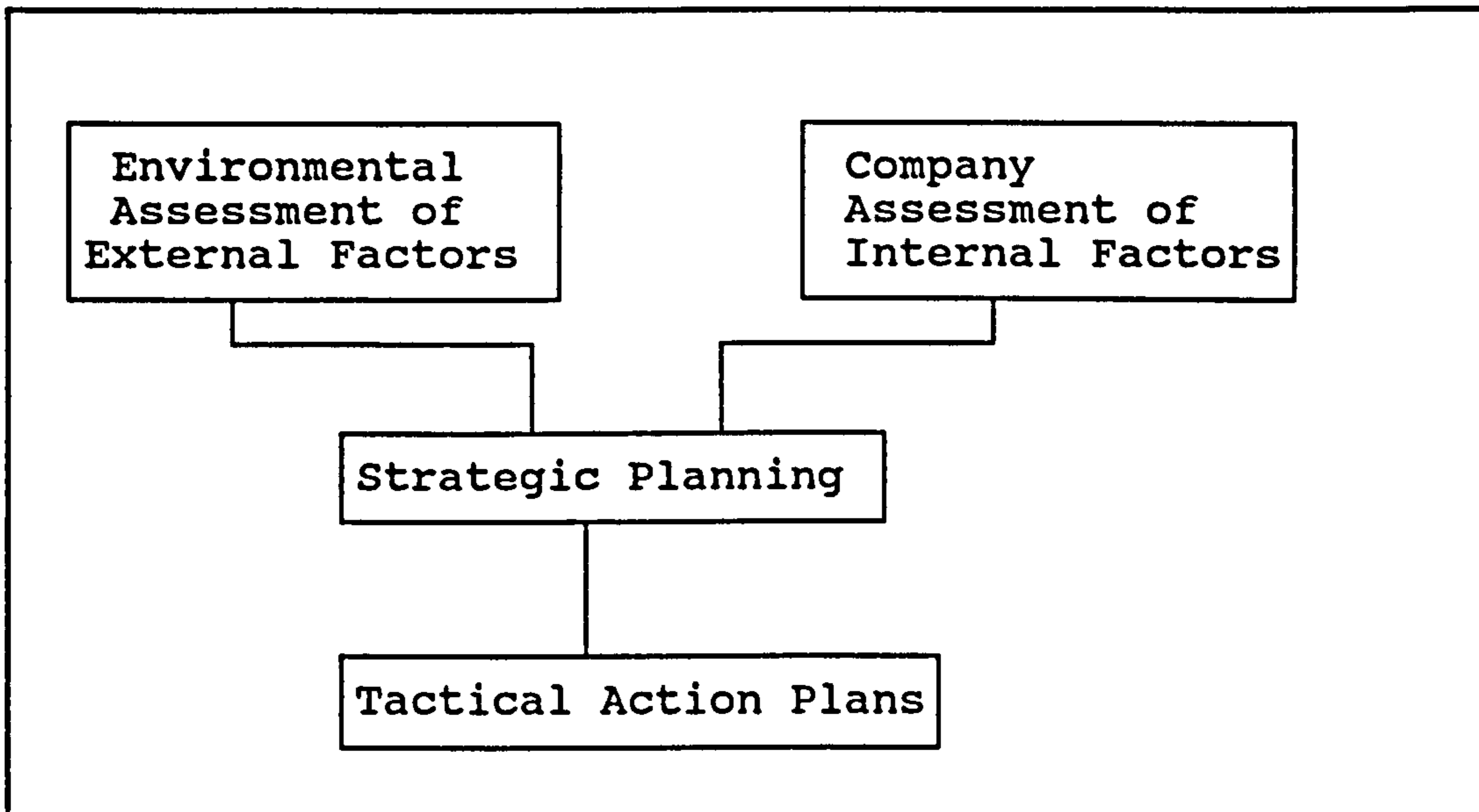


Figure 2 : GLOBAL STRATEGY OF MNE  
 -How to enter international  
 business (Rugman et al, 1985)

In formulating a strategic investment decision, OLI have to be addressed. The environmental factors in the form of location-specific advantages are *economic variables* which are factor inputs (labour, capital, technology, natural resources and management skill), *non-economic variables* (political, social and cultural) and *governmental intervention* (host and home governments). The corporate factors identified as ownership specific advantages as mentioned earlier are competitive advantages relative to other firms which include advantages in goods market, factor market, internal or external economies of scale and government policy (Rugman, 1979). In the case of natural market imperfections, MNEs protect ownership specific

advantages by establishing property rights such as knowledge through management of the internal market so that they are not dissipated to other firms.

Internalisation as a process from a strategic perspective would encourage growth in several ways. These include production process decoupling in ensuring efficiency, the opportunity to use discriminatory pricing policy in marketing, avoidance of the buyer-seller uncertainty problem when sourcing or in distribution, ensuring quality control, allowing for specific international orientation and control of the activity of MNE. Despite these benefits, costs of internalisation that arise from greater information burden and higher communication costs, expensive skilled management and the lack of local knowledge should not be ignored. Based on the strategic motive, the firm will grow until bounded by markets when the cost of replacing them outweigh the benefits of further growth by internalisation. When compared to other contractual arrangements the incentive to invest depends also on its relatively lower expected cost or higher expected revenue (Weston, Chung and Hoag, 1990).

### 2.3.2 Behavioral motives

The behavioral motives emphasize the interaction between the motives of the management, that is, the



corporate organisation and the external environment (Aharoni, 1966). Where managers are regarded as empire builders, the theory of *managerialism* is applied for reasons of establishing and expanding foreign subsidiaries with profitability being inherently assumed (Stopford and Wells, 1972). To a certain extent these motives reflect *agency problems* particularly between managers and shareholders. The implications of such motives are discussed in the next chapter on mergers and joint ventures. The potential benefits of the motives in FDI depend on whether managerial efficiency is achieved through foreign acquisitions.

### 2.3.3 *Economic Motives*

There are several economic motives for foreign direct investment and these include synergy, acquiring assets at a discount, multiple sourcing, follow the customer, tax advantages and defensive reasons.

The economic motive that relate to synergy arise when collective ownership through internalisation enhance the total value of the combined firms. This could be either from R&D or marketing activities. The opportunities to acquire foreign assets at a discount based on Tobin's Q due to asymmetrical information could result in asset stripping. These would occur when the replacement value of

individual assets is greater than the market value of equity. The economic motive to minimize buyer-seller uncertainty through multiple sourcing also reaffirm the similar strategic motive. In addition, the 'follow the customer' motive is also a recognition of economic externalities that arise from continuously servicing a client. The benefit of differential tax treatments could also be reaped through the MNE's transfer pricing mechanism.

The above motives represent a three dimensional view of explaining FDI. The strategic motives are concerned with exogenous and endogenous factors that affect the going concern of the entity. These motives are then viewed in relation to economic benefits that could be gained. The realisation of the economic gain is however viewed with scepticism especially when managerialism could also occur as identified by the behavioural motive. The next section addresses the types of organisational models of MNE and the market forces affecting it.

#### 2.4 Organisational models of MNE and market forces

An organisational perspective of the MNE provides a dynamic view of its relation with market forces. The two parallel but distinct organisational models of the development of multinationals are the 'internationalisation

model' and the 'globalisation model' (Buckley, 1992c). The internationalisation model suggests an incremental approach to development where 'deepening involvement' with foreign markets is suggested as being a process of 'creeping incrementalism' as the firms grow in international stature. It has been widely applied to both small and medium sized firms and those investing abroad for the first time (Buckley, Newbould and Thurwell 1987; Buckley, Berkova and Newbould 1983; Luostarinen 1978). This could be due to the tendency of the reaction of firms to risk and uncertainty by incremental learning and slow organisational development (Aharoni, 1966) and the difficulties of recruiting and absorbing an adequate cadre of managers that are crucial for the organisation. The model however has limitations and do not apply to 'rapidly changing high technology sectors' (Young, 1987) with rapid competitor reaction and which are dominated by firms capable of global scanning.

The globalisation model in its pure form produces a global product that involves standardised marketing techniques and centralised planning and control. The lack of sectors, industries or product divisions which conform to a homogenous worldwide strategy result in a more cautious version of the model. Porter's recent work (1986) suggest that there is not a single global strategy. According to him a strategy is constrained by the value

chain ,that is, vertical integration imperatives, configuration (location costs of interrelated activities internalised within the firm) and coordination issues. Other categorisation of global strategies include types of integration among a network of foreign affiliates: miniature replica, marketing satellites, rationalised manufacture, product specialist and strategic independent (White and Poynter 1984, Casson 1986). This categorisation provides a typology which relies on an extended version of the product cycle in order to analyse changes in the international division of labour in various industries namely, new product industries, mature product industries, rationalised product industries, resource-based industries and trading and non-tradeable service industries in which intra-firm trade can be studied.

With regard to the interaction of MNEs with the market forces, organisational theorists and management writers believed that management can decide upon and impose not only a strategy but also a structure of the world economy. This implies that the greater the degree of market power, the greater will be the degree of management discretion. Market power is often associated with multinationals though it is not an essential condition for their existence (Hymer, 1976).

Despite the distinction made between firm and market as major principles of organisation, a *third principle* which emphasize cooperation between firms as a dense network of cooperation and affiliation by which firms are interrelated is also to be considered (Richardson, 1972). Buckley and Casson (1987) made a further attempt to integrate cooperative ventures into the theory of MNE as '*coordination effected through mutual forbearance*' by identifying cooperation as a special type of coordination. This forbearance arises when one party refrains from cheating another. Transaction-cost economics recognises that parties involved in a venture have the potential for self-interested opportunism. Thus acts of aggression could arise in any venture in various ways<sup>16</sup>.

A distinct form of cooperative venture could be seen in joint ventures. Joint ventures are explained in terms of economics of internalisation, indivisibilities and obstacles to merger. In analysing joint ventures the concepts of not only forbearance but trust, reputation and commitment are also to be considered since the conventional economic analysis of contractual arrangements is only concerned with minimising transaction costs under certain

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<sup>16</sup> The actions can be classified as taking advantage of another party (strong cheating), refrain from either taking advantage of them or helping them (weak cheating) or assisting them (forbearance) Buckley and Casson (1987).

environmental considerations. A study found joint ventures to be, in certain circumstances, devices by which parties can demonstrate mutual forbearance and build up trust; and trust was shown to be both an input and output of joint ventures.

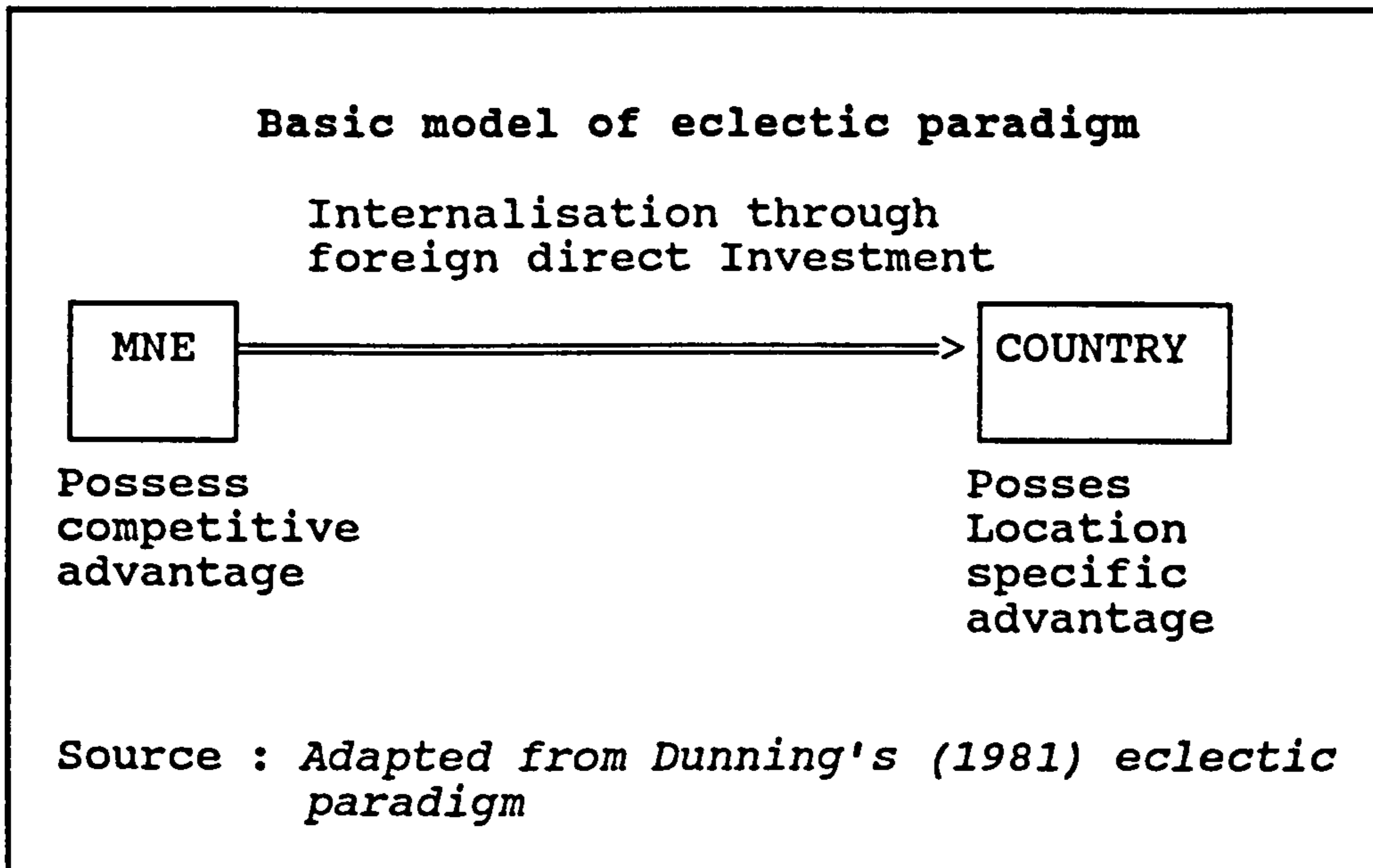
The analysis brought an element of altruism - or at least the sacrifice of short-term opportunistic gains for longer term aims - which the Williamson framework lacks (Francis, Turk and Williamson 1983, p.6). The analysis however has to be operationalised further in order to be explanatory and predictive. This is because of the difficulty in having to explain the mechanism by which one organisational principle changes into another, and the conditions which precipitate that change. The organisational models of MNE portray the different interactions between MNE and the market forces. The choice of a model thus depends on the nature of the firm, its industry and their complex interactions in an international environment (Buckley, 1992c)

## **2.5 A multi-approach diagrammatic model of MNE**

The above discussions on the conventional approaches and organisational development of MNE as well as the motives of FDI have shown that multinationals benefit extensively through their network in an imperfect

international market environment. The conventional approaches emphasized the importance of the ownership, location and internalization advantages of MNE. These advantages are also reiterated and identified as factors influencing the motives of FDI. In addition, the organisational approach proposed a behavioral factor of mutual forbearance in the discussion. In order to derive a framework that integrate the various discussions, the eclectic paradigm as suggested by Dunning (1981) is used. This can be diagrammatically illustrated as shown in figure 3.

The basic model derived from the eclectic paradigm shows that the as a proactive agent, the MNE has superior advantages relative to other firms in both host and home country, and that the host country has location advantages. Both advantages arise from government regulations and natural market imperfections. The link between them is the process of internalisation through FDI.

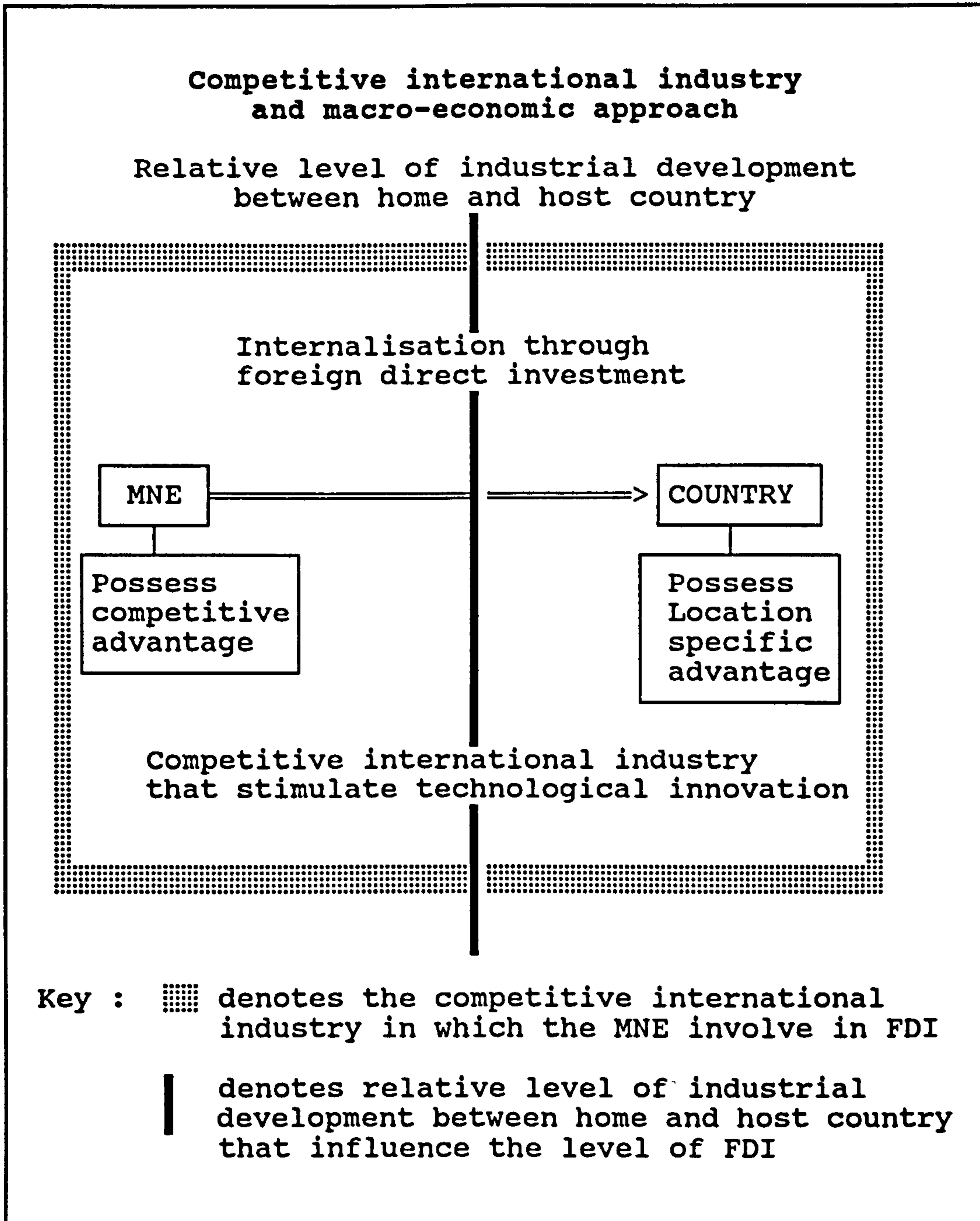


**Figure 3 : A BASIC MODEL OF ECLECTIC PARADIGM**

The basic model of the eclectic paradigm is then extended to include the competitive international industry approach and the macro-economic developmental approach as shown in figure 4. The boundary encapsulating the basic model is the competitive international industry. It represents the international industry competition faced by the MNE which invests in the host country. A vertical line that dissects the diagram into two halves represent the relative level of industrial development between the home and the host country.

The inclusion of the competitive international industry, draws attention to the importance of technology and technological innovation when discussing ownership and location advantages. The ownership advantages of the MNE would be in the form of management and technological





**Figure 4 : Modelling the approaches explaining MNE & FDI**

expertise that it would transfer to the host country. The location advantages of the host country would include government incentives as well as the availability of infrastructure for technological innovation and adaptation. The

inclusion of macro-economic factor which distinguish the relative level of industrial development between the home and host countries is related to technology transfer. The different levels of industrial development would determine the nature of their relationship with respect to technology. If the MNE is from a more industrialised economy, the home country with a technological lead would result in MNE with superior but low value added technology to invest in a less industrialised economy. The emphasis would then be technological diffusion to the host country. On the other hand if the relative level is almost similar than a transfer of complementary or differentiated but continuous technology will occur. In this respect the process of technological extension and adaptation will occur in the host country.

The purpose of this figure is to illustrate the importance of technology as a form of location and ownership advantages that are recognized by the eclectic paradigm and the other two approaches. Its relevance in this study is to focus on such advantages that could arise from natural market imperfections that could not be alleviated in an integrating economic environment. An interesting and distinguishing feature of Europe is that it is a heterogeneous economic region which constitutes several countries with varying characteristics. In addition a

significant regional development in Europe has been the removal of tariff, non-tariff as well as fiscal barriers within the European economic community. With the removal of these barriers, OLI advantages are expected to arise from natural market imperfections. Further discussion on the effects of European economic integration on FDI will be explained in chapter 4. The forms of FDI are discussed in chapter 3.

The ownership and location advantages are then emphasized as technological advantages. This is represented by the competitive international industry boundary which is superimposed on the basic model. The technological accumulation approach is highlighted because the competitive edge of MNE in oligopolistic rivalry comes in the form of technology. An integrated diagram is thus shown in figure 4.

By including this approach the competitiveness of the MNE is not only confined to firms in the host and home country but also to all other firms in the same international industry. The emphasis here is clearly on technological innovation which can be both firm and location specific in order to achieve economic efficiency. The macro-economic approach is reflected by the vertical dissection of the diagram which represents the relative

level of industrial development between the home and host country. Any difference that arise either in the form of technological lead, complementary or differentiated but continuous technology could be an impetus for the MNE to invest in the host country. Other economic, social and political factors that contribute to these differences could also be considered in the model.

This study particularly focuses on foreign direct investment by UK firms in Europe. Since Europe is an economic region recognised as one of the triad when compared to US and Japan, any form of FDI would have peculiar characteristics relevant to the region. Thus a review need to be made on the fundamental concepts of MNE in the context of the region. A feature of Europe, mentioned above, is that it is a heterogenous economic region which constitutes several countries with varying characteristics when compared to other triad powers, like U.S.A. and Japan, who have homogenous economic region respectively. With the removal of barriers in Europe in recent years, the importance of the competitive advantages of MNEs and the location advantages of the host country need to be reexamined. This is illustrated in figure 5 and discussed in chapter 4. In the next chapter the two forms of FDI namely, mergers and joint ventures will be discussed.

# CHAPTER 3

## THEORETICAL REVIEW OF MERGERS AND JOINT VENTURES

### 3.1 Introduction

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In the previous chapter the acquisition of firm or its assets are mentioned as forms of FDI. Two forms of corporate expansion and their market impact on shareholders wealth are reviewed in this chapter. The chapter will begin with a theoretical background of the nature, motives and theories of mergers. The empirical evidence of the effects of mergers are then discussed. A theoretical review of the forms, motives and theories of joint ventures are included in this chapter. This is followed by a discussion of the joint venture as a form of FDI and its unique features. The empirical evidence on the effects of the announcements of joint ventures are also presented. Finally, the distinguishing characteristics between merger and joint venture as well as their activities in both international

and domestic environment are analysed. The distinction will provide a background understanding in explaining the results of the study.

### 3.2 Nature of Mergers

A merger is a form of corporate expansion where two or more entities form one economic unit. The newly formed economic unit may retain the corporate name of the acquirer or adopt a new name. An important element of merger is the *controlling interest* which is transferred from the target company to the acquirer. There are two forms of mergers, namely, *full legal mergers* and *mergers involving only changes in ownership* (European Economy, 1989).

A full legal merger transfers the assets and liabilities of two or more companies to a single new or existing company. It involves major reorganization from changes in the board right down to product range. This will lead to a thorough integration of the constituent parts and to a new situation which is irreversible or reversible only at a high cost. The second form of merger is the acquisition of a company by another by acquiring a sufficient number of its shares, but, with both companies continuing to exist as separate legal entities. It results in a group of companies subject to central control through various kinds of links i.e. financial interests or the

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presence of directors. From an accounting perspective, the accounting treatment distinguishes merger, as a pooling of interest, as compared to the purchase of an acquisition where the created goodwill (an intangible asset) is to be amortized or written off immediately against the income statement.

The classification of mergers based on the degree of industry relatedness has also explained three types of mergers. A *horizontal merger* occurs when two or more merging firms are from a similar kind of business activity. When the merging firms are from different stages of production operations a *vertical merger* is said to occur. *Conglomerate mergers* occur when the merging firms are from unrelated businesses. These can be further classified into *product extension*, *geographic market extension* and *pure conglomerate* mergers. The choice of such mergers also has a bearing on the expansionary strategy adopted by firms. If the firm adopts a *concentration strategy*, horizontal or vertical mergers occur in the same industry. On the other hand conglomerate mergers occur when a *diversification strategy* is adopted. These strategies could be interrelated and are not mutually exclusive. For instance a cross-border merger may occur within the same industry.

### 3.3 Motives of mergers

The rationale for merger is principally an economic gain (Brealey and Myers, 1988) and the decision criteria will be whether the net present value of merger is positive<sup>17</sup>. There are several motives for merger activities, namely, economies of scale (Cooke, 1986), efficiency gains (Williamson, 1971), use for surplus funds (Shoven, 1986 and Jensen, 1986a), discipline management (Palepu, 1986), speculative motive (Gort, 1969), capital gain (Cooke, 1988) and market share (Kitching, 1974).

#### 3.3.1 *Economies of scale, vertical integration and scope*

Mergers do benefit from economies of scale especially in horizontal integration and to a certain extent conglomerate merger. The underlying assumption is that at least one of the merging companies is operating below economies of scale prior to the merger.<sup>18</sup> But such benefits will not be derived if firms operate as separate and competing operations or in the case of conglomerate merger, when general skills may not cater for specific problems. The two forms of benefits could arise from operational or

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<sup>17</sup> NPV of Merger = GAIN - COST  

$$= \{PV(AB) - [PV(A) + PV(B)]\} - \{CASH - PV(B)\}$$

where PV(A), PV(B) and PV(AB) are the present values of firm A, firm B and the merged firms. {CASH-PV(B)} is the cash premium.

<sup>18</sup> In reaping the benefits of economies of scale, the competitiveness of the market and its potential cannot be ignored. Restructuring or rationalizing is necessary if the target company is inefficient especially in a mature product market.



financial synergy. The gains from *operational synergy* are obvious in manufacturing, where large machineries form a substantial portion of fixed overhead costs; and in marketing, where promotion or advertising expenditure are the main overheads of the firm. The gains from *financial synergy* can be achieved when transaction costs incurred in sourcing external funds are reduced (Cooke, 1986).

Though earlier discussion on this motive had emphasized cost efficiency and ignored market power, a relationship between them was later established. In this respect, Williamson (1971) has provided a conceptual framework called the '*naive trade-off model*'. This partial equilibrium welfare model states that only a small gain in efficiency is necessary to offset a relatively large gain in market power and as such mergers are generally beneficial (Cooke, 1988). In terms of market power the acquisition of companies also relate to acquiring market share. Kitching (1974) suggested that it is useful to find a sufficiently small, fragmented market which can be protected against competitors. This motive is aligned to the economies of scale argument where increase in market share will decrease unit production cost.

In vertical mergers there is greater forward or backward control over operations. This may involve a

captive market to ensure demand or reduce uncertainty of supply from suppliers. When mergers combine complementary resources, they allow a pooling of strengths of each firm in terms of production or marketing ability. Thus it may also provide opportunities for economies of scope where a wider application of the available resources is made possible.

3.3.2 *Speculative motive: Gort's economic disturbance theory of merger*

In contrast to the above discussion, Gort (1969) questions the validity of using monopoly power and economies of scale to explain the levels of merger activity. He introduced and defined the rate of mergers as the number of acquisitions to total number of business firms in a given sector. Different shareholders value shares differently due to imperfect information. These differences occur because of rapid changes in technology which may shorten certain product life-cycles as well as affect share price changes when in a state of disequilibrium. Thus in a boom market according to Gort one would expect an increase in merger activity in a bull market to secure windfall capital gains. But this theory remains unproven as merger activities continue when share prices increase or decrease.

3.3.3 *Other economic motives*

Several other economic motives of mergers include disciplining management, use of tax shields and surplus cash, mispricing of assets and others.

Mergers as a means to discipline management would occur subsequent to takeover, when the board of directors and particularly the CEO are replaced. Though it appears to be a solution to the agency problem (Palepu, 1986) further clarifications will be made in the next section. In this respect loss making firms may be likely targets if the acquiring firm perceive opportunities to improve the operations of the firm. The motive with regard to gains from tax shields arise when the accumulated losses of the firm could also offset the profits of the acquiring company and thus reducing its tax liability.

Cash rich firms lacking opportunities for internal growth may acquire growth firms as a means to dispense surplus cash. These require an appraisal of productive opportunities in target firms. On the other hand, a 'cash cow' with no opportunities for growth may be acquired by a firm that could utilise the immediate cash available for expansion as evident in studies made by Shoven (1986) and Jensen (1986b).

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Mispricing of assets can occur when the replacement value of assets is higher than the market share value (Tobins Q) thus encouraging post acquisition sale of the assets. This may involve closing down the loss making activities and selling off the profitable sectors in the hope of making a gain (Cooke 1988).

Other dubious motives (Brealey and Myers, 1988) include diversification, the bootstrap game and the lowering of financing costs. Under the perfect capital market assumption, individual investors could diversify more effectively than firms thus refuting the possible motive for merger. The bootstrap game which involves reflecting higher EPS, is only an accounting non-cash flow effect which does not affect the market valuation of shares. The opportunity to have a broader lending base benefits the bondholders and not the shareholders. The former have greater surety with a larger equity base.

These motives do not imply successful mergers because other determining factors like poor implementation, under or over estimation of true value, poor management integrating ability and ignoring the reactions of people involved could attribute to the failure of the merger (Brealey and Myers, 1988).

### 3.4 Theories of Mergers

It is interesting to observe that merger activity increases during certain period of time in the form of waves which could be attributed to certain factors. These are briefly discussed with reference to the merger waves that occurred in four periods as shown in table III. The table describes the contributive factors to each of the four waves.

**Table III : Factors Explaining Merger Waves**

<u>Period</u>	<u>Contributive factors</u>
1900's <i>First Wave</i>	Most mergers were involved in suppressing competition in the U.S. which resulted in the formulation of U.S. anti-trust policies.
1920's <i>Second Wave</i>	Due to the development of mass production techniques and the support of European governments to rationalise the scale and scope of industries led to increased merger activities.
1960's <i>Third Wave</i>	U.K. enforced the policies of Monopolies and Mergers Commission (1948). However due to the explosive growth of international trade in manufactured goods, the government supported concentration in national markets.
1980's <i>Fourth Wave</i>	Further internalisation of the world economy, the expansion and liberation of the European Community, the emergence of the Pacific Rim as an important trading area and the prominence of the 'market for corporate control' had significantly affected merger activity.

*Adapted from Continental Mergers are Different - Strategy and Policy for 1992 (Kay, 1990)*

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Though merger waves are examined from a macro-economic perspective for example, the implications of national policies, a more rigorous explanation need to be analysed based on theories that evolved from five major areas, namely, efficiency, information, agency problems, market power and taxation (Copeland and Weston, 1988) as shown in table IV.

### 3.4.1 *Efficiency Explanations*

The efficiency arguments are based on the differential efficiency theory and inefficient management theory. The *differential efficiency theory*, states that if the acquiring company is more efficient than the target company, the merger will displace the management of the target company thus improving the operational efficiency of the target company. If several of such acquisitions occur, this will imply that the level of efficiency in the economy would be raised by such mergers. If this assumption holds true, in the extreme situation, a *one firm economy* will evolve. But this is not possible as other costs will arise beyond 'the optimal size' due to coordination problems such as agency costs. An alternative theory, states that there are firms that exhibit below average efficiency. These firms could be potential target companies if they could be identified and can be improved upon by firms operating in

**THEORETICAL REVIEW OF MERGERS AND JOINT VENTURES**  
**Table IV : THE FIVE MAJOR AREAS OF THEORIES OF MERGERS**

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**Theories of Mergers**

<i>Efficiency Explanations</i>	
Differential Efficiency Theory	Roll(1986)
Inefficient Management Theory (Disagree with theory) Based on perfect capital market assumptions	Myers(1968) Schall(1972) Mossin(1973) Modigliani & Miller(1958) Nielson(1974)
<i>Information Hypothesis</i>	
Information or signalling hypothesis	Bradley, Desai & Kim (1983)
<i>Agency Problems</i>	
Agency Problems	Jensen & Meckling (1976) Manne (1965)
- mitigate agency problem	
- cause agency problem (managerialism)	Mueller (1969)
- no effect on agency problem as managers tend to overbid (hubris or growth maximisation hypothesis)	Roll (1986)
	Marris (1964) Williamson (1963) Baumol (1967)
<i>Market Power</i>	
Market Power	Prais (1986)
<i>Tax Considerations</i>	
Effects of Taxation	Copeland and Weston (1988)

Adapted from Copeland and Weston (1988)

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similar kind of business activities. But at the same time an over optimistic valuation of the target company may also occur (Roll, 1986).

The *inefficient management theory* states that there exist firms whose management is not at its maximum potential or inept in its absolute sense and are potential takeover targets. The inefficient management theory is more

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likely to be the basis for unrelated mergers whilst the differential inefficient theory is for horizontal mergers. This is because the former places emphasis on eliminating managerial inefficiency through conglomerate merger. In a vertical integration however, both benefits of operating economies and external economies may be achieved.

The inefficient theory also assumed the possibility for *synergy*, which states that the value of the whole is more than the value of its constituents or separate parts. The value additivity argument for merger is also due to the benefits from *economies of scale*. Their assumptions are that economies of scale exist in the industry and that firms are operating at levels of activity that fall short of achieving economies of scale. The economies of scale also involve *indivisibilities* which are present in manufacturing, finance, research & development and marketing. Thus, benefits can be gained if the maximum output level is attained for a given level of fixed overhead costs which is obvious in horizontal integration.

In line with the efficiency arguments, the strategic planning approach to mergers implies the possibilities of economies of scale or of utilizing some unused capacities in the firms present managerial capabilities, especially in conglomerate mergers. Also, by external diversification the



firm acquires management skills for needed augmentation of its present capabilities. Even though merging is less risky than a green field investment, in a competitive market for acquisitions, the NPV of the merging firm is likely to be zero.

Several researchers, namely Myers (1968), Schall (1972), Mossin (1973), Modigliani and Miller (1958) however have refuted the theory of synergy arising from mergers. Based on perfect capital market assumptions value is conserved as it depends on the addition of income streams which are invariant with respect to a change in the number of trading instruments as a result of merger (Nielson, 1974). Furthermore, problems also arise in coordinating the strengths of the two merging entities and eliminating the weak aspects which may be followed with divestitures.

#### 3.4.2 Information Hypothesis

The *information or signalling hypothesis* refers to the revaluation of the ownership of shares owing to new information that is generated during merger negotiations, tender offer and joint-venture planning. Alternative forms of the information hypothesis as have been distinguished by Bradley, Desai and Kim (1983) are *kick-in-the-pants*, where management is stimulated to implement a higher-valued operating strategy; and *sitting-on-a-gold-mine*, where

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negotiations or tendering activity may involve the dissemination of new information or lead the market to judge that the bidders have superior information. The market may then revalue the previously 'undervalued' shares. In relating the hypothesis to wealth effects, several other competing hypotheses propounded by Mandelker (1974) that need to be considered are the perfectly competitive acquisitions market hypothesis, the efficient capital markets hypothesis, the abnormal gains hypothesis, the chain-letter hypothesis and the growth maximization hypothesis.

The *perfectly competitive acquisitions market (PCAM)* hypothesis relies on the assumption that competition will equate the expected rates of return on assets of similar risk. Thus it implies that for an acquiring firm there are no monopolistic sources of gains which are solely due to merging as a way of obtaining productive capacity. However, if there are unique advantages of the acquired firms which could be gained through merger, competition between acquiring firms will cause target firms to earn abnormal returns. In a perfect market, firms are able to achieve the effect of synergy equally either by internal or external growth.

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In an efficient market<sup>19</sup>, the value of firms are presumed to be reflected in share prices. The *efficient capital markets hypothesis* states that stock prices adjust instantaneously to new information. Thus, prices provide unbiased signals for efficient resource allocation. In contrast to PCAM it does not rule out monopolistic elements in the acquisition and could imply gains for either the acquiring or acquired firms.

The *abnormal gains hypothesis* is a traditional hypothesis of merger behaviour and is based on the neoclassical profit maximization theory of the firm, in which firms will continue to indulge in takeover activity as long as shareholders wealth is increased. It states that information concerning a forthcoming acquisition is generally considered 'good' news for the stockholders of the acquiring firm. This is based on the various economic gains made possible from the merger.

The *chain letter hypothesis* states that investors rely on very few sources of information, the main ones being financial and accounting numbers. It implies that shareholders are misled by manipulation of accounting numbers so that the announcement of a forthcoming merger is

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<sup>19</sup> The discussion on efficient market is extensively discussed in chapter 5.

followed by a rise in the stock price of the acquiring firm. In contrast to the efficient market hypothesis it assumes that capital markets operate inefficiently.

The *growth maximization hypothesis*, according to Mueller (1969), states that managers maximize their interest. For instance the growth in physical size of their corporation is pursued rather than its profit or shareholder welfare which are closely tied to their pecuniary and non-pecuniary rewards. This implies that merging companies' rates of returns should be abnormally low. This hypothesis is further discussed under the heading, agency problems below.

Another aspect of the undervaluation theory is the difference in the position of the control group as compared to the individual investor. The ratio of the market value of the target firm's shares in relation to the replacement costs of the assets represented by these shares is known as *Tobins Q-ratio*. A ratio of less than one indicates a favourable target where the premium paid over the current share price would still be less than the replacement cost.

#### 3.4.3 *Agency Problems*

The agency problem arise when managers hold a portion of shareholdings and do not exert maximum effort to

## THEORETICAL REVIEW OF MERGERS AND JOINT VENTURES

maximize shareholders wealth (Jensen and Meckling, 1976). Merger could either be a remedy or cause to the agency problem. The threat of takeover may mitigate the agency problem by substituting for the need of individual shareholders to monitor the managers' performance (Manne, 1965). On the other hand, merger could be a manifestation of the agency problem when managers are motivated to expand the size of the firm and disregard the shareholders interest known as *managerialism* (Mueller, 1969). In another study, Lewellen and Huntsman (1970) present findings that disagree with Mueller, and state that the manager's compensation is significantly correlated with the firm's profit rate and not its level of sales. In earlier studies, Williamson (1963) suggests that managers are motivated to build an empire, Marris (1964) proposed that managers will maximize growth and Baumol (1967) put forward the hypothesis that they will maximize sales revenue, since these are consistent with the managers interests. Roll's (1986) *hubris hypothesis* also states that agency problems are not checked by mergers as managers tend to overbid causing excessive transfer of wealth to target shareholders.

### 3.4.4 Market Power

Increasing the firm's market share through merger will lead to higher industrial concentration particularly with

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regard to horizontal integration which could be inefficient. Objections have also been raised for the "undue concentration" which may lead to "tacit collusion" thus causing undesirable social effects. An index to measure industrial concentration is known as *Herfindahl's index (H index)*<sup>20</sup>, which takes into consideration the market shares of all firms in the industry. While some economists hold that a high degree of concentration will cause some degree of monopoly, others hold that increased concentration will generally result in active and intense competition. If intense competition occur amongst large companies it could not possibly lead to collusion due to highly differentiated products. Changes in concentration could be attributed to either internal or external growth but Prais (1986) estimated 50% is due to mergers. Furthermore internal growth could instead be more economical than merger.

### 3.4.5 Tax considerations

Several tax considerations in mergers could benefit the parties involved (Copeland and Weston, 1988). It could be done by substituting capital gains tax for ordinary income tax by acquiring a growth company which pays small

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<sup>20</sup> If one or more firms have relatively high market shares, this is of greater concern than the share of the largest four firms.

$$H \text{ index} = \text{SUM } [n \cdot P]$$

where n is the no. of firms of similar percentage

P is the percentage of Market share

## *THEORETICAL REVIEW OF MERGERS AND JOINT VENTURES*

or no dividends and then reselling to realize capital gains. In another situation, a firm experiencing a slower growth rate and high earnings retention would prefer to divest so as to earn capital gains rather than pay income tax. The acquisition of a firm with accumulated tax losses can also be a tax shelter provided the tax provisions are complied.

Though the discussion of mergers have been from various perspectives the principal concern in this study is on the impact of mergers on shareholders wealth. It is also important to note that the impact is expected to be different in an international context due to benefits of FDI.

### **3.5 Empirical Evidence on the Effects of Mergers**

Despite the popularity of mergers as the quickest way to grow and diversify (Berry, 1975; Scherer and Ravenscraft, 1984) it is not easy to analyse its effects on company size, growth and profitability. This is because the nature of data, whether accounting or market, poses problem. In the case of accounting data, the lack of financial disclosure by small and privately held firms and the varying accounting policies of public listed companies create some difficulties. As for market data it also has its own limitations (Mueller, 1987) which are specifically

dealt with in chapter 5.

Though discussions of the economic effects of mergers on industry concentration, economic efficiency and profitability dominated the earlier literature, this study analyse the effects on corporate finance by looking at their impact on shareholders' wealth.

### 3.5.1 *The effects of mergers on concentration and efficiency*

John McGowan (1965) conducted a systematic investigation of the effects of mergers on concentration in the U.S. and showed that mergers affect aggregate concentration. A similar effect on overall concentration in the United Kingdom was also found according to a study done by Hannah and Kay (1977). With increased concentration firms assume greater market power and are able to earn excess returns. Such studies confirm the need for anti-trust or competition policies in regulating mergers.

It was proposed that mergers can increase corporate efficiency. This could be achieved either by cost reductions in horizontal mergers due to economies of scale, by lowering the company's cost of capital in conglomerate mergers through diversification (Lintner, 1971) or by creating a more efficient internal market than the external capital market due to transactional economies (Weston, 1970



and Williamson, 1970). However, when Mueller (1985, 1986) compared the market share of companies acquired in conglomerate mergers and those engaged in horizontal mergers between 1950 and 1972 with non-merging firms in similar industries, he found the former to have experienced significant losses in market share following the mergers relative to non-merging companies. Hogarty (1970b) and Lev and Mendelker (1972) also observed either lower than predicted sales or slower internal growth rates for merging firms following the mergers. These post merger negative effects<sup>21</sup> of decreasing market share and sales reflect the lack of competitiveness of mergers.

### 3.5.2 *The effect of mergers on profitability*

On average studies indicated that mergers did not lead to increase in profitability. Weston and Mansinghka (1971) studied the effects of Post-World War II mergers and focused on a sample of 63 companies that were active acquirers during the sixties. They found that these active acquirers had significantly lower profit rates than did a randomly selected sample of industrials. These merger strategies were classified as defensive strategies as they

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<sup>21</sup> The negative effects of merger on efficiency could be transitional or continuing in nature. These occur when 'internal organisation experiences a series of bureaucratic distortions such as management excesses as compared with market organisation' (Riordan and Williamson, 1985). The existence of an established and competitive market and the irrelevance of the acquiror's management expertise would also cause the undesirable effect of merger on efficiency (Szymanski and Thomson, 1990).

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diversify from below normal performance industries. When Newbould (1970) and Kitching (1974) used surveys which investigate the profitability of mergers, they concluded that the majority of acquisitions had proved to be unsuccessful.

The studies on profitability of mergers however have been inconclusive due to either different methodologies adopted by researchers or to sample differences which could be seen in the studies using accounting data by Singh (1971), Utton (1974) and Meeks (1977). Singh (1971) compared the combined pre-merger profitability with the post merger rate of return adjusted for industry returns and excluded frequent bidders which resulted in downward bias. Another limitation of the study is that the sample only included horizontal mergers. Utton (1974) worked on a small sample of 39 and concentrated on firms involved in frequent mergers, which tended not to merge for five subsequent years. There was no adjustment to reflect the profits of the industry during that time period. Meeks (1977) looked at a large sample of quoted companies over the period 1964 to 1972. In the study, profits were calculated for three years prior to the merger and compared with the post-merger profits after making adjustments for profitability in their respective industries and for goodwill. However, frequent acquirers were again excluded

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so that the study focused on single merger events. As noted above, the exclusion of multiple acquirers may have a downward bias, although in this study the evidence is so overwhelming that exclusion is unlikely to be material.

From these studies it was concluded that mergers were unprofitable which could be due to 'other accounting data'<sup>22</sup> which were reflected in the share prices.

In another study Hoshino (1982) analysed the performance of corporate mergers in Japan using accounting ratios. He used financial ratios to compare firms performance before and after merger, as well as merging firms with non-merging firms. It was found that the financial performance worsened after mergers when 15 corporate mergers were examined and there was no clear distinction between merging and non-merging firms in the same industry. However, a comparison between 90 merging firms and 488 non-merging firms showed that the two groups' financial performances can be distinguished with clearly adverse effects of mergers on net worth to total liabilities and assets.

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<sup>22</sup> The accounting data used to measure 'efficiency gains' of mergers have some drawbacks. Firstly, the performance measures ignore the improved bargaining position of the company. Secondly, the problems surround the reliability and homogeneity of the data. Finally, the accounting figures must be read with reference to the accounting policies of the firm.

3.5.3 *The effects of domestic mergers on share prices*

In early U.S. studies by Halpern (1973) and Mandelker (1974), using large data samples and market adjusted models, found significantly positive abnormal returns to shareholders of acquired firms and positive but not significant abnormal returns to shareholders of acquirors. Halpern (1973) found that the market anticipates the announcement 8 months before the announcement date of the merger. Mandelker (1974) also found the market to anticipate the same period before the effective date. He concluded that his results are consistent with the economic gains of merging for the acquired firm.

Previous studies of U.K. acquisitions have generally shown gains to target firms and either gains or losses to bidder firms. Firth's (1979, 1980) U.K. studies found gains to targets more than offset by losses to bidders. In contrast, Frank, Broyles and Hecht (1977) reported gains to both parties in the U.K. Breweries and Distilleries sector using monthly share prices. Like other U.K. studies, however, these papers suffered from either small samples or samples confined to short periods of calendar time. Barnes (1984) and Dodds and Quek (1985) found negative adjusted returns for acquiring companies following the announcement of the bid.

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Frank, Boyles and Hecht (1977) used the market model<sup>23</sup> to establish whether abnormal gains or losses had arisen to the merger participants. Their conclusions showed that shareholders of acquired companies earned high abnormal returns averaging 26% whilst shareholders of acquiring companies experienced small positive abnormal returns which were not sustained during the four months prior to the completion of a merger. The gains on combined shareholdings in acquiring and acquired companies appear to reflect net gains emerging from within industry. Their empirical evidence suggested that the market began to anticipate mergers at least three months on average before mergers were announced. Similar empirical evidence also showed that corporate acquisitions effected through tender offers are wealth increasing transactions for the stockholders of both target and acquiring firms (Dodd and Ruback, 1977 and Bradley, 1980).

Although the above studies found substantial gains to acquired companies, Firth (1980) found that mergers proved to be expensive to the acquirer. His findings showed that the overall benefits to the economy, in terms of share price gains or losses, proved to be neutral. The study revealed that the abnormal gains accruing to the shareholders of the acquiree company were completely offset

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<sup>23</sup> The explanation on market model is given in chapter 5.

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by the abnormal losses incurred by the shareholders of the acquirer company.

Previous empirical findings have shown that there is a strong positive association between target gains and both all-cash offers and competition in bidding (Bradley, Desai and Kim (1988) and Franks, Harris, and Mayer (1988)). A comprehensive study by Franks and Harris (1989) which used a sample of more than 1,800 U.K. acquisitions over a 30 year period (1955-1988) found that around the merger announcements, target gains 25 to 30 percent and bidders earn zero or modest gains. When they examined the effects of the relative size of target to bidder it was found that bidders abnormal returns are virtually unchanged but target abnormal returns do appear higher when the target is small in relation to the bidder. They also found that revised and contested bids will result in significantly higher target gains with no effect on bidder gains. When toehold acquisitions were examined they found that toehold with a percentage of less than 30% provide the highest target gain with no significant difference to the bidders gain. A cross-sectional analysis of wealth gains in U.K. acquisitions found significant higher target returns from multiple bids.

A study by Limmack (1991) analysed returns around both

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bid and outcome announcement dates and found that there is no net wealth decrease to shareholders in total as a result of takeover activity. Three models (the market model, the model based on adjusted beta and the index-relative model) were used to estimate the parameters using monthly returns, but the results were insensitive to the choice of the model. Analysis was done in three periods, that is, the pre-announcement, the announcement to outcome and the post outcome. Bidder returns were found to be significantly positive in the pre-announcement period regardless of the outcome of the bid. In contrast the bidder returns within the period from announcement to outcome were found to be negative and significantly negative only in abandoned bids. As for the post outcome period there was a downward drift of bidders return with bidders in lost bid incurring significant wealth decrease. The shareholders in target firms obtained significant positive wealth increases in both completed and abandoned bids, though higher in the former. The target returns did not differ significantly from zero in the post outcome period.

Whereas the positive returns to target firms' shareholders have been clearly identified in the U.K. it is apparent from the discussions above that the returns to the bidding firms are typically small and are often negative. This study concentrates on such returns for a specific sub-

sample of bidding firms and will provide further evidence regarding the impact of bidding on shareholders wealth.

3.5.4 *The effects of international mergers on share prices*

The announcement of an international merger signals not only the possible economic prospect of merger but the benefits of internalization as a form of FDI. International merger as a form of corporate expansion or restructuring recognizes the difficulty in valuing intangible assets in market based transactions due to the possible market failure within an international setting. Within the framework of efficient capital markets in the UK any cross-border merger event would be reflected in the share prices. Thus, if cross-border mergers are significant economic events to investors it will be reflected as changes in the share prices.

As a form of *foreign direct investment (FDI)* international mergers may be beneficial to the acquiring firm in terms of its flexibility in the transfer of resources across borders through a globally maximizing network (Kogut, 1983). In this respect, Doukas and Travlos (1988) postulated the '*positive multinational-network hypothesis*' which states that an expansion of the firms' operation on a global scale tends to accomplish the investor's international diversification objectives while



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enhancing the firms ability to benefit from the systemic advantages inherent in a multinational network. They examined 301 announcements and used the impact on market value of the firm to show whether FDI through acquisition is a wealth increasing corporate decision. From three segmented samples of MNCs operating in a target country, MNCs not operating in target country and domestic firms expanding abroad for the first time, a significant positive result was obtained for acquisition announcements only in countries where the acquiring firm is lacking exposure, that is, shareholders of MNCs not operating in the target firm's country reap the greatest benefits from cross-border acquisitions when their firms expand into a new industry (product) and geographical market. Similarly significant positive results were obtained for merger announcements made in less related and developed economies as well as those which involved geographical and industrial diversifications.

Conn and Connell (1990) examined 73 cross-border merger returns to US and British firms and tested for the significance of cumulative abnormal returns using two types of market models: Domestic Market Model (DMM) and International Market Model (IMM), the latter include an international index ( $\beta_i$ ) calculated as the weighted average of the domestic stock indices of the nine major European

trading partners of US or Britain. The three estimation periods: pre-merger returns, post-merger returns and pooled merger returns are used to estimate the parameters. They found cumulative abnormal return (CAR) of acquiring firms using pre-merger returns to be less than that if post merger returns were being used due to the decline in mean alpha. Also the CAR of the post-announcement period remains unchanged or decline for both UK and US acquiring firms. The pre-announcement performance of UK bidders was less than US firms and is not significant. The use of the IMM model outperforms DMM in the case for UK acquiring firms' returns due to its higher  $R^2$ , lower standard deviation of abnormal return and a significant  $\beta_1$ .

The Harris and Ravenscraft (1991) study on the role of acquisitions in Foreign Direct Investment (FDI) in the US examined abnormal returns of target shareholders. They found that cross-border takeovers tend to be involved in Research and Development (R&D) and are in related industries. The abnormal returns that arose from foreign acquisitions were higher than those from domestic acquisitions even after controlling for factors like all-cash bids and multiple bids. Although higher premiums were found in R&D purchases, no significant difference was found between domestic and foreign acquisitions. The effect of currency fluctuations on target gains in cross border

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acquisitions are significantly higher when buyers currency is strong relative to the dollar, a finding consistent with Froot and Steins's (1989) argument when there are significant information asymmetries.

Cakici et al (1991) also found the abnormal returns of 245 foreign acquisitions to be higher than domestic acquisitions. The country and industry wide effects when examined were found when significant differences arise in the abnormal returns of target firms. The empirical issue was that since abnormal returns of foreign acquisitions gained by target shareholders were greater than domestic acquisitions, it could be concluded that the benefits gained from foreign acquisitions were not only greater than domestic acquisitions but were transferred to target shareholders. It is clear from this study that the focus is more on the transfer of wealth effects to target shareholders and not the wealth effect to the acquirers. Although the combination of wealth effects shared by both reflects the total wealth effect, it is also necessary to identify the wealth effects of the acquirer who is proactive in the acquisition process.

A recent study on foreign takeover activity in the U.S. and the wealth effects for target firm shareholders found that the wealth gains realized from 73 foreign bids

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relative to those realized from 134 domestic bids, increase with foreign takeover activity in the respective industry of the target (Cebenoyan, Papaionnou and Travlos, 1992). This finding is consistent with the *competitive acquisitions market paradigm*, that is, if cross-border expansion via corporate acquisitions produces superior (relative to domestic acquisitions) gains, foreign bidders pass them to target firm shareholders only when the demand of foreign firms for U.S. firms in a particular industry is relatively strong.

The previous studies on foreign acquisitions have focussed on factors relating to the level of foreign involvement in the acquiring firms, the level of development of the target country, the degree of industry and geographical diversification and the level of foreign acquisition within each industry and examined how these affect the wealth gains of both bidder and target. This study considers the regional factor of the European economic integration when analysing the market impact of such acquisitions and the motive of acquisition which relate to strengthening of market position within the European community. The other form of FDI is joint venture which is discussed in the following section.

### 3.6 Forms of Joint Ventures

In understanding the forms of joint ventures, three main classifications of joint ventures are considered. These are based on the nature of equity-contract relations, scope of operations and organisational relationships. There are two types of joint ventures (JV), namely, *equity joint ventures* and *contractually-based joint ventures*. The equity JVs are formed when there is a need to manage JVs as a going concern which could be a new corporate entity. The contractually-based joint ventures are established for a fixed time period with the explicit intention of the partners at the outset to dissolve the relationship at a specified date (Beamish, 1988). Joint ventures are also categorised according to scope of operations known as *traditional joint ventures* and *international joint ventures*. In the U.S.. the traditional JVs formed before 1975 were restricted to producing for the local market only and were insignificantly involved in collaborative R&D. The restriction was due to the view that JV operations may conflict with the parent's other non-joint venture operations, that is, other subsidiary operations (Hladik, 1985). The international joint venture operations, however, extend beyond national boundaries.

Due to the complexity of organisational relationships in JVs, they are also classified into three types, namely,

the operating JV, the spider's web JV and the child JV (Harrigan, 1985). In *operating JVs* two or more firms create an entity to carry out a productive economic activity and also take an active role in decision making. Each partner contributes equity in the form of capital, technology and others. In addition to this the access to local markets is a necessary ingredient to its success. The *spider's web JV* occurs when many firms are linked to a pivotal partner. Depending on the needs of each partner and the sensitivity of information and resources to be exchanged, a domestic firm could forge a variety of patterns for cooperation that keep outsiders at bay while strengthening its position. The *child JV* occurs when entities are created by partners for a specific activity. The parent-child relationship is crucial as the dynamics of this relationship is important for the success of the venture. Therefore the choice for a particular organisational form of JV varies with the needs of the partners.

### 3.7 Motives of Joint Ventures

As a form of corporate expansion or restructuring, the motives of JV include the ability to use complementary technology or research techniques, spreading the risks of establishing an enterprise in a new product or geographical market, achieving economies of scale, overcoming entry barriers to domestic and international markets and

acquiring market power. The venture creation rationale could also be attributed to government suasion or legislation, partner's need for other partner's skills and partner's need for other partner's attribute or assets (Killing, 1983).

Several advantages associated with the motives for JVs include the sharing of fixed costs, pooling of knowledge and sharing of research efforts. The pooling of knowledge could solve the free-riding problem to property rights and trade secrets; avoid duplication of socially wasteful research particularly in R&D; and, unlike mergers which eliminate a firm, JVs create new competitors. It also confers specific transactional advantages over contractual agreements by offering greater flexibility when activities are integrated in a single firm which can be for a limited period and may not incur a substantial cost on part of the parent company.

The motives for joint ventures could also be classified into three main uses which are internal, competitive and strategic (Harrigan, 1985). The internal uses include cost and risk sharing; obtaining resources where there is no market and finance to supplement firm's debt capacity; benefiting from economies of scale, intelligence, that is, obtaining a window on new

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technologies and customers, and innovative managerial practices; and retaining entrepreneurial employees. The *competitive use* refers to strengthening current strategic positions. These include the evolution of the industry's structure, pre-empting competitors, as a defensive response to blur industry boundaries and globalization, and creation of more effective competitors. The *strategic use* is to augment the strategic position of the partners which include creation and exploitation of synergies, technology transfer and diversification. In a US-Foreign relationship the trend towards JV is due to MNCs that felt resource constrained due to the increasingly competitive world economy; and the growing protectionist sentiment against wholly owned operations in many host countries (Hladik, 1985).

Despite the potential economic benefits of JVs, several disadvantages are also present. Horizontal JVs have the ability to eliminate or reduce actual competition between the parent firms as it provides the opportunity for collusion in information and management, and the creation of a solid mechanism to enforce the terms of the venture. There is also a possibility of foreclosing particular markets, that is, preventing accessibility to essential inputs when vertical relationship exists with a JV parent. Finally, it generally has the ability to reduce potential



competition.

### 3.8 Theories of Joint Ventures

The theories of joint venture stemmed from the discussion on its life cycle which was classified by Bruce Kogut (1990) into three main types, namely, transaction cost economics, strategic behaviour and organizational behaviour approaches.

The *transaction cost economics* approach focused on the firm's boundaries and explain how the institutional design reflects efforts to minimize the sum of production and transaction costs (Williamson, 1975, 1985). The production costs are those associated with the transformation process and the transaction costs include the costs of monitoring efforts and of investing in ways to ensure fulfilment of contractual obligation. The conditions that lead to high transaction costs according to Williamson (1975, 1985) are *asset specificity*, that is, the degree to which assets are dedicated to transacting with a particular partner, *uncertainty*, that is, the difficulty of predicting and observing cheating, and *frequency*, that is, whether sufficient volume exists to justify fixed investment. The approach analysed the unique organisational properties of a JV and addressed the transaction hazards. Due to the sharing of ownership of assets, and monitoring and control,

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JVs create incentives for parties to cooperate but are subject to constant negotiation. According to the approach, the choice between full and partial ownership depend on the costs and benefits of sharing ownership, that is, joint venture relative to those of full ownership such as wholly owned subsidiaries (Hennart, 1991).

The *strategic behaviour approach* is concerned with how JV could maximise profit under varying and volatile competitive conditions. The exogenous variables being examined extend beyond the three conditions mentioned earlier. Finally, the *organisational theory approach* stresses cooperative motivations, since skills embedded in complex organisational routines could not be transferred through the market or through a license. These approaches also contribute in explaining the stability of JV. The transaction economics and strategic approaches assume competitive dynamic environment whilst the organisational theory focus on the transferability of knowledge.

In addition to the above approaches, joint ventures which conform to certain preconditions and structural arrangements can actually provide better solutions to problems of *opportunism, the small numbers dilemma* and

uncertainty<sup>24</sup>. Where a joint venture is established in a spirit of mutual trust and commitment to its long term commercial success, opportunistic behaviour is unlikely to emerge. The effective management of opportunism depends on managerial perspicacity and persistence, and inter-organisational linkages such as a mechanism for the division of profit and joint decision making processes. The problem of small numbers is related to opportunism and could easily be managed if opportunism is reduced. This especially arises when there is a need to change partners. Consequently if the first two problems are adequately addressed there will be strong incentives for the parties to pool their resources thus economising on the information requirements of foreign investment (Caves 1982, Beamish 1984, Rugman 1985).

### 3.9 International Joint Ventures

The use of international joint ventures depends on two

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<sup>24</sup> According to Williamson (1975), market imperfections arise due to environmental conditions of 1) *uncertainty*, that is, where specification of the full decision tree is infeasible and 2) of a *small number of market agents*, that is, where only one or two market agents are available to perform the required tasks. He also identified two sets of human factors, namely, *opportunism*, that is, a human condition manifested by the strategic manipulation of information or the misrepresentation of intentions (self-interest seeking behaviour) and *bounded rationality*, a human condition characterised by limited capacity in terms of knowledge, foresight and skill. The co-existence of both environmental conditions and the human factors will result in the costs of writing, executing and enforcing arms's length complex contingent claims to be greater than the costs of internalising the market. Thus the rationale for vertical integration is due to the failure of intermediate goods and for horizontal diversification to the failure in the markets of intangible assets. The major limitation of this theory, however, is its focus primarily on wholly owned subsidiaries.

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necessary conditions. Firstly, the firm should possess a rent-yielding asset which would allow it to be competitive in a foreign market. Secondly, the JV arrangements should be superior to other means of appropriating rents from the sale of the asset in the foreign market (Teece, 1983). Thus, in an international JV the foreign partner provides the firm-specific knowledge relating to technology, management and others while the local partner provides location specific-knowledge such as host country market and political trends. Furthermore, there are certain characteristics unique to international joint ventures

These characteristics differ between their location in developed and less developed countries. Higher instability rate (Beamish 1984, Reynolds 1979, Killing 1983, Franks 1971), greater managerial dissatisfaction (Killing, 1983), high unsatisfactory performance (Beamish, 1984) and high frequency of government partners are found to be prevalent in JVs that involve less developed countries. There is also more equal ownership and control of JVs in developed countries than LDCs. The characteristics of international JVs activities are influenced not only by the joint ventures profit maximising opportunities but also by the degree of interdependence between a parent firm's joint venture and non-joint venture profitability.

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Several findings have shown that most international JVs were being formed to develop, manufacture and market new product lines as compared to traditional JVs which produce or service for the markets of existing multinationals. There is also a significant shift of the activity of international JV from exporting to R&D as found by a qualitative econometric study on JVs' involvement in R&D and exports. The profitability of R&D for JVs depends on the size of local and international markets, market access, technical competitiveness and access to technical skills and resources. Several factors identified with JVs are classified into positive factors which include economies of scale, involvement in new product or process development and foreign parent involvement with operations in international markets and a negative factor, that is, the larger the market size of the host country the less likely it seeks export markets (Hladik, 1985).

When the proposition that a joint venture is to achieve cooperation within a competitive context, two aspects arise, namely, the cooperative aspects of R&D and joint ventures and the importance of reciprocity. The statistical tests have distinguished between R&D and other activities. It was found that ventures in R&D intensive industries have less tendency to be dissolved than other ventures (Kogut, 1989). A plausible interpretation is that

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ventures motivated by the transfer or creation of knowledge reflect more potent cooperative incentives relative to other kinds of ventures. Reciprocity in the potential to reward and penalize behaviour among transacting parties is fundamental to the achievement of long-term cooperation. The findings also indicated the importance of understanding contractual hazard and benefits in terms of the relationship among firms.

The importance of R&D in JVs became important in the US due to certain competitive factors (Hladik and Linden, 1989). When compared to Europe and Japan, the two other members of the triad, the U.S. was not at the leading edge in some key technologies. Secondly, there is a need to get a foothold in larger domestic and international markets. Thirdly, the host country pressure for technology transfer and local R&D also contributed to the need for JV. Finally, there is a desire to spread the costs and risks of in-house R&D due to the increasing complexity of technologies and the shorter product life cycle.

Several risks facing JV involved in R&D should also be considered. These are the *risks of sharing proprietary know how; issues of control* especially in global coordination or product line development which may be overturned due to personal, corporate or national pride, and of product

*design such as the failure to agree on design specifications during negotiations even after the venture is operational; dissimilarities between potential partners; integration and communications with the rest of the parent company; and antitrust regulations and parent protection.*

### **3.10 Joint venture as the preferred choice of FDI**

The need for joint ventures will be particularly strong in four instances. Firstly, when the foreign affiliate represents a product or geographical diversification for the parent. For example, as a form of product diversification the affiliate manufactures a product not produced by the parent. Thus the parent may find intermediate inputs needed to venture into new industry to obtain product specific knowledge. Joint venture could also be the most efficient form of geographical diversification if it is difficult to acquire by contract an access to distribution held by another firm or costly to replicate it (Stopford and Wells 1972, Stopford and Haberich 1978, Berg, Duncan and Friedman 1982, Shan 1986).

In the second instance, studies have shown firms that enter a foreign country for the first time are more likely to undertake JV due to the lack of knowledge of local conditions (Davidson 1980, Gatigon and Anderson 1988).

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These studies also indicated that firms with previous investments would prefer full control. Thirdly, the need to access resources which are controlled by local firms may induce firm to engage in JV, especially in natural resource industries. This was confirmed by Gomes-Casseres (1989) who studied the ownership policies of U.S. MNEs. Finally, JVs are used to combine complementary inputs held by two separate firms, when the market for both of these inputs is subject to high transaction costs (Tybejee 1988, Ferguson 1981, Kogut and Singh 1988). Other incentives for JVs include not demotivating the management team and bridging cultural differences (Ravenscraft and Scherer 1987, Kogut and Singh 1988a, Hofstede 1980). Also the larger the asset size of the subsidiary relative to parent the greater the incentive to JV.

In addition to the above, JV could also be an efficient form of organisation if two conditions are met, namely, the markets for intermediate goods held by each party are failing, and acquiring or replicating the assets yielding those goods is more expensive than obtaining a right to their use throughout a joint venture agreement (Hennart, 1988). When compared to greenfield investments, it is more efficient when indivisibilities could be exploited through economies of scale or scope. A full takeover is also less efficient than a JV when the assets



could not be separated from unwanted ones or resistance is faced from the target management team.

3.10.1 *Joint venture vis-a-vis non-joint venture operations*

The analysis of joint venture activity should not exclude its possible effects on the parent firm's performance. Three types of spill over effects can arise between joint venture and parent firms' profitability (Hladik, 1985). Firstly, where joint venture and non-joint venture operations are completely independent, the joint venture is free to pursue its own profit maximizing behaviour since its activities have no repercussions on the profits of the parent firms. Secondly, where spill overs are negative as evident in traditional joint venture, the JV exports will then compete with the sales of other parent-firm subsidiaries. Lastly, where spill overs are positive, the joint venture is then able to apply know-how gained through the joint-venture activities to other non-joint venture activities; or link the establishment of joint venture to other profit maximising objectives.

3.10.2 *Joint ventures an option to expand and acquire*

When a firm enters a new market with an uncertain demand, the entry could be considered as buying the right into the future. In such markets joint ventures have been used to share risk and lower cost of investments. A dynamic

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process of renegotiation occur in JV when partners decide on additional investments. During such a process, the partner that values the venture more than the other may decide to acquire the project, that is, exercising the option to expand.

The differences in option valuation can arise if the potential spill-over effects of the venture's technology complement the product portfolio of one partner more than the other. Thus the divesting firm is willing to sell because, it could realize capital gains and may also not have the downstream assets to bring the technology to market (Teece 1987; Shan 1988). This acquisition could be motivated by industry conditions and those stemming from the desire to expand in response to favourable growth opportunities. Thus from the options perspective, joint ventures are designed as mechanism to exploit, as well as buffer, uncertainty. It resolves partly the trade off between buying flexibility now and waiting to invest and focus later (Wernerfelt and Karnani 1987). Hence joint ventures are *real options*, not in terms of the legal assignation of contingent rights, but like many investments, in terms of economic opportunities to expand and grow in the future (Kogut 1991)<sup>25</sup>. In addition the JV

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<sup>25</sup> The valuation of the venture,  $V_j = F_j(K,p) + O_j(K,p)$ , where  $V_j$  is the value of venture,  $F_j(K,p)$  is the value of the assets in current use,  $O_j(K,p)$  is the value of future growth opportunities,  $p$  is the current value of an uncertain state variable (Pyndick, 1988)

offers better valuation information and affords the possibility to learn the true value of the assets (Balakrishnan and Koza, 1988).

### 3.11 Limitation of joint ventures

Several limitations that occur in joint ventures include goal distortion due to the hierarchy in organisational structure, opportunities for partners to resort to guile, risk of leakage of proprietary knowledge and high cost of information diseconomies of local politics and culture. Since the claim on the residual varies amongst the partners, the efficiency of the JV hinges on the convergence of the goals of parties to the agreement or failing this, on the degree to which opportunism by the partners can be controlled by other means, such as contracts or hostages (Hennart, 1991). The problem of goal distortion could also be overcome by giving equity holding to the general manager. Partners may resort to guile if the partners fear of losing strategic flexibility. This could be worsened with mistrust and cause the JV to be ineffective. When parent and subsidiary share the same trademark and it is costly to detect breaches or partners are mobile, there is a possibility for partners to free ride on the reputation of the other and debasing the quality of products bearing the trademark (Caves 1982,

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Hennart 1982). Also changes in the market served by a growing child JV may also pose threat to any of the parents who has to compete with the child. The possibility of leakage could arise when a local employee resign or local partner dissolve arrangement and form new organisation. Whenever the parent transfers uncodified or poorly protected proprietary knowledge to the subsidiary it is difficult to prevent its leakage beyond the joint venture (Hladik, 1985). Improper partner relationships and leakage of knowledge occur if JV is uncritically maintained.

Anti-trust problems do similarly arise for JVs like mergers unless the parties could justify the efficiency gains and need for promoting economic growth or international trade. When local laws prohibit foreign ownership, the sovereignty conflicts occur. JV may also face conflicting objectives between host nations and home JV partners with possible risk of expropriation. Conflict may also arise when foreign subsidiaries export back to parents home market or to third countries (Stopford and Wells 1972, Hennart 1982, Hladik 1985, Gomes-Casseres 1989).

### **3.12 The effects of joint ventures on shareholders wealth**

A study on the effects of international joint ventures on shareholders wealth was done by Lee and Wyatt (1990) to

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measure the stock valuation effects of international joint ventures on U.S. firms' shareholders and to determine whether these valuation effects are related to the economic status of the partners home country. The sample characteristics include firms in non-regulated industries, the assets of JV partner is located in a foreign country and the JV partner was a private firm rather than a government enterprise. The sample was divided into three groups according to the degree of economic development that is, developed, newly industrialised and less developed countries. The results suggest that overall investor reaction to international joint venture is negative i.e. significant wealth losses incurred by shareholders. In less developed countries it appeared that JVs do not reduce shareholders wealth significantly.

In another study of stock evaluation effects of international JVs it was implied that corporations undertake international joint ventures only when they provide a positive net present value which, in turn, implies that unanticipated announcements of international joint ventures should be associated with increases in the market price of the common stock of the companies announcing them (Lumner and McConnell, 1990). It was found that on average, the announcements of international joint venture by a US firm are associated with an increase in the

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company's market value and the magnitude of the stock price reaction is related to the amount invested by the firm. The valuation effects are also dependent upon whether the partner is a foreign company or a government. If a foreign company is the partner greater value is generated as compared to that with a government partner. This could imply that foreign governments can and do exploit a certain degree of monopoly power in international joint ventures. There is no evidence that US firms enjoy any particular value premium as a result of participating in joint ventures in less developed countries. This contradicts the view that US firms exploit the resources of LDCs to the detriment of the host country's constituents. It was also found that the increases in value are not the result of diversification benefits. These could be due to the ability of individual investors to access foreign capital markets; or that other political risk could offset the benefit; or the benefit of identification is not sufficiently valuable to overcome the effects of those unidentified factors.

The differing nature of the relationship between the parties and the selective resource combination indicates that the wealth effects of joint ventures may be different from those predicted by the whole-unit combination (Finnerty, Owers and Rogers 1986). The study found no significant evidence of abnormal returns being associated

with joint venture formation. Such ventures appear to be approximately zero NPV projects, and the wealth effect for stockholders of participating firms is similar to that for acquirer firms in a whole-unit combination. Partitioning of the sample into domestic and international ventures did not give rise to significantly different patterns of abnormal return accumulation.

In evaluating the shareholder wealth gains in mergers, the sources of gains could be due to synergy or management displacement. An investigation of wealth gains in U.S. domestic joint ventures had been used in a study to isolate the management displacement hypothesis from the synergy hypothesis as the source of gains in corporate combinations (McConnell and Nantell, 1985). It was found that there are significant wealth gains from joint ventures; the smaller partner earns a larger excess rate of return while the dollar gains are more equally divided; and the gains, scaled by resources committed, yield "premiums" similar to those in mergers. These results are supportive of the synergy hypothesis as the source of gains in other types of corporate combinations.

### **3.13 A comparison between mergers and joint ventures**

Mergers and joint ventures as forms of FDI have some similar and distinguishing characteristics as shown in

table V.

**Table V**

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<b>International Mergers and Joint Venture: Similarities and Differences</b>	
<i>Similar Characteristics</i>	
1. Ownership and Control	As forms of FDI they are represented by share ownership or ownership of assets
2. Economic motives	Both of them exploit the benefits of economies of scale, scope and vertical integration
3. Transaction cost theory	The theory is commonly used to explain both mergers and joint ventures in terms of imperfect markets
4. Internalization theory	Both recognize the need to benefit from OLI advantages
<i>Different Characteristics</i>	
1. Degree of Control	Mergers involve dominance and full control whilst JVs are involved in partial control. However there could be dominant partners
2. Selective synergy	JVs have the ability to select partners with synergistic potentials. Mergers could only be followed with divestments if unproductive assets were acquired.
3. Agency problem	Mergers could be used to replace inefficient management. JVs however manage relationship through cooperation
4. Transaction cost approach	JVs emphasize on market hierarchy to explain its relationships whilst merger emphasize on efficiency gains.
5. Dynamic reappraisal system	JVs require consistent re-evaluation of interaction amongst the partners with changes in exogenous economic variables. Not required by mergers.
6. Effects on shareholders wealth	The target firms earn positive wealth effects compared to the negative of zero returns of the acquiree. A transfer of wealth effect is also present in merger. JVs have mixed results amongst partners.

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The fundamental distinction between them and other multinational activities like exporting and licensing is their ingrained involvement in terms of ownership and control of foreign activities. This could be represented by share ownership or ownership of assets. The economic motives for mergers and joint ventures are similar as they are essentially based on economies of scale and scope. A common theoretical approach based on transaction cost theory has been used to justify their organisational forms and to address the fundamental problem of market failure especially in relation to the valuation of intangible assets such as management expertise and R&D. As forms of FDI the internalization theory is consistently applied since the existence of the advantages and the benefits of internalization could be gained.

Although common characteristics are found in both mergers and joint ventures there are also certain distinguishing characteristics. Mergers usually involve dominance or complete control of the subsidiary. In the process the acquiror wield greater influence and may replace target management. The acquisition also comprises of all the target firms' assets whether productive or otherwise and may be followed with divestments. On the other hand, joint ventures usually involve partial control by each partner. In this respect JV could be selective in

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combining the strengths of the partners. Dominance over partners also exist in certain JVs which affect the stability of partnership. JVs could also be of a contractual nature such as technical cooperative agreements which is not a characteristic of mergers. The importance of technology as a competitive edge as emphasized by the technology accumulation approach could be achieved through JV.

A different emphasis of the transaction cost approach is found in explaining JVs and mergers. Since JVs involve a dynamic process of managing complex relationships between the parties, the market hierarchies approach is utilised. The relationship between the partners needs to be constantly reviewed in order to deal with changing environmental factors that could affect the stability of the JV. In contrast efficiency gains are emphasized in mergers which involve the replacement of external markets or target managers. In view of the differences, a link of JVs as an option to merger has also been established. The inherent flexibility of JV when dealing with uncertainty allows it to be a real option to a merger. Even though incremental involvement in the form of piecemeal acquisitions is also possible, the position of a minority interest is different from that of a JV partner.

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The effects of merger and joint venture announcements as forms of FDI are mixed. Mergers when viewed as a competitive device, have resulted in a significant transfer of wealth effects from the acquiror to the acquiree. In most instances the acquiror earns modest or negative returns whilst the acquiree always earn a positive return. When international merger involve product or geographical diversification and a less developed country positive acquiror gains were found. The positive target gains were also consistently higher in foreign compared to domestic acquisitions especially when there are competitive bids within the industry. As for JVs the wealth effect on the partners have been mixed with both reports of positive and negative returns. The choice of home country partner was found to be the influencing factor as a government partner will result in a lower return as compared to a private partner. The partner with a smaller shareholding but high relative to its market value also earns a premium. No significant difference was found between JVs in less developed country and those in developed countries. When an international JV was compared to traditional JVs there was also no distinction between them.

The distinguishing characteristics of mergers and joint ventures are important considerations when analysing the market impact of their announcements. As mentioned in

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chapter 2, the benefits of foreign direct investment will arise from natural market imperfections in an integrating economic environment. The phenomenon of European economic integration are dealt with in chapter 4.

## CHAPTER 4

# THE IMPACT OF EUROPEAN ECONOMIC INTEGRATION ON FOREIGN DIRECT INVESTMENT

### 4.1 Introduction

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This chapter address the phenomenon of European economic integration and its implications for foreign direct investment, particularly on mergers and joint ventures. The effects of integration on the competitive and location advantages of MNE will also be examined. A theoretical framework which relates European economic integration to anticipated economic benefits of FDI as suggested in chapter 2 is further discussed as a basis for this study. In relation to the previous chapters its focus will be on European mergers and joint ventures that involve U.K. firms.

### 4.2 European community and the 1992 programme

The European community had faced intense global

competition especially from U.S.A. and Japan. Its competitiveness was falling behind them in terms of absolute output, high rates of inflation and unemployment, and slow growth in investment and productivity (Muchielli, 1991). More seriously, it exhibited a failure to perform well in new emerging technologies upon which the future development of world economic business looked likely to rest. Also, European firms unlike their Japanese and US counterparts, were constrained to competition in small national markets due to barriers and rising costs which undermine efficiency<sup>26</sup>.

The weakness of European competitiveness is due to its intermediate position, that is, being non-competitive in labour intensive industries *vis a vis* NICs and non-competitive in high-tech industries *vis a vis* USA and Japan (Muchielli, 1991). It is not a problem of the level of R&D which is comparable with Japan and USA but low efficiency of R&D expenditure as explained by demand for and supply of technology (Geroski and Jacquemin, 1985). On the demand side, reduced demand for high-tech products was generated by the nationalist attitude of USA and from the supply side each national policy was subsidising a 'national champion'

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<sup>26</sup> Each member of the triad (U.S., Japan and Europe) derives much of its economic strength from its own integration. In the case of EC the benefits could be derived from tariff reductions through exploitation of economies of scale.

that avoided the entrance of new firms and limited industrial structure renewal and the growth of technology. The lack of availability of skilled workers (Prais 1981) and increasing technological obsolescence (Muchielli, 1991) also contributed to the lack of competitiveness. The failure of an industrial policy which focused on the attainment of large size and not the dynamic performance which is fostered by entry and mobility within industries (Geroski and Jacquemin, 1985:177) is a fundamental problem in public procurement in Europe. It is a failure of the market to efficiently allocate economic activities which encourage both corporate and regional integration (Dunning, 1988)<sup>27</sup>.

Although efforts towards European economic integration by the community began in 1958 through the removal of intra-EC tariff barriers and import controls, these did not sufficiently boost the competitiveness of EC. A comprehensive review of the goals of the community was then made based on the Cecchini Report (1988)<sup>28</sup> in the 1980s

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<sup>27</sup> Corporate integration is integration of cross-border activities by and within MNCs which is favoured when intra-firm is lower than inter-firm transaction costs. Regional integration is economic integration of countries within regions of countries with the principal objective of reducing inter-country transaction costs.

<sup>28</sup> The four major consequences of the Cecchini Report (1988), which outline the expected achievements of the Single Market, are,

1. a reduction in cost resulting from exploitation of economies of scale by companies in production and business organization.
2. improved efficiency within companies, industrial

that conceived the need for free trade in goods and services and the free movement of labour and capital, which implies the eventual achievement of a unified market by 1992. These goals are reflected in the three main themes of the 1992 programme which are trade facilitation, removal of non-tariff barriers and liberalisation of procurement. The impact of the first two themes will be on the relative cost positions of different competitors within existing markets and undermined market segmentation whilst the third theme will facilitate the entry of new competitors into markets that were previously closed or unattractive.

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reorganization and a downward pressure on prices under increased competitive pressure.

3. new patterns of industrial competition arising out of reallocation of resources with real comparative advantages playing the key role.
4. improved innovation affecting new business processes and products in the dynamic internal market

The report lays down foundation for virtuous circle which the Single Market is expected to achieve which include,

1. removing barriers to intra-EC trade - allowing firms to operate unhindered in a wider Europe
2. intensifying competition across the market of the community
3. reducing costs through economic efficiency and price competition
4. decreasing prices which will increase consumer's purchasing power and therefore raise the volume of EC business and stifle inflation.
5. encouraging firms to innovate and develop new technologies as a way of attaining long term advantages.
6. new technologies which are produced in large scale units will face a downward price trend and stimulate further innovation.

The report, however, has two weakness as it ignores cultural differences between member countries, the elements that support different consumer attitudes and behaviour, and nationalistic sentiments (Welford and Prescott, 1992)



The goal of the programme<sup>29</sup> is to evolve towards a single European market that is, a single economic market which ideally is based on the *Law of One Price* (Kay, 1990). The obvious emphasis of the programme is not the legislations and regulations which will result in such a market but the nature of competition between buyers and sellers. The process of market unification comprise of three stages as illustrated in table VI. It can also be explained based on the economics of integration.

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<sup>29</sup> The fundamental goals of economic policy of the member states as incorporated in Article 104 of the Single European Act, are: to ensure equilibrium of the overall balance of payments; to maintain confidence in the currency; to ensure a high level of employment; and to ensure a stable level of prices.



compared to imports outside agreement.

2. Preferential tariff cover all imports between the countries involved in the agreement. If a zero-tariff is agreed between the countries than such arrangements is referred to as the 'free trade area', for example EFTA of industrial products.

3. customs union occur when there is completely free trade in all products between the members of the union and a common external tariff levied on imports from non-member countries.

4. When a free trade between countries is not only ensured by elimination of tariffs, but also by the removal of all other obstacles such as non tariff barriers to<sup>30</sup> free trade; and the freedom of movements of capital and labour operates with respect to production as well as exchange, an internal market will arise.

5. economic union implies a high degree of cooperation between members of the union and include the coordination of monetary and fiscal policies and non-economic planning across all member countries, despite remaining as individual political units.

EC has progressed from customs union towards the

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<sup>30</sup> this include non-tariff licences, foreign exchange control, customs procedures standards and indirect taxes.

creation of a single internal market. The progression towards full economic and monetary union revolves around macro-economic cooperation and monetary integration. It also involves *economic convergence* which can be defined as the narrowing of international differences in the development of certain economic variables<sup>31</sup> (Anderton, Barrell and William, 1992). In a fully integrated Europe real convergence is one of the fundamental objectives though it is a long term process and not a necessary condition for transition to economic and monetary union.

According to the programme the removal of *physical barriers* will facilitate trade and movements of labour through reduced documentation<sup>32</sup>. The *fiscal barriers* include restriction on capital movements as well as differences between tax levels and excise duties. Greater freedom in capital movements allow for more competition in financial markets thus stimulating a convergence in the cost of capital across the community. The *technical barriers* are the divergence between technical standards and testing procedures within the community. Removal of these

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<sup>31</sup> There are three forms of convergence which are *nominal convergence* of the development of costs and prices and their underlying determinants, *real convergence* of working conditions and living standards, and convergence of economic institutions and structures.(pp2)

<sup>32</sup> The introduction of the Single Administrative Document (SAD) in 1988.

technical disparities is likely to facilitate the attainment of greater scale economies. The strategy to remove all non-tariff barriers by 1st January 1993 (Cecchini, 1988) implies a 'harmonisation of national regulations and imposes a supranational approach' to international economic relations which is the essence of MNC<sup>33</sup>.

#### 4.3 'EC 1992' and FDI in Europe

The OECD (1992) has identified EC as a factor that encourage a liberalised climate for MNC's activity. The EC directives and regulations have led to a harmonization of many national policy instruments and measures which otherwise might have affected the locational decision and forms of FDI. Thus regional integration per se will determine the countries' success or failure in attracting inward investment as well as provide incentives and opportunities to be competitive in enhancing outward investment. Secondly, the social programme of the European commission and the community efforts to help the poorer regions through grants or loans known as 'fiscal transfers' may help to improve the locational attractiveness or

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<sup>33</sup> The two main instruments created to achieve these objectives are:-

- i. EC has adopted a new rule of European Free Trade Area (EFTA) practice which recognises national regulations on a mutual basis, each time international harmonisation could not be reached.
- ii. Important decisions are now taken by a qualified majority and do not need unanimity of all EC members.

upgrade their technological capabilities. Thirdly, the stimulation of the innovative capacity of EC-based firms in cutting edge technologies has involved the wealthier members states. Finally, the completion of the internal market will enhance the relative competitiveness of EC firms vis-a-vis non-EC firms. At micro organizational level, the European commission, through the provisions of the Rome Treaty can and do have an impact on the actions of both domestics and foreign MNCs through a wide range of regulations to reduce monopolistic practices and encourage competition in the community (Dunning, 1992)<sup>34</sup>. An example would be a regional ruling on local-content of a 'European-made' car in July 1991.

The increasing level of FDI in Europe contradicts the explanation of conventional theories or models of direct investment which view direct investment as one mode of servicing final product market. The integration according to such theories would imply FDI to be replaced by trade and licensing which are contractual arrangements that become easier to arrange due to decreasing costs of trade and transport. However various responses that attempt to

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<sup>34</sup> These regulations include article 85 of the treaty, EC's labour law programme which is meant to advance employment protection and worker participation as per Fifth Directive of the commission, directives on corporate responsibilities and group accounts, the harmonization of aids to inwards investment (Articles 92-94) and directives and rulings on environmental, safety and health matters.

explain the phenomena are advanced.

From a global perspective the European phenomena is explained as part of a worldwide trend where direct investments between industrialised countries have grown substantially since the early 1980s especially in the triad<sup>35</sup> (Cantwell, 1992). Another perspective (Ozawa, 1992) views that trade and investment need not be substitute but may instead be complements as illustrated by the parallel growth between growth of inter-industry trade and growth of intra-industry direct investment. A specific response has been that growth of intra-European international production in the current process of European integration via trade has been facilitated by reduction in tariff barriers (discrimination of location of production) and direct investment has increased due to the removal of non-tariff barriers (discrimination in accordance to ownership) (Cantwell and Sanna-Randacio, 1992). From a strategic behaviour of firms perspective which relate to Hymer's market power, European mergers and strategic alliances are viewed as a response to the greater international competition within Europe that had resulted from free trade so as to preserve an oligopolistic balance of power (Acocella, 1992).

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<sup>35</sup> The triad is referred to as Europe, Japan and the US.

In addition to the above responses, two aspects of the growth of MNE as having been accelerated by the greater regional integration associated with the single market in the EC are identified (Cantwell, 1992). Firstly, cross-investments in MNEs within the same industry (intra-industry production) have been steadily rising. Though to a lesser extent it occurs between region and country, the motivation and effects are different from those within the EC. Secondly, MNEs already established in the EC have been reorganizing their European operations which tend to increase the degree of geographical specialization of production across affiliates in each MNC and change their inter-firm relationships.

In analysing the competitiveness of countries between the EC and USA after trade liberalization with respect to two criteria, namely, entrepreneurial capacities and locational advantages, Sleuwagen (1987) found that countries which score high in the first criterion will show high outgoing investment and for those that score high in the second criterion will show high incoming investment and vice versa. Molle and Morsink (1991) analyse European direct investment flows from 1975-1983 with a significant percentage involving USA. The empirical analysis is based on gravity-type models using the country's pull, push, stimulus and friction factors to explain international



flows. The push factors induce outward direct investment flows and these include high wage levels, high levels of R&D and surplus national financial resources. Entrepreneurially competitive countries have large outward FDI flows. These countries offer highly skilled human resources, good and reliable capital markets and industrial policies that stimulate investment and R&D.

The pull factors attract direct investment flows and these include high GDP growth, high interest rate and shortage of national financial resources. Locationally attractive countries offer optimum chances of substantial returns for inward FDI which is largely determined by the access to its markets. The stimulus variables include existence of trade relations, the absence of barriers and exchange rate risk. The resistance factors include distance, that is, transport and communication costs and cultural differences. It was found that the more voluminous European direct investment flows concentrate on the core countries of the EC. These flows are influenced mainly by push factors like availability of funds and ownership advantages. The pull factors seemed less important. Dominant factors of resistance are physical distances and cultural differences with the former being a crucial factor. *In the context of the European integration process, the relation of FDI and trade is non-linear and for FDI to*

occur there must be a minimum level of trade beyond which there is no proportional relationship (Molle and Morsink, 1991). The exchange risk appears to discourage FDI abroad. Monetary integration, by stabilizing exchange rates is also likely to stimulate FDI from rich to poor countries in the EC, contributing to its cohesion.

#### 4.3.1 Intra-European Direct Investment

Since 1962 the Treaty of Rome considered direct investment between firms in the member states of EC to be 'fully free'. FDI which involves the transfer of capital, management expertise, marketing skill as well as technological know-how and assuming free capital movements differ according to whether or not trade in goods is free (Bhagwati, 1987). When faced with trade restrictions a firm may circumvent the barrier by investing in the country known as 'tariff jumping'. In a customs union, FDI may also arise due to fiscal and non-tariff barriers like access to government contracts or obligation to comply with national technical norms or standards. Several studies have shown that market access and tariff-jumping have inspired the large flows of American FDI in Europe (Scaperlanda and Mauer 1969, Schmitz 1970, Lunn 1980, Schmitz and Bieri 1972). Within the free trade area in the EC, FDI increased significantly in the 1966-1970 period due to optimum locations for production within an enlarged market

(Pelkmans 1983, Franko 1976). The freeing up of capital movements across the EC will then remove restrictions on firms wishing to set-up foreign facilities in the form of branches, subsidiaries and others.

An interesting and unique factor of intra-European direct investment is that EC members are of a similar level of development. Thus, the traditional focus of economic theory on the gains from international specialisation which was based on different levels of developments (eg. Britain and colonies) is not suited to the EC members. The development of each EC producers' potential market inclines towards intra-industry specialisation on different varieties of product rather than inter-industry specialisation.

#### 4.4 The Effects of the Single Market on FDI

The concerted effort of European economic integration towards the Single market has affected FDI. The removal of non-tariff barriers across the EC has encouraged intra-EC trade and will have effects on the size of EC production units (Sherer, Beckenstein, Kaufer and Murphy 1975) thus raising the scale and efficiency of European production plants. The effects of eliminating non-tariff barriers are sector specific as it depends on transportation costs and location advantages when choice is made between exports and

FDI.

There are three broad categories of non-tariff barriers (Cantwell and Rondacio, 1992). Firstly, the Cost Disadvantaged Generating Barriers type I (CDB I) include customs procedures and technical regulations which impose an extra cost on the foreign exporter. Secondly, the Cost Disadvantaged Generating barriers type II (CDB II) which are cost disadvantaged not only to exporters but to foreign subsidiaries operating in the domestic market such as technical barriers, different technical specifications requested by each host country and grant or aid to home-based companies. Thirdly, Market Entry Barriers which include public procurement policies which favour national champion home based firms. These barriers are not cost disadvantaged but first mover advantage.

The removal of CDB II and not CDB I is likely to lead to an increase in intra-industry direct investment. In the home country the national champion is the market leader but the foreigner is the follower and vice versa in the foreign market. Thus the removal of the market entry barrier will change the leadership in the home market. The removal of CDB I will cause an increase the intra-industry trade but not necessarily intra-industry direct investment. On the other hand, the removal of CDB II and market entry will

cause a net expansion of foreign production activities.

Previously, the 'closed' nature of public procurement has been a motivating factor behind a firm's decision to invest abroad because of lower transport and trading costs, better after sales service, more rapid delivery, supporting local employment and emergent high technology industries. But, with the 'opening up' of public procurement the incentive to invest shift to cost reduction by increasing plant scale. In this particular circumstance, the issue is not whether the single market will restrict foreign investment in favour of centralised production, but the degree to which it will affect the nature of foreign investment and the extent to which markets can be served from large centralised (regionalised) manufacturing units.

The effects of the single market can also be explained by analysing two principal determinants of FDI which are the locational and ownership advantages (Yannopoulos, 1992). Several factors which arise from the single market do influence changes in the *distribution of the locational advantages* of MNCs. As discussed above, the elimination of non-tariff barriers to trade will favour those presently trading inside the community, that is to both members and non-members. The removal of non-tariff barriers to intra-EC trade is also an immediate stimulus to growth as the

output-capital ratio will rise due to the one-off expansion effects of non-completion of the internal market. The locations inside the single market may also become more attractive for international sourcing by MNEs since economic integration will lower costs due to economies of scale and intensive competition. Finally, the single market programme is expected to generate a redistribution of locational advantages inside the common market. The regrouping of MNC activities will be profit driven unless constrained by local market knowledge<sup>36</sup>. Also, the intensification of competition will encourage focus on core businesses and geographic diversification through the acquisition of assets. It will also stimulate outward investment to gain more favourable locations abroad.

The effects on *ownership specific advantages* of MNE are more on those producing within the EC. These advantages may be created or strengthened due to the impact of the unification of the market or the exploitation of economies of scale and scope, and particularly through the more rational utilization of the firms' R&D resources and the stimulus to innovate activities. The integration of fragmented markets also facilitates the exploitation of any '*economies of common governance*' by firms, that is, new

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<sup>36</sup> When constrained by local knowledge, strategic alliance or joint ventures is preferred to mergers or greenfield investments.

experiences in the governance of multinational which are geographically separated units.

When technology is viewed as having both ownership and location advantages, intra-industry technological activity in the EC are also expected to increase (Cantwell and Randacio, 1992). In most industries where a relatively strong intra-industry direct investment within the EC can be identified, a system of intra-industry technological activity has grown up to accompany it (IITA is measured by patenting). Cross investments are part motivated by the desire of MNCs to establish EC wide networks of technological activity<sup>37</sup>.

Thus direct investment within the EC will be either for offensive import-substituting or for the purpose of reorganization or as rationalised investment to better exploit differences in input costs. Since the changes that the single market programme will bring to the business environment is far more extensive for firms operating inside the EC, intra-EC direct investment is expected to

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<sup>37</sup> The structure of the networks depends on the forms of locational hierarchy that is implied by the ranking of different EC research centres in a particular industry. IITA is greatest where the locational hierarchy is neither very weak nor very pronounced (one centre alone is dominant) (all centres are of similar strength). Firms from a lower-order centre when investing in a higher-order centre are prone to try and extend their research in their own fields of technological strength, but firms from a high-ranked centre of excellence are more likely to attempt to tap into areas of local strength in lower order centres.

grow faster than those of extra-EC. There would also be a regional core network strategy that involves the building up of an integrated network of affiliated units in each of the principle markets of the EC. The process of 'regionalization' will be pursued by both third country multinationals that already operate inside the EC and indigenous community firms.

Consequently, the completion of the European internal market, which creates a more integrated demand at a European level, is leading companies to concentrate on their most productive activities as well as to seek a better geographical location. The new competitive environment will also encourage more product and process specialization within the community markets. Mergers and acquisitions are thus expected in related core businesses (Jacquemin, 1990). In sectors where presence near the customer and knowledge of local conditions is vital to compete effectively, alliances in the form of joint ventures with local firms or mergers are then preferred to greenfield investment.

#### 4.5 The European Monetary System (EMS)

The European monetary system (EMS) is a step towards



European monetary union<sup>38</sup>, which involves the coordination of monetary policies. The issue of monetary union was raised by the European Commission because currency movements have a destabilising effect on the economies of member states. The EMS was borne with the following three elements, namely, European Currency Units (ECU) which is a basket of all the member states currencies and used as denominator for fixing exchange rates and for operation within the system; Exchange Rate Mechanism (ERM), a central element in the EMS which links domestic currencies which have an exchange rate against the ECU, called the 'central rate'<sup>39</sup>; and financial support mechanisms which are short and medium term support for member states with balance of payments difficulties which can be provided via granting credit to those countries.

#### 4.5.1 *Advantages and Disadvantages of Monetary Coordination*

The several advantages of the EMS are, the ERM provides certainty in that exchange rate fluctuations are eliminated because increased certainty, which not only

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<sup>38</sup> According to the Delors report, a monetary union is characterized by the combination of two elements, namely, the complete liberalization of capital transactions and full integration of banking and other financial markets; and the elimination of margins of currency fluctuation and the irrevocable locking of exchange rate parities.

<sup>39</sup> Under this arrangement currencies are allowed to fluctuate at an upper and lower ceiling of 2.25 % against each other. The ceiling has recently been adjusted for certain EC countries that require larger bands.

widened planning horizons but encourages risk averse firms to trade across national boundaries; it aids counter-inflationary policies, that is, firms will not be able to continue to raise their prices higher than their European competitors and remain competitive; and reduction in the cost of financial management, that is, costs of currency transaction.

The disadvantages of EMS are the maintenance of exchange rate values, that is, it can cause conflict with any inflationary policy based on the control of interest rates, for example the need to lower inflation rates as high interest rates will be in conflict when the exchange rate reaches the ceiling; and sovereignty, that is a complete monetary union and a single currency would require a single monetary policy such that loss of sovereignty is feared (Welford and Prescott, 1992). However, a counter argument to this view is economic performance of the UK is inferior to other EC countries and it is pooling of sovereignty rather than loss of sovereignty.

#### 4.6 Mergers in Europe

The EC internal market is a collection of geographically proximate, not wholly dissimilar, national markets which add up to a 'single' market of considerable size (Geroski and Vlассopoulos, 1990). The continental

mergers have become the central issue in European business strategy (Kay, 1990) according to a survey by the Financial Times. The survey showed that both private and public decision makers view that the true potential of EC internal markets could be realized by restructuring through merger. Thus, a distinguishing feature of European mergers from domestic mergers is that they are involved in the process of integration.

The basic motives of mergers are principally the same as they range from entry into new geographical markets as well as other motives like new product markets, economies of scale, distribution, and the efficient management of assets such as corporate control. Though a motive like market entry is not per se a source of the competitive advantage, it can unlock the value of competitive advantages that either of the firms may have by enabling them to be extended to new markets. In this respect cross-border mergers appear to be more firmly based on the existence of potential synergies than their domestic counterparts, where market entry is their goal (Grant, Jamine and Thomas, 1988). Another significant difference of cross border merger is that it takes the acquiror into different economic, political, legal and social environments. This will expose the firm to different expectations which govern the relationships within the

firms, between the firms and with governments.

In Europe, there are institutional obstacles to cross-frontier mergers which apply to the legal form of mergers. This is due to the absence of a framework of European legal rules and practices. As a result the organisation and administrative costs of multinational firms in Europe are often very high because of the duplication made necessary by the requirements of multiple establishments and adaptation to specific local rules. Secondly, mergers appear not as European operations but as acquisitions of one national company by another of a different nationality, which tends to offend national susceptibilities and to provoke nationalist reactions. On the other hand, mergers through the acquisition of shares, allow for greater flexibility and decentralized management. With respect to flexibility, the organisation as a group makes market entry and exit easier. Merger as a form of geographical diversification provides flexibility in adapting to varied economic, social and political conditions which is facilitated by a network of legally independent subsidiaries. Also, getting out of a loss-making subsidiary is easier by the disposal of shares. Greater autonomy is given to subsidiaries and thus a more personal attention could be given to localized problems. Though such mergers are popular in the U.K. and U.S. it has also gained

popularity amongst continental mergers.

In a recent paper, Geroski and Vlassopoulos (1990) concluded a survey that viewed EC merger activity as a response to 1992 and the 'single European market' to be hardly impressive. It was found that most firms chose domestic partners with which to merge; when they did look abroad their choice often settled on a partner outside Europe, and merger activity was concentrated in sectors that did not need massive restructuring, such as the food industry. But more recent evidence gathered by Pringle (1991) showed that in the last two years European companies have focused their attention on the European market. The trend of European mergers involving U.K. firms can be seen in table VII and VIII. These tables show a breakdown of target firms acquired by U.K. firms. The pattern of the acquisition of European firms differ from both domestic acquisitions and acquisitions of U.S. firms. An increasing trend of the European merger activity involving U.K. plcs can be seen from 1987 to 1989 with higher number of acquisitions compared to U.S. in 1990 and 1991. The value of such acquisitions was highest in 1990. Such a trend is reflective of the unique incentives for mergers as a result of economic integration.

TABLE VII: FIVE YEAR COMPARISON OF U.K. MERGER ACTIVITY

TARGET	1987	1988	1989	1990	1991	SUB-TOT
UK PLCS	197	158	159	119	90	723
UK PTE.COS.	1266	1475	1243	793	657	5434
UK DIVESTMS	395	608	676	612	442	2733
TOT	1858	2241	2078	1524	1189	8890
U.S.	256	389	262	167	97	1171
EUROPEAN	145	258	410	298	194	1305

Source : Acquisitions Monthly

TABLE VIII: FIVE YEAR COMPARISON OF UK MERGER ACTIVITY (£M)

TARGET	1987	1988	1989	1990	1991	SUB-TOT
UK PLCS	13895	19076	27999	10664	6241	77875
UK PTE.COS.	6402	5293	8417	6793	5939	32844
UK DIVESTMT	4125	13254	10816	10221	6001	44417
TOT	24422	37623	47232	27678	18181	155136
U.S. (\$M)	27195	31724	16764	8406	2071	86160
EUROPEAN	1342	2788	2724	4699	1634	13187

Source: Acquisitions Monthly

#### 4.6.1 *Costs and Benefits of Mergers in Europe*

The main benefits of European mergers are a reduction in production and transaction costs, and an improvement in the efficiency of management. In terms of cost efficiency the apparent benefits of economies of scale, positive

learning effects and economies of scope<sup>40</sup> could be realized especially with large market share. The underlying assumption here is that the new entity has an efficient internal operation. However, such cost efficiency could be thwarted with poor communications, sour industrial relations, corporate culture clashes, failure to cast out costly duplication, insufficient coordination, and lack of flexibility due to being an over rigid organisation, which are more likely in international mergers. Similarly, in the case for management efficiency, the replacement of inefficient managers of target firms through a 'market for corporate control' may on the contrary encourage managers of acquiring firms to have expansionary motives or to excessively focus on the financial aspect of acquisition, thus neglecting productivity and long term objectives, which could also be counter-productive. Thus the net effects of mergers are rather inconclusive as it depends on firms' ability to ensure a successful venture.

In the European market, the suppression of non-tariff barriers has lead to an expanding market and a larger potential demand. Firms that do not participate in mergers will most likely be very responsive to price increases and tend to increase their output especially in expanding

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<sup>40</sup> Scope economies occur when the cost of producing two or more products separately is more than if they are produced together.

industries. As for firms involved in mergers especially in the EC they conform to a two fold strategy. Firstly, firms acquire assets in the activities they are best at, and sell assets related to activities in which their competitive position is weak; and secondly, they extend their geographical sphere of operation by buying up firms in other member states in their core business (Jacquemin, 1990 p.19). In contrast to product diversification, such a strategy in a limited geographical area is compatible with an industry structure favourable to output expansion. Jacquemin (1990) further argued that even a reduction in total output induced by merger could be compatible with an increase in social welfare if the redistribution of output among firms were to lead to sufficient cost savings, that is, from economies of scale according to Smith and Venables' (1988) model. The strategy is thus both concentric on the firms core business within the industry and geographically diversified within the market.

From an international dimension the removal of trade barriers will have a more significant impact on mergers in relatively closed industries than those which are relatively open to international trade. Ross (1988) shows that the lowering of tariff barriers is more effective in limiting the price-increasing effects of a merger, the greater the number of foreign firms. The effects of EC



mergers on the rest of the world could be explained in terms of the degree of European involvement in the merger and the proportion of output consumed in Europe. The greater involvement will result in a higher net European gain in welfare and in contrast, lower with higher consumption. In high technology industries where huge indivisible investments in R&D have to be incurred, mergers will accentuate the capability of the European firms to undertake research programs, eliminate duplication, encourage technology transfer and speed up the process of innovation.

The main conclusion is that although mergers can indeed lead to cost savings and efficiency gains, neither theory nor empirical work provides any cast-iron arguments in favour of a presumption that these operations are generally efficient. Even when they are efficient, the corresponding gains must be compared with the effects of a possible increase in monopoly power. This leads to complex trade-offs where the expected new industrial structure following the merger, the degree of openness to international trade, and the long run dynamic performance linked with learning and technical change. In the European context the removal of physical, technical and fiscal barriers as well as the liberalisation of public procurement will certainly stimulate greater factor

mobility including mergers. The competitive economic environment that encourage more efficient operations could provide some explanations for anticipated net benefits of such mergers.

#### 4.6.2 *Merger control in Europe*

European competition policy is concerned with promoting free markets and healthy competition within a firm regulatory regime, that is to broaden the range and lower price of products offered to the community and to raise the competitiveness of European firms vis-a-vis international competitors. Its aim is to prevent sub optimization at the national level in favour of promoting competition and efficiency to benefit the community as a whole (Welford and Prescott, 1992) by preventing price fixing, cartels and other collaborative anti-competitive acts, controlling the size of the acquisition that remove competition, break-down state-owned monopolies and freeing up competition particularly in public procurement, and restricting state aid to indigenous firms.

In order to promote competition and reduce concentration the *Merger Control Regulation (Council Regulation 4064/89)* was enacted and came into force on 21 September 1990, which has direct effect in UK law. Under this regulation only mergers with a community dimension,

essentially those involving the largest companies, will now be subject to examination by the European Commission<sup>41</sup>.

The nature of concentration as mentioned in Article 3 of the regulation could occur where two or more previously independent undertakings merge to become one new independent undertaking. Also, where person(s) controlling an undertaking acquire direct or indirect control of the whole or parts of one or more other undertakings, it is also considered to be another form of concentration similar to the UK ruling. The term control is meant to be the ability, by whatever means, to exercise decisive influence on an undertaking by the ownership, or right of use of assets, rights or contracts conferring decisive influence on the composition, voting or decisions of the organs of an undertaking.

The application of concentration according to the regulation does not exclude joint ventures. The regulation classified two forms of joint ventures, namely

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<sup>41</sup> Mergers that are subjected to this regulation involve enterprises with the following characteristics :-

- i. An aggregate worldwide turnover of more than 5 billion ECU (around \$3.5 billion) and
- ii. the aggregate Community turnover of each of at least two of the enterprises concerned is more than 250 million ECU (around \$175 million).

However, mergers which primarily concern one member state in that more than two thirds of the Community turnover of each enterprise concerned is in one and the same member state, will not come under this regulation.

"concentrative" or "cooperative" joint ventures. A concentrative JV is that which involves a lasting change in the structure of the undertakings concerned. Thus a JV which performs all functions of an autonomous economic entity on a lasting basis, without coordination of the competitive behaviour of the parties will be subjected to the regulation. On the contrary the cooperative JVs will fall under Articles 85 and 86 of the Treaty of Rome.

#### 4.7 Joint Ventures in Europe

Due to the nature of European economic integration and where corporate expansion focuses on entry into new markets, JVs is the suggested form in dealing with transaction costs (Szymanski and Thomson, 1990). Also, other costs to cross-border integration like differences in business culture and language, differences in legal institutions and accounting conventions, distance and travel time, and differences in the ownership pattern of firms in other member states, particularly the importance of family controlled firms further support the need for partial integration through joint ventures.

The removal of non-tariff and fiscal barriers had also encouraged the formation of joint ventures. The main motives of forming JVs in Europe are to strengthen firms within the EC vis-a-vis major global players such as that

of U.S. and Japan; to benefit from government incentives for joint research projects for example, The European Strategic Programme for Research and Development in Information Technology (ESPRIT); and to secure a 'toe hold' in a number of markets either for pre-emptive or joining the band wagon reasons, that is, a transitory strategy due to lacking of long term commitment and therefore resulting in either pull out and leave, or pull out and be independent, or raising stake and take control. Despite the incentives, certain problems of forming JVs in Europe like failure to agree on strategies and objectives, and communication barriers between managers do arise.

When deciding upon JV as a strategic choice in responding to the economic integration of the European economy the main emphasis is made on reducing development expenditure. The opportunities for reducing development expenditure would arise in a market entry if the complementary resources of the partners could be matched. The uncertainty of payoffs faced by the partners committed to the expenditure is also a determining factor of JVs. If they reduce the costs of the JV or it ends in failure, the partners will equally benefit or share the risks respectively. On the contrary, if one partner undertakes a successful development whilst the other fails and that the high cost of development expenditure is more than offset by

the competitive advantage which results from the economic development it is better not to have the JV. The size of payoff by being the successful company in a failed JV is also important. Thus the deterrent factor to form a JV is when the portion of development expenditure more than offset the possible advantage that could be gained.

#### 4.8 A theoretical analysis of intra-European direct investment vis-a-vis merger and joint ventures

This study has discussed three main areas, namely, the theoretical approaches of FDI, mergers and joint ventures as forms of FDI and the European economic integration. This section attempt to explain the relationships between them by suggesting a diagrammatic representation. The recognition of European economic integration as a phenomenon which promotes competition within the EC is essential in explaining the level of intra-European FDI. Generally it is shown to encompass the three main theoretical approaches of FDI as shown in figure 5. This figure replicates figure 4 which illustrate the approaches that explain MNE and include the European economic region in the diagram. The basic model of the eclectic paradigm which represents the essence of FDI is retained in figure 5. The OLI advantages, however, are now focussed on those that arise from intra-European direct investment. The intersection of the boundaries of the European economic

region and competitive international industry denote that a substantial portion of intra-European direct investment are within similar industries and therefore need to be analysed from an international industry approach. The vertical line that separate the MNE from the host country represent the relative level of industrial development between the home and host country in a heterogenous European economy.

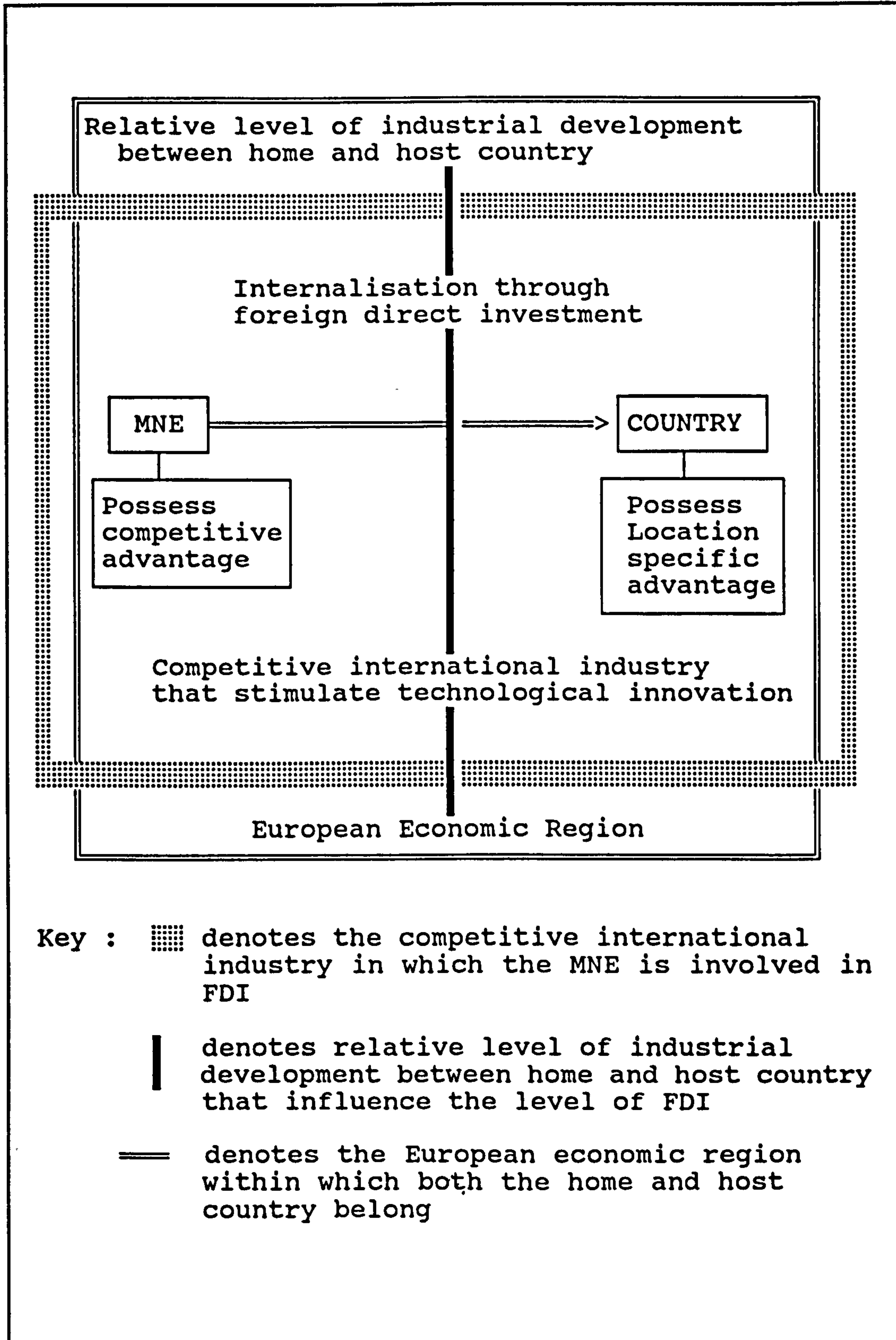


Figure 5 : A Model illustrating FDI within Europe



The basic model of FDI based on the eclectic paradigm is used to explain FDI in Europe. The effects of economic integration on ownership, location and internalization (OLI) advantages have to be examined as these advantages are more likely to arise from natural market imperfections. With the removal of non-tariff and fiscal barriers, the ownership advantages of firms already operating within the EC are strengthened. This could be attributed to greater factor mobility due to reduced documentation and liberalisation of capital movements. The harmonisation of technical standards also encourage greater opportunities to realise technological advantages through product differentiation. The distribution of location advantages are also affected by the removal of the barriers which may encourage regrouping of firms operations within the EC.

With regard to the removal of technical barriers, opportunities for technological accumulation will arise in locations that encourage extension and adaptation of technology. The liberalisation of public procurement, a mover advantage, will encourage market entry into a previously closed market. The economic integration which substantially reduce government interventions and restrictions will thus cause the internalization process to be more concerned with natural market imperfections when reducing or eliminating transaction costs. In this respect

internalization advantages could be gained from intangible assets and public goods like research and development, technology and management expertise.

The international industry approach which focuses on competition within the international industry and its particular emphasis on technology as forms of both ownership and location advantage is also considered. It is important to note that the phenomenon of integration specifically relate to intra-industry competition within Europe as shown in the diagram. With the economic integration and a global emphasis on technological competitiveness, the approach would suggest a concentric strategy based on technological inter-relatedness. Greater opportunities for R&D due to a larger market and reduced technical barriers are impetus to FDI. The macro economic developmental approach which focuses on differences between national and technological developments is particularly relevant in a heterogenous Europe. The recognition of these as well as other social, language and cultural differences, and their possibility of being complementary in promoting intra-European FDI is realised with economic integration.

In the global dimension mergers and joint ventures have been used by EC firms to improve their competitive position vis-a-vis US and Japanese firms in world markets

(Hamill, 1990). The corporate strategy of choosing mergers and joint ventures as forms of intra-European FDI depends significantly on the degree of controlling interest with the accompanying risk involved. The opportunities for investment are similar for both mergers and joint ventures but with merger regulation favouring cooperative joint ventures. Both will benefit from the OLI advantages mentioned above. However, the extent and degree of involvement vary with the familiarity of the firm with the market especially with respect to the costs and risks involved. European mergers will be a preferred choice when the acquiring firm is familiar with the market and the risks involved. A joint venture with a dominant partner could also be an alternative for firms that would prefer greater control but need to share the risks and costs involved in the venture. Finally, an equally owned JV could be a choice for investment in an unfamiliar market and the possible high risks involved.

In order to ascertain the impact of European economic integration on intra-European direct investment, the announcements of mergers and joint ventures are analysed. The announcements represent the signal for the anticipation of possible economic benefits of such investment. The empirical approach as outlined in chapter 5 attempt to identify any market reaction in share prices to these

announcements made by U.K. firms. A significant market reaction will indicate that the market is sensitive to these announcements and could be indicative of its net effects.

## CHAPTER 5

# EVENT STUDY METHODOLOGY : ITS RELEVANCE AND APPLICATION IN THIS STUDY OF MERGERS AND JOINT VENTURES

### 5.1 Introduction

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This chapter explains event study methodology and its relevance to the study of European mergers and joint ventures. The methodological problems that arise in this study are dealt with in this chapter. The techniques employed and the data analysed are also described in this chapter.

### 5.2 What is an Event Study ?

An event study is an empirical investigation of the relationship between security prices and economic events. The assumed stochastic behaviour of share prices is tested for any change that could be affected by the disclosure of firm-specific events. The most general form of null and

alternative hypothesis for such test would be (Gonedes, 1978):

$$H_0 : f(R_j/y_i) - f(R_j) = 0 \text{ for all } y_i$$

$$H_1 : f(R_j/y_i) - f(R_j) \neq 0 \text{ for at least one } y_i$$

where

$R_j$  is the return for security  $j$  in an event period of interest

$y_i$  is a signal from an information structure  $\eta$  announced in the event period which potentially affects security  $j$

$f(R_j/y_i)$  is the distribution of  $R_j$  conditional on the information signal  $y_i$  from the information structure  $\eta$ ; and

$f(R_j)$  is the marginal distribution of  $R_j$

According to the null hypothesis, for the signal  $y_i$  to possess an information content, the distribution of the rate of return on the share conditional on the signal  $y_i$  should differ from the marginal or unconditional distribution. The statistical measures for the distribution include both expected return and variance.

The methodology have subsequently evolved into either *efficiency-oriented* event studies and *information content-oriented* event studies. The former have focused attention on the expected value of the return distribution which gives the following hypothesis,

$$H_0 : E(R_j/y_i) - E(R_j) = E(u_j/y_i) = 0 \text{ for all } y_i$$

$$H_1 : E(R_j/y_i) - E(R_j) = E(u_j/y_i) \neq 0 \text{ for at least one } y_i$$

It is assumed in event studies that an efficient capital market, which reflects all available relevant information, exists<sup>42</sup>. The notion of efficient capital markets depend on the definition of information and value of information (Hirshleifer and Riley, 1979). The information structure ( $\eta$ ) mentioned above is the message about various events which may happen. Its value depends on whether the recipient could act on the message and derive benefits from the resulting action, which could be mathematically represented as follows :-

$$V(\eta) = \sum q(m) \text{ MAX } \sum p(e/m) U(a, e) - V(\eta_0)$$

$q(m)$  - marginal probability of receiving message

$p(e/m)$  - conditional probability of an event  $e$ , given a message  $m$

$U(a, e)$  - utility resulting from an action  $a$  if an event  $e$  occurs, known as the benefit function

$V(\eta_0)$  - the expected utility of the decision maker without the information

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<sup>42</sup> According to Fama (1976), an efficient capital market is where the joint distribution of security prices,  $f_m(P_{1t}, P_{2t}, \dots, P_{nt}/\eta_{t-1}^m)$ , given the set of information that is used to determine security prices at  $t-1$ , is identical to the joint distribution of prices that would exist if all relevant information available at  $t-1$  were used,  $f(P_{1t}, P_{2t}, \dots, P_{nt}/\eta_{t-1})$ . At equilibrium,  $f_m(P_{1t}, P_{2t}, \dots, P_{nt}/\eta_{t-1}^m) = f(P_{1t}, P_{2t}, \dots, P_{nt}/\eta_{t-1})$ .

$V(\eta^m) - V(\eta) = 0$  i.e. the net of cost or utility value<sup>43</sup> of the given information is zero

Thus, if an information structure is to have value, the market, when using such information, will affect its distribution.

The basis of an event study is that a market which is efficient conditional to a particular information structure at equilibrium could be used to price an asset or security. In identifying the value of information due to a particular event, the abnormal return is measured for this change in the value of the information structure. This implies that  $u_{jt} = f( V(\eta^m) - V(\eta) )$  where  $u_{jt}$  is the abnormal return.

The information content oriented studies have analysed volatility of returns and trading volume. Volatility increases if the frequency of information arrival and/or the relative quantum of impact on expectation increases. If stock prices rationally reflect fundamental values, then volatility can be taken as a measure of information content. In this respect Ross (1989) has formally demonstrated that 'in an arbitrage free economy, the volatility of prices is directly related to the rate of

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<sup>43</sup> The utility value of information has THREE components, namely, the utilities of the payoffs, given an action; the optimal action, given receipt of message; and the probabilities of a state of nature provided by the messages.



*flow of information to the market'*. The choice of variance of abnormal returns as a measure of volatility assumes an efficient market, that the abnormal return series is serially uncorrelated and the *ex ante* abnormal return on an event date is zero. Although there is some noise or excess volatility but it is unresolved empirically as no evidence could be quantified (Fama, 1988). In this study both the abnormal returns and volatility of share prices are examined.

### 5.3 Behaviour of share prices and investors

The behaviour of both the share prices and investors are discussed in the three theories of time series behaviour of prices and the four hypothesis explaining investor behaviour. The three theories of time-series behaviour of share prices are the fair-game model, the martingale or sub-martingale and the random walk.

The *fair-game model* is based on the behaviour of average returns, where abnormal return ( $\epsilon_{j,t+1}$ ) is the difference between actual return and expected return conditional on a prior information structure,  $\epsilon_{j,t+1} = R_{j,t+1} - E(R_{j,t+1}/\eta_t)$ . It also states that across a large number of samples, the expected return of a security  $j$  equals its actual return,  $E(\epsilon_{j,t+1}) = E[R_{j,t+1} - E(R_{j,t+1}/\eta)] = 0$ .

The *sub-martingale* is a fair game model with the expectation that tomorrow's price is to be greater than today's price. It implies that both the experimental and control portfolios will have positive returns but the difference between them will be zero since there is no superior portfolio,  $E(P_{j,t+1}/\eta_t) > P_{j,t}$  and  $E(R_{j,t+1}/\eta_t) > 0$ . In contrast to the sub-martingale, the *martingale* is a fair game model with the expectation that tomorrow's price is the same as today's price,  $E(P_{j,t+1}/\eta_t) = P_{j,t}$ .

In the case of *random walk* there is no difference between the distribution of returns conditional on a given information structure and the unconditional distribution of returns. Thus it requires the parameters of a distribution to be the same with or without an information structure; the sample to be drawn independently from the same distribution; the mean of the underlying distribution does not change over time; and that a fair game result is obtained.

A particular distinguishing requirement of the random walk from the fair game model is that all drawings are to be independently taken from the same distribution. This implies that in random walk serial covariances between returns for any lag must be zero whilst significant serial covariances of one period returns are not inconsistent with

a fair game. But in both fair game and random walk the residuals are expected to have zero serial covariances.

Forsythe, Palfrey and Plott (1982) identified four hypothesis which assume that investors know with certainty what their own payoffs will be across time, but they also know that different individuals may pay different prices because of differing preferences. The first hypothesis known as the *naïve hypothesis* assert that asset prices are completely arbitrary and unrelated either to how much they will pay out in the future or to the probabilities of various payments. The second hypothesis called the *speculative equilibrium hypothesis* asserts that all investors base their investment decisions entirely on their anticipation of other individuals behaviour without any necessary relationship to the actual payoffs that the assets are expected to provide. The third hypothesis known as the *intrinsic hypothesis* states that prices will be determined by each individual's estimate of the payoffs of an asset without consideration of its resale value to other individuals. The fourth hypothesis which may be called as the *rational expectations hypothesis* predicts that prices are formed on the basis of the expected future payouts of the assets including their resale value to third parties. Thus a rational expectations market, which is an efficient market because prices will reflect all information, is

assumed in this study.

#### 5.4 Basic structure of an event study

The steps involved in conducting an event study (Bowman, 1983) are identifying the event of interest, modelling the security price reaction, estimating the excess returns, organising and grouping the excess returns and analysing the results.

In identifying the event, the type of event, its definition and timing need to be precisely spelt out. The modelling of security price returns require a theoretical proposition as to the possible reaction to the event and testing of the hypothesis. The problem of having to test two hypotheses jointly may need to be addressed i.e. real gains or stock market inefficiency. When estimating the excess returns three fundamental choices: choice of measure of security return, choice of underlying model and choice of estimation technique, need to be made. Each of these choices will affect the underlying assumptions made as to the 'normality' or other behaviour of returns examined.

The two dimensions, across sample (cross sectional) and across time (time series), of the aggregation process involves a choice of simple returns or compounded returns. There are three ways of calculating portfolio average

return, namely, *Arithmetic Portfolio Method* :  $R_p = \{1 + (\sum_i (\sum_j R_{j,i} / N) / T)\}^T - 1$ , where  $j = 1, N$  is the no. of announcements by firms and  $i = 1, T$  is the time period, *The Buy and Hold Strategy Method* : where the portfolio's mean return is calculated by first adding the returns for each firm across time then averaging these longer term returns over the portfolio and *The Rebalancing Strategy Method* where an equally weighted portfolio is rebalanced at the end of each period before the mean return is calculated. The computation of cumulative abnormal returns is based on the rebalancing strategy.

The choice of the method can be important in relation to the size effect as explained in the next section. With regard to the *measurement interval*, a shorter measurement interval to detect information effects is much more preferable (Morse, 1984; Brown and Warner, 1980, 1985; Dyckman et al, 1984). In the determination of the *estimation period* (EP) and the *test period* (TP), there is a trade off between including more observations to increase statistical accuracy and not going too far forward or back from the TP in case the parameters of the return generating mechanism have shifted. However data availability considerations often constrain the choice. In analysing the results the issue over whether parametric or non-parametric testing or both should be employed can arise. In addition

the commonly known three step procedure, which models returns, calculate abnormal returns and performs multivariate regression on the cross-sectional returns, as a metric explanation could also cause such problem of data mining (Bowman, 1983, p 575).

## 5.5 Methodological problems and issues in event study using daily data

### 5.5.1 Event date and other events

The dating of the event is problematic due to the element of uncertainty and that a series of events may be closely related. The difficulty in being exact on the announcement date can cause reasonable uncertainty especially when daily data is used. This particularly affects the ability to detect abnormal returns. Dyckman et. al (1984) use simulations to show the extent of this problem and found that the likelihood of detecting abnormal returns diminishes as event date uncertainty increases and to deal with this problem, they suggest accumulating residuals over the uncertain period or use a multi-day estimation approach. Brown and Warner (1985) also use simulations to investigate the use of event period longer than one day. They pointed out the problem of autocorrelation if longer event periods are used, however they find little evidence of resultant test statistic misspecification. They also found that the power of the

test decreases with the increase in the event period. In this study the difficulty in being exact about the announcement date is a problem in the joint venture announcements.

Problems that relate to series of events could be either due to the culmination of several approaches or the making of several acquisitions. In the case of the former empirical work has been done by way of case studies (Ruback, 1983 ; Balakrishnan 1988), which emphasize the importance of studying longer event histories. The problem of multiple acquisitions or several acquisitions will cause difficulty in finding an adequate pre/post announcement event free period. The exclusion of firms involved in frequent acquisitions will cause serious problem of sample selection bias. Schipper and Thompson (1983), alternatively looked at announcements of programs of acquisition activity but again it biases against firms engaging in one off acquisitions. But it will be interesting if comparisons could be made between the two i.e. firms actively involved in acquisitions with those which do not. Thus the problem of sample selection bias in merger studies remain unresolved for the moment (Belcher, 1989). The difficulty in isolating other domestic or foreign corporate events are noted in this study.

5.5.2 *Correlation Problems*

An important assumption in testing the hypothesis of non-zero average abnormal returns is that the abnormal returns are cross-sectionally independent. If the event date is the same as the calendar date or the firms are in the same or related industry the problem of dependence is exacerbated. Under such situation the standard deviation of the cross-sectional sample mean is underestimated. Jaffe (1974) suggested the *Jaffe Standardized Residual Test (JSR)* which measures the cross-sectional variance of a sample via the residual variance of an equally weighted portfolio of securities measured directly over time. Though the test takes into consideration the possibility of cross-correlation it assumes constant residual variances from the estimation to the test period. Collins and Dent (1984) use both analytical and simulation techniques to investigate the cross-sectional correlation of returns and found that '*severe errors of inference*' occur if the event is at one calendar date for all firms and is industry specific. They proposed an econometric procedure based on generalised least squares estimation which handle the problem of non-zero contemporaneous cross-sectional correlation in event time. However the technique is cumbersome when the sample is large.

Brown and Warner (1985, pp 20,21) constructed a test



statistic based on the variance of the mean excess return estimated from the time series of the estimation period mean excess returns, a procedure which adjusts for any cross-sectional dependence. They find that where event dates are not clustered in calendar time, and the data are daily, '*... dependence adjustment can actually be harmful compared to procedures which assume independence*'. Also, the use of sophisticated methodologies based on seemingly unrelated regression model offer very little increase in the power of tests (Belcher, 1989). The problem however is not anticipated since there were no clustered event dates in the study.

### 5.5.3 *The Size Effect*

The size effect also known as the small firm effect occur when the average returns for small firms tend to exceed those of larger firms. The size is measured as the market value of equity. It becomes more pronounced when daily data are used to calculate returns. It is of concern because it can cause bias in the abnormal returns. Two main factors have been suggested as causes of the size effect. According to Roll (1981), he explained the effect in terms of biased estimates of beta ( $\beta$ ) resulting from non-synchronous trading. Downward bias in measures of risk will cause corresponding upward bias in average risk adjusted returns. The second factor to explain the size

effect is the bid-ask spread in closing prices. Blume and Stambaugh (1983) investigated this effect and suggested that the bid-ask effect is potentially much larger than any effect due to nonsynchronous trading. They conclude that size effect biases can be greatly reduced by calculating returns using a buy and hold strategy.

Dimson and Marsh (1986) investigated two ways of dealing with the effect. The first involved the construction of a set of diversified control portfolios for different capitalisation classes and the other based on the market model. The former is sometimes called the *companion portfolio approach*,

$$\epsilon_{it} = R_{it} - R_{p(i)t} \quad (\text{Size Control})$$

$$\epsilon_{it} = R_{it} - R_{p(i)t} - (\beta_{im} - \beta_{p(i)}) (R_{mt} - R_{ft}) \quad (\text{Size \& Beta})$$

where  $R_{p(i)t}$  is the return on the companion portfolio of shares of the same capitalisation category as security  $i$ . It is found that the size and beta control effectively removes the size effect from the CAPM.

The second way is to use the market model, which will control the size effect if that effect is assumed constant over time. Thus any upward bias in returns of small firms will be incorporated in the intercept term ( $\alpha_i$ ) which will

be the same for the estimation period and the period over which abnormal returns are investigated. Dimson and Marsh (1986) based on their evidence suggest that any of the above ways should be used in any study where the size effect could be important and the companion portfolio approach appears to give the best results.

#### 5.5.4 *Thin Trading*

The problem of thin trading as found by Dimson (1979) occur when the estimated betas of frequently traded shares rise as the interval increases and vice versa, and is due to price-adjustment delays and trading frictions which cause the observed returns to depart from their true values<sup>44</sup>. Scholes and Williams (1977) and Dimson (1979) resolve these problem by adjusting the beta. The Scholes-Williams (SW) beta estimator assumed that although trades are non-synchronous, a transaction takes place in every measurement interval; in addition it is assumed that price-adjustment delays arise only through non-synchronous trading so that an observed transaction price is the true price at the time of the transaction. Scholes-Williams ignores higher-order lead and lag betas which can lead to an inconsistent beta estimator that contains intervalling-

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<sup>44</sup> The three types of price adjustment delay that arise due to friction are when transaction price adjustments lag quotation price adjustments, when specialist-dealers impede quotation price adjustments as they rebalance their inventory position and when quotation price lags for individual traders who accumulate 'news bits' for periodic review. The first type is relatively brief but the latter two might be quite protracted.

effect bias (Cohen et al, 1983). The conflict between the choice of model and statistical accuracy was interestingly raised by Dimson (1979) who stated that on the one hand the greater the number of lead and lag terms that are estimated, the better potentially is the model's representation of reality and on the other hand, the more such terms are included, the greater is the potential noise introduced in the estimation process.

In stabilising risk measures under conditions of thin trading, Dimson and Marsh (1983) used the *trade to trade method* when regressing returns. They also showed that mean beta estimates tend to decline rapidly as trading become less frequent. This method which only address the price distortion introduced by lagging quotation prices by matching measurement times with trading times (Schwert, 1977; Franks, Broyles and Hecht, 1977 ; and Marsh, 1979) ignores possible bias by other causes of price adjustment delays (Cohen et al, 1983). However, the difficulties of knowing the exact transaction time and the availability of an index continuously updated in which each security trades nearly continuously are inherent in the method. In addition the performance of these procedures according to simulation studies done by Dyckman et al (1984) and Brown and Warner (1985) had failed to improve the power of tests to detect abnormal performance resulting from the use of the more

sophisticated procedures for estimating beta.

Other studies used trading volume as proxy for trading frequency. Although Atchison (1986) extended the work to allow the exact trading frequency to be known, he found that the power of the test is not improved by the use of the Dimson (1979) or Scholes and Williams (1977) estimation procedures. Heinkel and Kraus (1988) propose another method of filling in the missing returns based on information rather than trading. But the benefits of this technique have not been properly investigated. Another technique which estimates *Asymptotic Beta Coefficients* developed by Cohen et al (1983) states that by regressing the beta estimate and the inverse of the interval and increasing the interval the beta estimate approaches an asymptote. They also showed that the expected price adjustment delay is inversely related to the security's market value. A more sophisticated test was then developed by Fowler-Rorke (1983) who corrected Dimson's two lead and lag technique. This technique is used and will be further explained in this study.

#### 5.5.5 *Variance as a measure of volatility of returns*

The problem of non-normality squared residuals occurred in the Beaver-Patell's method where the skewness and kurtosis are different from zero. Marais (1984)

extended the technique and suggested an improved estimator for the variance of the Beaver-Patell U statistic based on the sample kurtosis of the regression residuals and the 'bootstrap' estimates of variance. In order to deal with this problem another non-parametric rank technique developed by Walmsley et al (1992) is used in this study.

#### 5.5.6 *Parametric and non-parametric tests*

The effect of *non-normality* in daily returns on parametric test performance was examined by Corrado (1989). The power of this test in large samples depend on mean and variance and not its shape, and for the test to be optimal, the underlying distribution must be normal. Thus the power of the parametric *t*-test reduces as the distribution becomes skewed and leptokurtic. Due to this limitation, a *nonparametric rank test* is preferable over parametric *t*-test for a broad spectrum of fat-tailed distributions (Corrado, 1989). This is because it does not require the distributions to be symmetrical as also required by other nonparametric *signed rank test* and *sign tests* (Brown and Warner, 1980) and its specification is less affected by an event-date excess returns variance increase than are the parametric tests.

The *nonparametric test on mean ranked excess returns* is analagous to a *t*-test of mean excess returns. In the

following equation,  $K_{it}$  denote the rank of the excess return  $u_{it}$  in security  $i$ 's time series of excess returns during the estimation and test period:

$$K_{it} = \text{rank}(u_{it}), t \in (\text{EP and TP})$$

where  $u_{it} \geq u_{jt}$  implies  $K_{it} \geq K_{jt}$  and  $n \geq K_{it} \geq 1$ .

The average rank  $E(K)$  is  $(n+1)/2$  where  $n$  is total number of days within the estimation and test periods. The rank statistic substitutes  $(K_{it}-K)$  for the excess return  $A_{it}$ , yielding the following test statistic,

$$T_5 = \frac{1}{N} \frac{\sum_{i=1}^N (K_{it} - K)}{S_k}$$

where

(1)

$$S_k = \sqrt{\frac{1}{n} \sum_{t=t_{\text{beg}}}^{t_{\text{end}}} \left( \frac{1}{N} \sum_{i=1}^N (k_{it} - k) \right)^2}$$

In order to allow for missing returns, ranks are standardized by dividing by one plus the number of non missing returns in each firms's abnormal time series,

$$U_{it} = \frac{K_{it}}{(1+M_i)} \quad (2)$$

where  $M_i$  is the number of nonmissing returns for security  $i$ .

This yields order statistics for the uniform distribution with an expected value of one-half (Lehman, 1986). The rank test statistic substitutes  $(U_{it} - 1/2)$  for the abnormal returns  $u_{it}$ , yielding this day 0 test statistic,

$$T_u = \frac{1}{\sqrt{N}} \frac{\sum_{i=1}^N (U_{i0} - \frac{1}{2})}{S_u}$$

where

(3)

$$S_u = \sqrt{\frac{1}{n} \sum_{t=t_{beg}}^{t_{end}} \left( \frac{1}{\sqrt{N_t}} \sum_{i=1}^{N_t} (U_{it} - \frac{1}{2}) \right)^2}$$

where  $N_t$  represents the number of nonmissing returns in the cross-section of  $N$ -firms on day  $t$  in event time.

The ranking procedure then transforms the distribution of security excess returns into a uniform distribution across the possible values regardless of any asymmetry in the original distribution. This procedure precludes the misspecification of the nonparametric signed rank and sign tests documented by Brown and Warner (1980, 1985).

Similar to the  $t$ -test, cross-sectional variance adjustment is done for the non-parametric rank test. The standardised abnormal returns  $u_{it}$  are defined as follows



$$X_{it} = \frac{u_{it}}{S_0} \quad (4)$$

The cross-sectional variance-adjusted rank test is obtained by first dividing the ranks of abnormal returns by one plus the number of non missing returns

$$U_{it} = \frac{\text{rank}(X_{it})}{(1+M_i)} \quad (5)$$

and then proceeding to calculate the rank test statistic as follows

$$T_u = \frac{1}{\sqrt{N}} \frac{\sum_{i=1}^N (U_{i0} - \frac{1}{2})}{S_u} \quad (6)$$

where

$$S_u = \sqrt{\frac{1}{N} \sum_{t=t_{beg}}^{t_{end}} \left( \frac{1}{\sqrt{N_t}} \sum_{i=1}^{N_t} (U_{it} - \frac{1}{2}) \right)^2}$$

In financial event studies, a sign test is commonly used to specify statistical significance independently of an assumption concerning the distribution of the abnormal returns from which data are collected. Brown and Warner (1980), (1985) and Berry, Gallinger, and Henderson (1990) demonstrated that a sign test assuming an excess return

median of zero is misspecified. Thus Corrado and Zivney (1992) demonstrated the power of the sign test by not assuming the median to be zero but uses the sample excess return median to calculate the sign of an event date excess return. It is expected to be correctly specified no matter how skewed the distribution of security excess returns and it may be efficient compared to a t-test for distributions with heavier tail weights than the normal distribution (Corrado and Zivney, 1992).

Let the median excess return in security  $i$ 's time series of excess returns be denoted by  $median(u_i)$ . For each day in the sample period, the sign of each abnormal return is calculated as

$$G_{it} = \text{sign}(u_{it} - \text{median}(A_i)) \quad (7)$$

where  $\text{sign}(x)$  is equal to +1, -1, or 0 as  $x$  is positive, negative, or zero, respectively. From the signs  $G_{it}$ , this day 0 test statistic is constructed

$$T_g = \frac{1}{\sqrt{N}} \sum_{i=1}^N \frac{G_{I0}}{S_g}$$

where

(8)

$$S_g = \sqrt{\frac{1}{n} \sum_{t=t_{beg}}^{t_{end}} \left( \frac{1}{\sqrt{N_t}} \sum_{i=1}^{N_t} G_{it} \right)^2}$$

where  $N_t$  is the number of non missing returns in the cross-section of  $N$ -firms on day  $t$  in event time.

A cross-sectional variance-adjusted sign test is obtained by defining the signs of the abnormal returns as follows,

$$G_{it} = \text{sign} (X_{it} - \text{median} (X_i))$$

and then proceeding to calculate the rank test statistic as follows

$$T_g = \frac{1}{\sqrt{N}} \sum_{i=1}^N \frac{G_{I0}}{S_g}$$

where

(9)

$$S_g = \sqrt{\frac{1}{n} \sum_{t=t_{beg}}^{t_{end}} \left( \frac{1}{\sqrt{N_t}} \sum_{i=1}^{N_t} G_{it} \right)^2}$$

In a recent study by Corrado and Zivney (1992) the performance of the sign test is compared with a parametric t-test and a nonparametric rank test. Both the sign test

and the rank test are equally well specified under a complete null hypothesis of no abnormal performance and no variance increase. In the presence of an event date variance increase, all three test statistics display some misspecification, but the parametric *t*-test is most severe. When abnormal performance is present, the rank test dominates both the sign test and the *t*-test. Due to the robustness of the non-parametric rank test, it is adopted in the study.

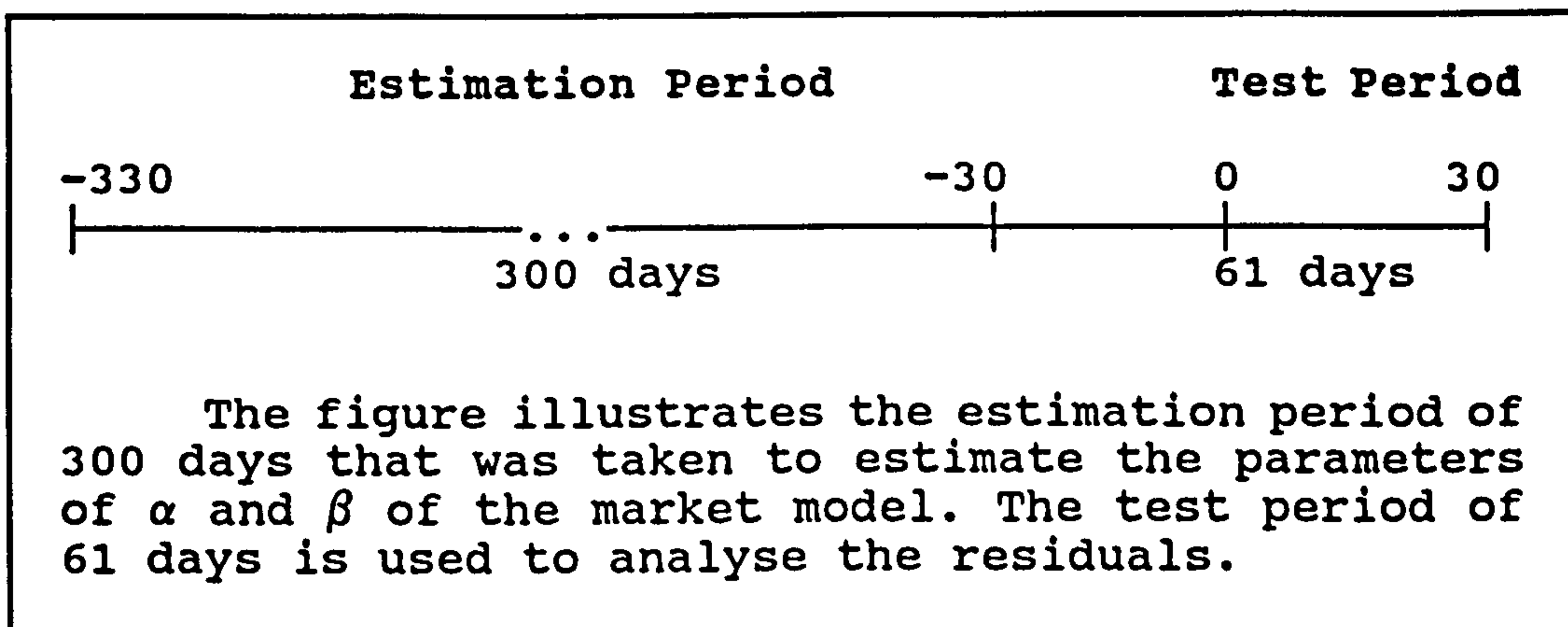
#### 5.6 Methodology of this study

The main methodology employed in the study of European mergers and joint ventures is the event study methodology. In addition to this, a profile analysis of individual joint venture announcements is also adopted in the study. The event study methodology is adopted to detect any share price reaction to the announcement of UK acquisitions of European firms and the announcement of joint ventures with European firms. The underlying assumptions are that the UK stock market is efficient and the market impact of the announcements will reflect the value of the mergers.

This study takes into consideration the methodological problems that may arise due to the sample data, the limitations of statistical analysis and the identification of strategic factors contributive to the wealth effects of

the mergers.

The sample includes announcements by public listed corporations whose share prices are available on the Datastream. The share prices are required for a period of 361 days, that is, 330 days prior to the announcement date, the announcement day and 30 days after the acquisition date. This allows for an estimation period of 300 days and a 61 day event window as shown in Figure 6.



**Figure 6 : A TIME CHART SHOWING THE ESTIMATION AND TEST PERIODS**

The choice of the period and the selection of the sample in this study is done by taking into consideration the difficulty in systematically excluding announcements of other corporate events that occur during the test period (TP). Secondly, the problems of thin trading arising from daily data were noted and adjusted accordingly using the Fowler-Rorke technique. Finally, the factors relating to the monetary policy of U.K.'s entry into Exchange Rate

Mechanism (*ERM*) and the regional factor in distinguishing acquisitions within the EC from those outside the EC are also examined to identify any significant reaction.

Both the abnormal returns and the volatility of such returns are analysed using parametric and non-parametric statistical tests. Inferences about information content based on the abnormal returns require an expectation model of whether the news is favourable or otherwise. The variance-based tests of information content however do not use the sign of abnormal returns and hence avoid the errors generated by specification of subjective expectation models (Yadav, 1992).

#### 5.6.1 *Choice of returns and benchmark*

In the calculation of returns, the logarithmic returns are preferred over discrete returns as they are analytically more tractable when linking together sub-period returns to form returns over longer intervals, and empirically more likely to be normally distributed and thus conform to the assumptions of standard statistical techniques (Strong, 1992).

$$R_{jt} = \text{Log}_e \left[ \frac{P_{jt}}{P_{jt-1}} \right] \quad (10)$$

where  $R_{jt}$  = logarithmic returns of price relatives of security  $j$ .

The models selected to estimate the abnormal returns are the *mean adjusted returns model*, the *market adjusted returns model* also known as *(0,1) model* and the *market model*.

The mean adjusted returns model assumes that the *ex-ante* expected return for a given security  $i$  is equal to a constant  $K_i$  which can differ across securities. The model and the expected abnormal return ( $u_{jt}$ ) are given by :

$$E(R_j) = K_j \quad (11)$$

$$u_{jt} = R_{jt} - K_j \quad (12)$$

where expected return on security  $j$  is from period  $t \in TP$  (where TP is the test period).

The (0,1) model assumes that *ex ante* expected returns are the same for all securities and are therefore equal in any period to the expected market return. Despite its insensitivity to individual securities it provides a robust measure. The FTALL share index is used as the proxy for

market returns.

$$E(R_j) = E(R_m) \quad \text{for all } j \quad (13)$$

The *ex post* abnormal return on security  $j$  in period  $t$  that controls for market effects is given by :

$$u_{jt} = R_{jt} - R_{mt} \quad (14)$$

where the marginal expected return on security  $j$  in period  $t \in TP$  (where  $TP$  is the test period) is conditioned on the realisation of the market return in period  $t$ .

The market model (MM) is employed in many event studies and assumes that returns are generated according to the following mechanism :

$$R_{jt} = \hat{\alpha}_j + \hat{\beta}_j R_{mt} + u_{jt} \quad (15)$$

where  $u_{jt}$  is a mean zero, independent disturbance term in period  $t$ . The parameters  $\alpha_j$  and  $\beta_j$  are OLS estimates of the market model and are assumed stationary.

An abnormal return for the security of firm  $j$  on day



$t$  is shown in the equation below

$$u_{jt} = R_{jt} - (\hat{\alpha}_j + \hat{\beta}_j R_{mt}) \quad (16)$$

The information signal from the announcement of merger is meant to be captured by the unsystematic (*firm specific*) component of  $u_{jt}$  as it is assumed that the information signal is independent of  $R_{mt}$ . The problem of *event date clustering* does not arise in this analysis. The market model benchmark is also favoured because it results in smaller variances of abnormal returns, leading to more powerful statistical tests, and that it produces smaller correlations across security abnormal returns giving closer conformity to standard statistical tests (Beaver, 1981).

No consideration was given to include the industry index in the market model. This is because a previous study by Thompson (1988), that used daily data and compared three models by using market index, industry index and both indices, found very little difference in the power of tests between these three models using either simple or continuously compounded returns.

#### 5.6.2 *Adjustments for thin trading on estimated betas*

In this study, the need to allow for more than a single lead or lag interval between return on an individual security and that of the market return could not be

ignored. With reference to Fowler and Rorke's (1983) comment on risk measurement, the need to consider two leads and two lags intervals in estimating beta is adopted in this study to identify any significant difference of abnormal returns with and without adjustments for thin trading. Thus the following model is used to estimate the adjusted beta :

$$\beta_j = \frac{(1+\rho_1+\rho_2)}{(1+2\rho_1+2\rho_2)} \beta_{j+2} + \frac{(1+2\rho_1+\rho_2)}{(1+2\rho_1+2\rho_2)} \beta_{j+1} + \beta_{j0} + \frac{(1+2\rho_1+\rho_2)}{(1+2\rho_1+2\rho_2)} \beta_{j-1} + \frac{(1+\rho_1+\rho_2)}{(1+2\rho_1+2\rho_2)} \beta_{j-2} \quad (17)$$

where  $\rho_1$  and  $\rho_2$  are estimates of the first- and second-order serial correlation coefficient of the market index.

The adjusted alpha will then be derived from the equilibrium equation as follows :

$$\hat{\alpha}_j = R_j - \beta_j R_m \quad (18)$$

It is interesting to note that though both Scholes-Williams and Fowler and Rorke attempted to adjust for estimated Beta due to thin trading, the standard error of beta was assumed constant at  $t_0$ , that is, without lag or lead. The standard error of regression for each model

however need to be adjusted and determined separately.

### 5.6.3 Parametric Tests

In testing for the significance of abnormal returns  $u_{it}$ , the t-statistic assumes independent drawings from an identically distributed normal population. This therefore implicitly assume that the mean effect of the event is identical across securities; that variances of abnormal returns are equal across securities; and there is no cross-correlation in abnormal returns.

If the above assumptions are violated that is the variances of abnormal returns exhibit heteroscedasticity or are not cross sectionally independent, this will lead to inefficient estimates of the average abnormal return. Also, the calculation of standard errors with no cross sectional independence leads to biases in the estimated standard errors. These will result in the statistical significance tests to be misspecified.

Alternatively, a more refined test procedure developed by Patell (1976) known as *Patell Standardised Residual (PSR) Test* is used in this study. Patell notes that when the parameters of the market model are estimated from observations outside the test period (TP), that is in the estimation period (EP), abnormal returns are prediction

errors rather than true residuals and should therefore be standardised according to the following formula:

$$V_{jt} = \frac{u_{jt}}{s_j \sqrt{C_{jt}}} \quad (19)$$

where

$$s_j^2 = \frac{\sum_{t=1}^T u_{jt}^2}{T-2} \quad (20)$$

is an estimate of the variance of the residuals during the EP;

$$C_{jt} = 1 + \frac{1}{T} + \frac{(R_{mt} - R_m)^2}{\sum_{v=1}^T (R_{mv} - R_m)^2} \quad (21)$$

reflects the econometric adjustment for the increase in variance for prediction outside the EP;

T = the number of observations in the EP; and

$$R_m = \frac{1}{T} \sum_{v=1}^T R_{mv} \quad (22)$$

The standardised average abnormal return is then accumulated in a normalised sum which is distributed unit normal for large N as follows:

$$Z_{vt} = \frac{\sum_{j=1}^N V_{jt}}{\sqrt{\sum_{j=1}^N \frac{T_j^{-2}}{T_j^{-4}}}} \quad N(0,1) \quad (23)$$

where  $T_j$  = the number of EP observations for security  $i$

The  $Z_{vt}$  statistic is thus a measure of the statistical significance of the abnormal return.

A similar test can be constructed on the cumulative abnormal returns. The cumulative abnormal return of each individual security  $i$  during the test period is  $W_{jL}$ .

$$W_{jL} = \frac{1}{\sqrt{L}} \sum_{t=1}^L \frac{u_{jt}}{S_j \sqrt{C_{jt}}} \quad (24)$$

and the t-statistic is  $Z_{WL}$

$$Z_{WL} = \frac{\sum_{i=1}^N W_{iL}}{\left[ \sum_{i=1}^N \frac{T_i^{-2}}{T_i^{-4}} \right]^{1/2}}$$

where  $L$  is the number of observations cumulated in the TP (Patell, 1976 pp. 256-7).

As for the parametric tests on volatility of the abnormal returns during the test period, Patell's  $U_{jt}$  statistic which emphasizes variability is employed. The statistic is as follows :

$$U_{jt} = \frac{u_{jt}^2}{C_{jt} S_j^2} \cdot \frac{T_j - 4}{T_j - 2} \quad (26)$$

where  $E(U_{jt}) = 1$

$$\text{Var}[U_{jt}] = \frac{2(T_j - 3)}{(T_j - 6)} \quad (27)$$

$$Z_{vt} = \frac{\sum_j^N (U_{jt} - 1)}{\left[ \sum_j^N \frac{2(T_j - 3)}{(T_j - 6)} \right]^{1/2}} \quad (28)$$

Since  $U_{jt}$  is constructed directly from  $V_{jt}$ , both statistics measure some of the same effects. If the expected value of  $u_{jt}$  is not equal to 0, but its variance remains  $C_{jt} \sigma_j^2$ , both  $V_{jt}$  and  $U_{jt}$  will signal rejection of their respective null hypotheses. Conversely, if the expected value of  $u_{jt}$  is equal to 0, but the variance is greater than  $C_{jt} \sigma_j^2$ ,  $U_{jt}$  will correctly signal rejection of its null

hypothesis.  $U_{jt}$  can therefore be viewed as a direct test of increased variance.

The main weaknesses of the Beaver-Patell  $U_{jt}$  are that market model is assumed to be normally distributed when there is substantial evidence of skewness and kurtosis in actual market model residuals (Peel et al, 1992) and contemporaneous cross-sectional correlation in event time is assumed to be zero, an unlikely assumption when events are clustered in event time.<sup>45</sup>

Though PSR recognises the possibility of different residual variances across securities, and weights the abnormal returns accordingly, the PSR test continues to assume cross-sectional independence of abnormal returns and no change in residual variances between the EP and the TP.

#### 5.6.4 *Non-parametric tests*

The *non-parametric rank tests*, which rank the Patell's statistic, are then conducted to determine the consistency of the results obtained from the parametric tests. Patell's  $U_{jt}$  statistic is biased against the null hypothesis as the

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<sup>45</sup> The bias can be serious because kurtosis can be extremely high especially for daily data sampled over a relatively long interval (Peel, Pope & Yadav, 1992) where the dataset effectively becomes a mixture of distributions. Marais (1984) used an improved estimator for the variance of the U statistic based on the sample kurtosis of the regression and the 'bootstrap' estimates of variance.

distributions are leptokurtic and therefore will likely lead to a high probability of rejection of the null hypothesis. The bias can be serious because kurtosis can be extremely high especially for daily data sampled over a relatively long interval (Peel, Pope & Yadav, 1992). In this respect Walmsley, Yadav and Rees (1992) developed the non-parametric rank test to correct this problem.

The tests are used for both abnormal returns and volatility of abnormal returns. In testing the significance of the metric, they are ranked accordingly as  $x_{jt}$ , and the mean of the ranks are then computed for each day  $t$ , as follows

$$x_t = \frac{1}{N} \sum_{j=1}^N x_{jt} \quad (29)$$

In testing the significance of the volatility of returns, the ranking is done on Patell's  $U_{jt}$  statistic, that is  $x_{jt}$  is the rank of  $U_{jt}$  for company  $i$  on day  $t$  whereas for the abnormal returns it is PSR ( $V_{jt}$ ) that is ranked.

Assuming that successive  $x_j$ 's are independent, hence

$$\text{Var}(x_t) = \frac{\text{Var}(x_{jt})}{N} \quad (30)$$



Therefore

$$SE(x_t) = \frac{\sqrt{\text{Var}(x_{jt})}}{\sqrt{N}} \quad (31)$$

The expected value of  $x_t$  is

$$E(x_t) = \frac{M+1}{2} \quad (32)$$

where  $M$  is the number of days within the test period ( $t \in \text{TP}$ ).

The test statistic used to judge the significance of  $x_t$ , the mean ranking for a particular day  $t$  in the event window is:

$$Z_t = \frac{(x_t - E(x_t))}{SE(x_t)} \quad (33)$$

Under the null hypothesis  $Z_t$  is a unit normal variate.

#### 5.6.5 Sample segmentation and multivariate regression

The sample is segmented into announcements of U.K. acquisitions within the EC and acquisitions outside EC in order to identify any significant impact of the community. Also segmentation of the sample is conducted based on the

timing of the U.K.'s entry into the ERM on 6th October 1990. This is to analyse the impact of the level of economic integration. It is interesting to note that the number of acquisitions within the EC decrease from 275 before U.K. entry into the ERM to 117 after the entry.

The 11 day window of standardised cumulative abnormal return using the Fowler and Rorkes adjusted market model is then regressed with several factors which include both quantitative and qualitative variables. The Fowler-Rorke model of abnormal returns are used as they are the most sophisticated of the three metrics calculated. These are the log values of market capitalization (*LNMTVL*) and the ratio of value of acquisition to market value (*LNRTIO*), and the dummy variables for acquisitions within EC (*EC*), acquisitions after U.K. entry into ERM (*ERM*), Gross Domestic Product per Capita (*GDPK*) and industry groups : consumer goods (*CONGDS*), capital goods (*CAPGDS*) and services (*SERVCS*).

$$W_{j11} = \gamma_0 + \gamma_1 ERM + \gamma_2 EC + \gamma_3 GDPK + \gamma_4 LNRTIO + \gamma_5 LNMTVL + \gamma_6 CAPGDS + \gamma_7 CONGDS + \gamma_8 SERVCS + \epsilon_j \quad (34)$$

where  $W_{j11}$  = the standardized cumulative abnormal return in the 11dy window

$ERM$  = 1 for acquisitions after U.K.'s entry into ERM and 0 for those before the entry

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- EC = 1 for acquisitions within EC and 0 for those outside EC
- GDPK = 1 for more developed economy and 0 for less developed economy based on Gross Domestic Product per Capita.
- LNRATIO = Log<sub>e</sub> of ratio of value of acquisition to the market value of the acquiring firm
- LNMKTVL = Log<sub>e</sub> of market value of the acquiring firm
- CAPGDS = Industry producing capital goods
- CONGDS = Industry producing consumer goods
- SERVCS = Industry that provide services
- OTHERS = Industry that provide miscellaneous goods

The model was also analysed by excluding some of the dummy variables to identify for any significant relationship of the explanatory variables.

### 5.7 Profile analysis of joint ventures

The profile analysis of joint venture announcements is done by analysing a sub-sample of the announcements. The selection of the sub-sample is based on announcements which show significant cumulative market reaction. By examining individual announcements and their surrounding corporate events, this analysis should provide some insights on the possible factors affecting the market reaction.

### 5.8 Hypotheses formulation

The potential economic benefits of FDI as have been discussed in chapter 4 will be enhanced with the process of European economic integration. Thus the announcements of

European mergers and joint ventures represent the economic events in which information structure may include the potential economic benefits. In view of this phenomenon the hypotheses are formulated to determine the significance of this economic event by employing tests on volatility; and identifying its potential economic benefits, by employing tests on abnormal return. The null hypotheses are as follows :

5.8.1 *Hypotheses of European Merger Announcements*

$H-I_0$  : *The announcements of European mergers will have no significant effect on share prices of acquiring U.K. plcs.*

$H-IA_0$  : *The announcements of European mergers within the European community do not significantly affect the share prices of acquiring U.K. plcs.*

$H-IB_0$  : *There is no significant difference between the effect of announcements of European mergers within the European community and those outside the community on share prices of acquiring U.K. plcs.*

$H-IC_0$  : *There is no significant difference between*

the effect of announcements of European mergers made in the period before U.K.'s entry into ERM and those after the entry on the share prices of acquiring U.K. plcs.

5.8.2 *Hypotheses of European joint venture announcements*

*H-II<sub>0</sub>* : The announcements of European joint ventures will have no significant effect on share prices of U.K. plcs.

*H-IIA<sub>0</sub>* : There is no significant difference between the effects of announcements of European joint ventures made in the period before U.K.'s entry into ERM and those after on share prices of U.K. plcs.

The results and analysis of the tests on these hypothesis are reported and explained in chapter 6.

## CHAPTER 6

# RESULTS AND ANALYSIS OF MARKET IMPACT OF EUROPEAN MERGER AND JOINT VENTURES ANNOUNCEMENTS

### 6.1 Introduction

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The sample description and results of the study are presented in this chapter. A description of the sample and data of European mergers and joint ventures are discussed in the next section. The results of the market impact of European mergers and joint ventures that involve U.K. firms are based on the event study methodology mentioned in chapter 5. The analysis of the results is then made in the context of the theoretical discussions on FDI and the phenomenon of European economic integration. Both results are also compared based on the methodology employed.

### 6.2 Sample and data description

#### 6.2.1 *European Mergers*

A sample of 490 European merger announcements by UK plcs from 1989 to 1991 is obtained from Acquisitions

## RESULTS AND ANALYSIS OF STUDY

Monthly. Only 447 of these announcements concerned public listed companies whose share prices are available on the Datastream<sup>46</sup>. As shown in *table IX* seventeen of these announcements involve U.K. acquisitions in more than one European country. There were no announcement of confounding events on the announcement day.

All the announcements of acquisitions are subsequently completed as there were no unsuccessful bids. No detailed information was available on the forms of acquisition, such as, cash and competitive bids. But generally European mergers involve friendly bids.

The sample include announcements of U.K. acquisitions in both EC and non-EC countries in Europe. From *table IX* we can see that 84% of the acquisitions are in the EC countries with most of the acquisitions occurring in France, Germany and Netherlands. Amongst the acquisitions in EC countries, acquisitions in France ranked highest with 25.5% of total number of UK acquisitions within EC followed by Germany, Netherlands and Spain as shown in *table IX* and *Figure 7*.

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<sup>46</sup> The announcement date is the most recent offer date made to the offeree as reflected in the Acquisition Monthly. It corresponds to the official announcement date in the Financial Times.

TABLE IX DETAIL BREAKDOWN OF ANNOUNCEMENTS OF UK PLC ACQUISITIONS WITHIN EUROPE					
TARGET COUNTRY		1989	1990	1991	TOTAL
BELGIUM	EC	7	10	5	22
DENMARK	EC	4	3	2	9
EIRE	EC	5	5	1	11
FRANCE	EC	37	41	17	95
GERMANY	EC	29	29	27	85
GREECE	EC	1	1	1	3
ITALY	EC	15	9	6	30
LUXEMBOURG	EC	1	0	1	2
NETHERLANDS	EC	31	26	11	68
PORTUGAL	EC	5	3	1	9
SPAIN	EC	19	14	9	42
ACQUISITIONS WITHIN EC		154	141	81	376
AUSTRIA		2	1	0	3
CZECHOSLOVAKIA		0	0	1	1
FINLAND		0	0	2	2
HUNGARY		1	0	3	4
NORWAY		3	1	1	5
POLAND		1	1	1	3
SWEDEN		4	6	6	16
SWITZERLAND		6	2	4	12
OTHERS*		4	1	3	8
SUB-TOTAL		175	153	102	430
ANNOUNCEMENTS INVOLVING MORE THAN ONE COUNTRY**		10	4	3	17
TOTAL		185	157	105	447
<p>Note : * This refers to announcements which did not specify the European nation</p> <p>      ** This refers to announcements of more than one acquisition in two or more countries</p>					



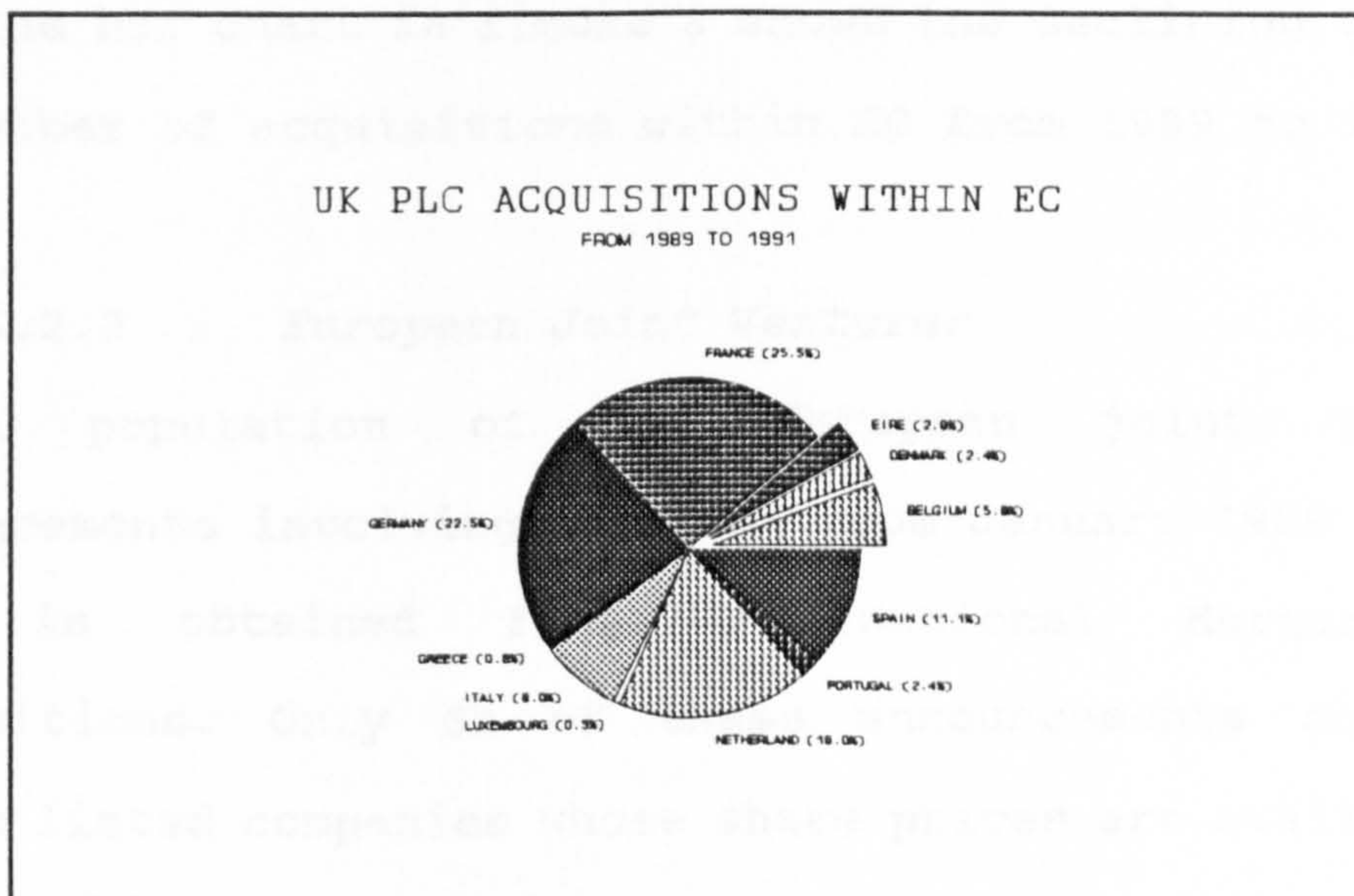


Figure 7 : A PIE CHART OF U.K. PLC ACQUISITIONS

The pie chart in figure 7 shows the highest proportion of number of U.K. acquisitions in Europe occurring in France followed by Germany and Netherlands.

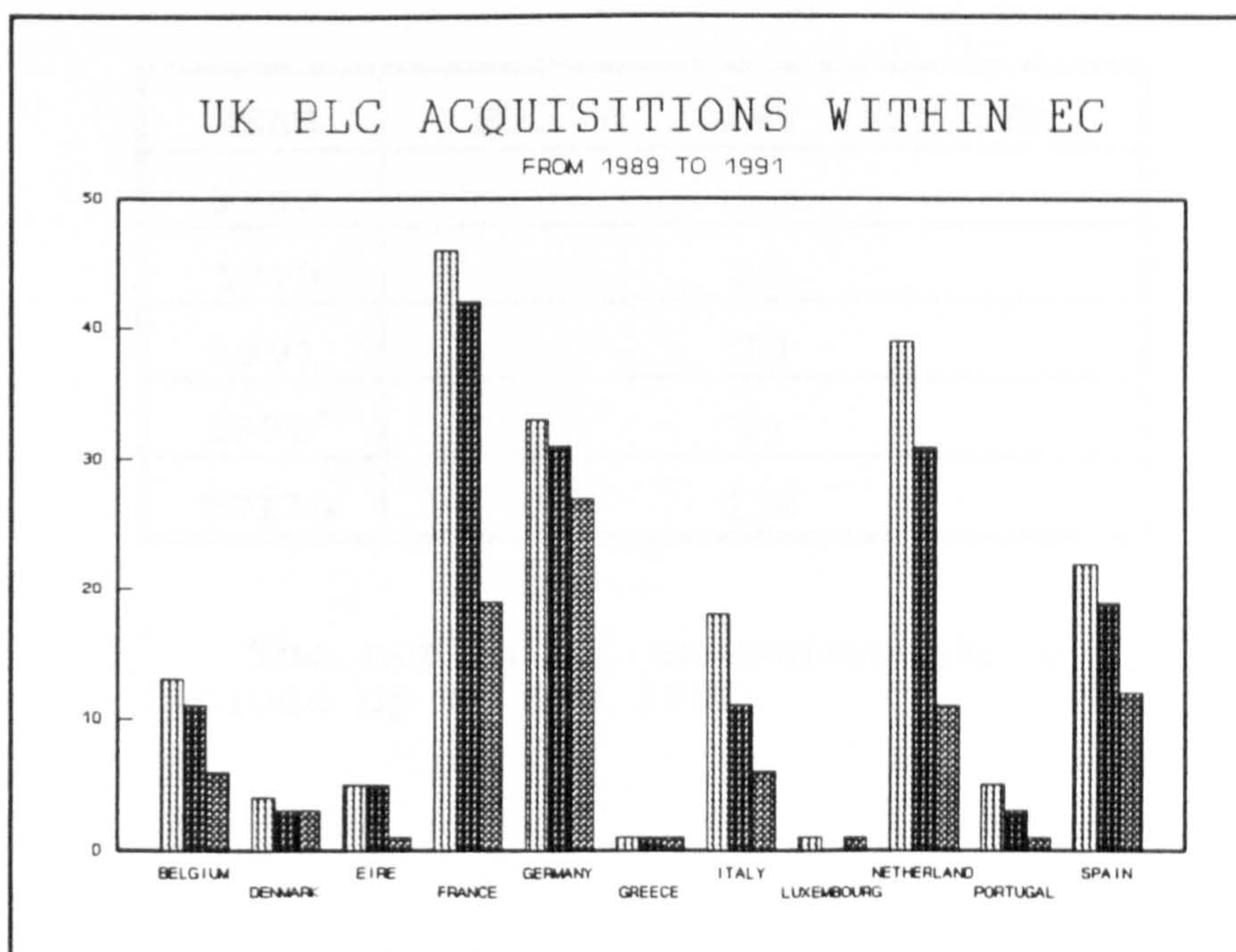


Figure 8 :A BAR CHART OF U.K. PLC ACQUISITIONS

## RESULTS AND ANALYSIS OF STUDY

The bar chart in figure 8 shows the declining trend in the number of acquisitions within EC from 1989 to 1991.

### 6.2.2 European Joint Ventures

A population of 118 European joint venture<sup>47</sup> announcements involving UK firms from January 1989 to June 1992 is obtained from International Mergers and Acquisitions. Only 69 of these announcements concerned public listed companies whose share prices are available on the Datastream. The announcement date corresponds to the official announcement date in the Financial Times. The number of joint ventures increased slightly in 1990 but is generally stable over the period as shown in table X.

**Table X : EUROPEAN JOINT VENTURES  
INVOLVING UK FIRMS**

YEAR	NO. OF JOINT VENTURES
1989	30
1990	37
1991	30
1992*	21
<b>TOTAL</b>	<b>118</b>

\* The number of announcements only include up to Jun 1992.

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<sup>47</sup> A European joint venture is a venture which involves at least a U.K. firm and a European firm.

The announcements only include joint ventures located in Europe. The breakdown of the sample according to joint venture partners and timing of announcements made before and after U.K.'s entry into the ERM are shown in *table XI*. From the table about 63% of the joint ventures have all partners from the EC.

**Table XI : A DETAIL BREAKDOWN OF SAMPLE OF EUROPEAN JOINT VENTURES**

	PRE-ERM	POST-ERM	TOTAL
EC PARTNERS	24	19	43
NON-EC PARTNERS	6	13	19
MIXED PARTNERS	5	2	7
TOTAL	35	34	69

Note :

EC Partners : refer to all partners of JV from the EC  
 Non-EC Partners: refer to at least one partner of JV from Non-EC

Mixed Partners : refer to at least one Non-European partner of JV

### 6.3 Results of European merger announcements

The results of parametric and non-parametric tests using event study methodology on European merger announcements by U.K. plcs are discussed for the whole sample as well sub-sample categorised according to identified factors. Both the results of tests on abnormal returns and their volatility are examined concurrently.

The distribution of the estimated parameters of  $\alpha$  and  $\beta$  using the market and Fowler-Rorke adjusted models are also examined as shown in table XII below. The table confirms the presence of thin trading since the estimated  $\beta$  is less than one. Though the Fowler-Rorke model is preferred the problem of extreme  $\alpha$  and  $\beta$  could not be ignored.

Table XII : DISTRIBUTION OF ESTIMATED PARAMETERS Alpha ( $\alpha$ ) AND Beta ( $\beta$ ) (N = 447)					
	MEAN	MEDIAN	TRMEAN	STDEV	SEMEAN
$\alpha$	-0.00009	-0.00005	-0.00006	0.00092	0.00004
$\beta$	0.81200	0.83210	0.80560	0.40400	0.01910
FR- $\alpha$	-0.00021	-0.00016	-0.00019	0.00092	0.00004
FR- $\beta$	1.14350	1.16820	1.14260	0.51080	0.02420
	MIN	MAX	Q1	Q3	
$\alpha$	-0.00696	0.00237	-0.00052	0.00040	
$\beta$	-0.15390	2.46994	0.53900	1.11120	
FR- $\alpha$	-0.00679	0.00219	-0.00067	0.00030	
FR- $\beta$	-0.23280	3.58650	0.78230	1.48740	

Note :  $\alpha$  and  $\beta$  are estimated using the market model, and FR- $\alpha$  and FR- $\beta$  are estimated using the Fowler-Rorke adjusted model.

### 6.3.1 Results for the whole sample

When a parametric t-test is done on volatility of abnormal returns for the whole sample a high incidence of rejection of t-values are found. This confirms the problem of fat-tailed distribution of the Patell's statistic (Peel

et al, 1992) and are thus not informative. However, the non-parametric rank tests on the volatility show positive significant t-values on the day before the announcement for all models. These are shown in *table XIII* and *Appendix I*<sup>48</sup>. These results imply that the null hypothesis  $H-I_0$ , which proposed no significant market reaction to the announcements is to be rejected.

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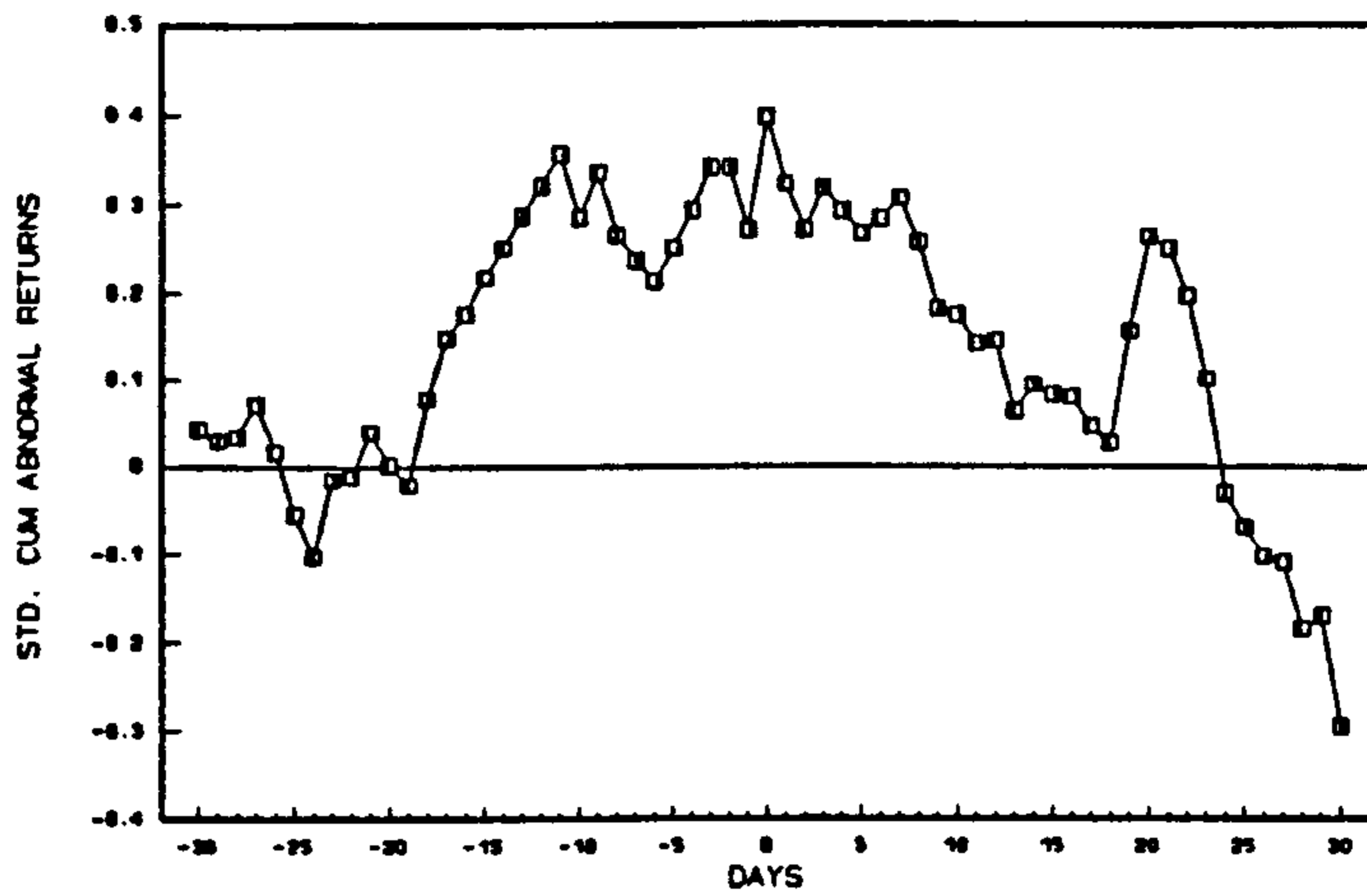
<sup>48</sup> There 8 other significant t-values out of 180 other observations scattered in the window.

Table XIII : NONPARAMETRIC TEST ON VOLATILITY

DAY	(0,1)	MKT	FR
-30	0.37	-0.25	-0.74
-29	0.88	2.28*	1.49
-28	-0.41	-0.19	0.04
.	.	.	.
.	.	.	.
-10	-1.76	-1.07	-1.18
-9	-0.61	-0.07	-1.09
-8	-1.31	-1.05	-1.55
-7	-1.90	-1.96*	-1.67
-6	-1.96*	-0.68	0.04
-5	0.21	-0.53	-0.60
-4	0.47	-1.76	-1.43
-3	-0.33	-1.08	0.01
-2	-1.05	-0.65	0.37
-1	3.55*	3.17*	2.22*
0	0.67	1.40	1.49
1	0.52	0.97	1.09
2	1.79	1.69	1.28
3	-0.21	0.48	1.81
4	-0.46	-1.42	-1.78
5	0.15	0.01	-0.33
6	-0.73	-0.32	-0.74
7	-0.62	0.04	-0.22
8	1.38	0.85	0.37
9	1.09	0.91	1.00
10	-0.35	0.01	-0.83
.	.	.	.
.	.	.	.
28	0.32	0.19	-0.28
29	-0.58	0.23	0.34
30	1.27	-0.06	0.34

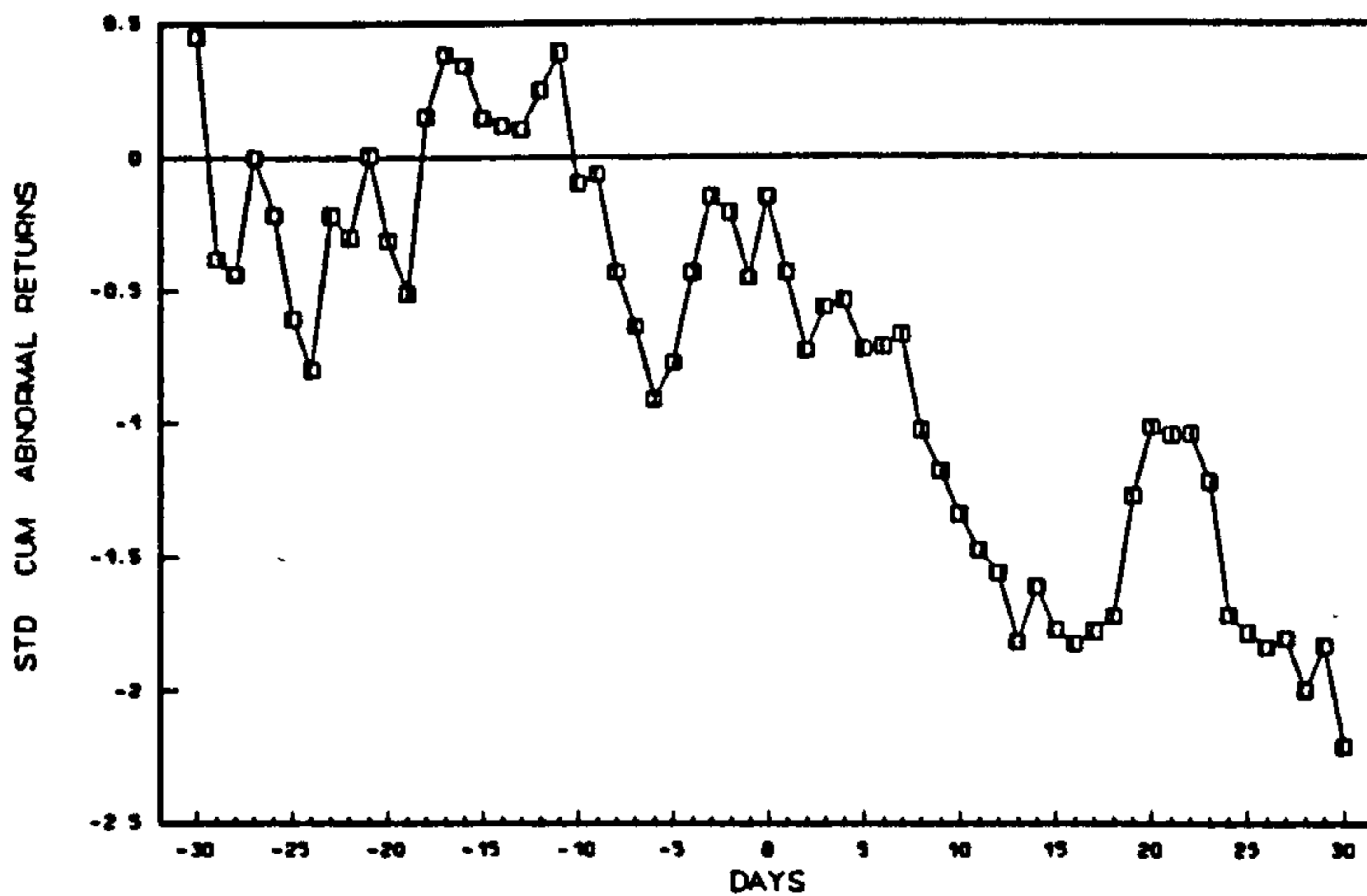
\* denotes at least 5% level of significance. (0,1), MKT and FR are the t-values using the market adjusted, market and Fowler-Rorke adjusted models. Refer to Appendix I.

When *Standardised Cumulative Abnormal Returns (SCAR)* is plotted over a 61 day window a common positive market reaction on the announcement day is shown for all the four models. These are shown in figures 9, 10, 11 and 12.



**Figure 9 : GRAPH OF SCAR USING THE MEAN ADJUSTED MODEL**

The SCAR plot using the mean adjusted model in figure 9 shows a positive trend during the test period which is indicative of possible market timing in a generally positive market trend<sup>49</sup>.



**Figure 10 : GRAPH OF SCAR USING THE MARKET MODEL**

<sup>49</sup> Due to its limitation for ignoring market wide effects the mean adjusted model is not used in the following analysis.

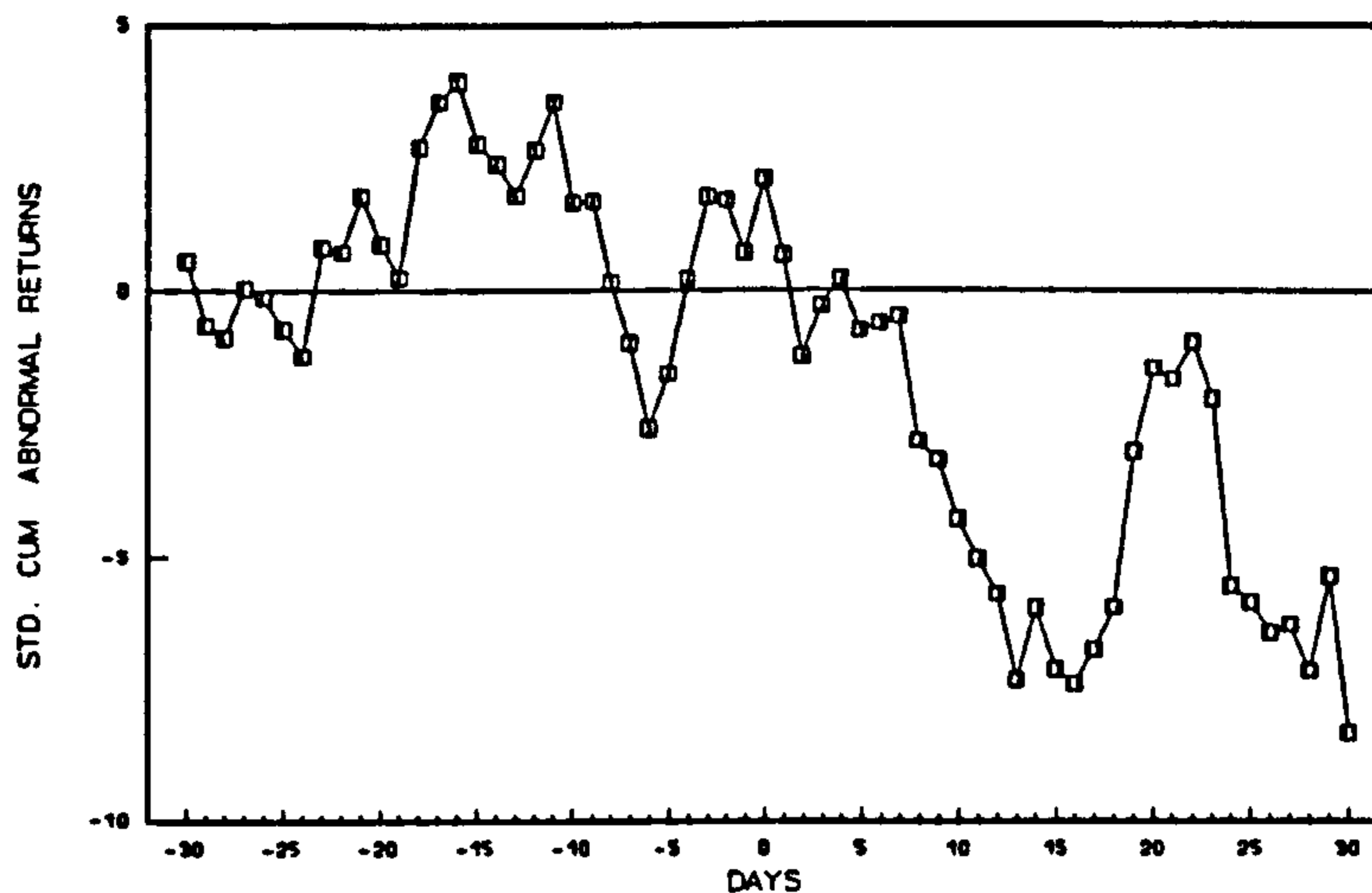


Figure 11: GRAPH OF SCAR USING THE FOWLER-RORKE MODEL

The market,  $(0,1)$  and F.R. adjusted model residuals however only show positive market reaction on day of announcement and a negative declining trend after the announcement. There is also a common positive market reaction from 18 to 20 days after the announcement which could be a post announcement event. The SCAR plot using the market adjusted  $(0,1)$  model appeared to be less erratic when compared to the market and Fowler-Rorke model. This indicates the problem of estimating the parameters and adjusting them for thin trading as discussed earlier.



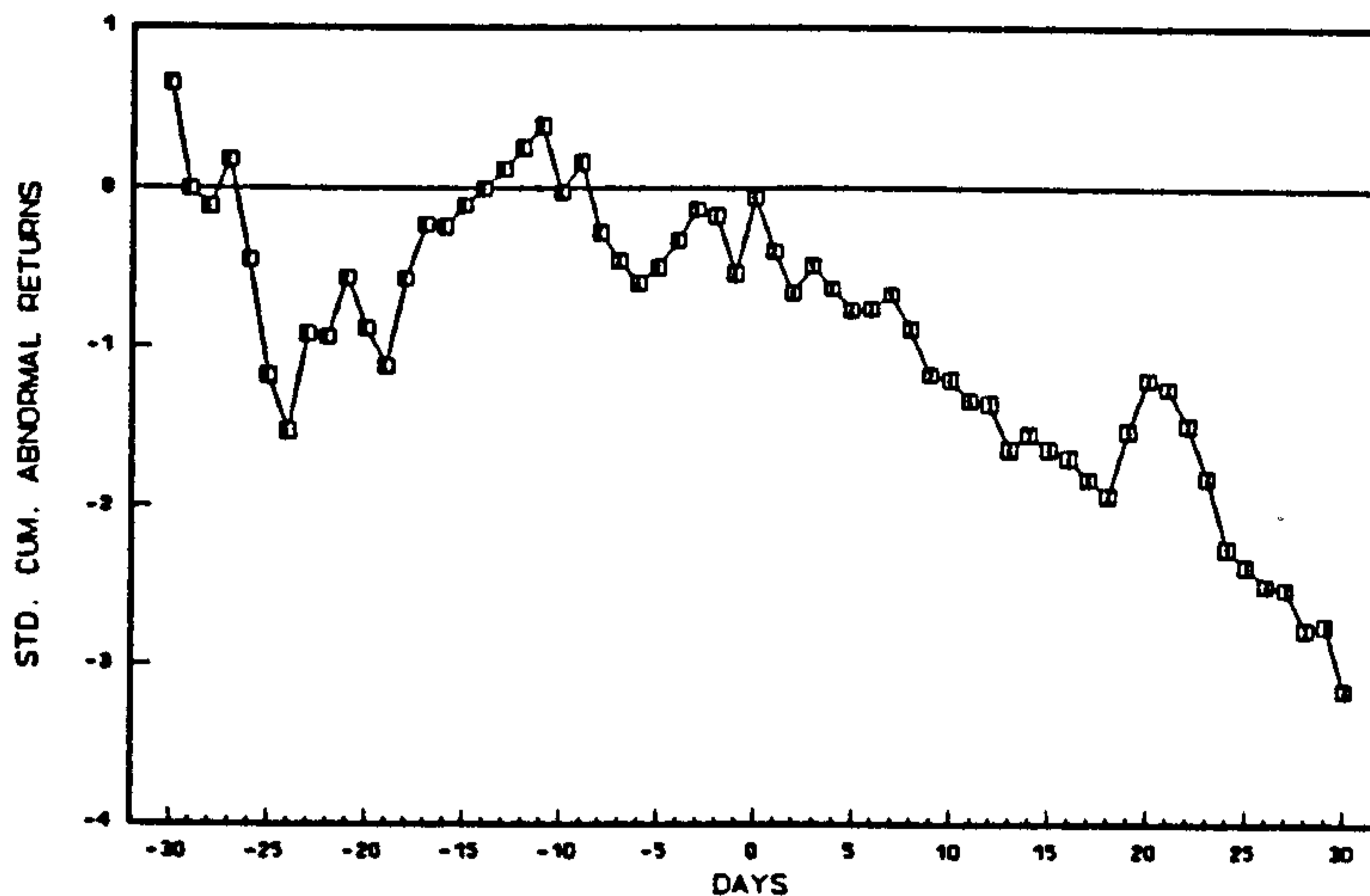


Figure 12: GRAPH OF SCAR USING THE MARKET ADJUSTED MODEL

The SCARs using the market adjusted, market and Fowler-Rorke adjusted models were however found to be significantly negative in the post announcement period as shown in *Table XIV* especially in the market adjusted and market models.

RESULTS AND ANALYSIS OF STUDY

**Table XIV : T-VALUES OF CUMULATIVE ABNORMAL RETURN USING THE THREE MODELS**

PERIOD	(0,1)	MKT	F.R.
<i>WHOLE SAMPLE</i> <i>N = 447</i>			
-2 TO +2	-1.45	-1.53	-1.36
-5 TO +5	-0.52	0.07	0.55
-10 TO +10	-2.02*	-2.26*	-1.71
-30 TO 0	-0.11	-0.15	0.38
0 TO +30	-3.88**	-2.66**	-1.63
<i>POST ERM</i> <i>N = 143</i>			
-30 TO 0	1.50	2.32**	3.76**
0 TO +30	-2.46**	-2.23*	-0.79
<i>PRE ERM</i> <i>N = 304</i>			
-30 TO 0	-1.16	-1.77	-2.11*
0 TO +30	-4.4**	-2.46**	-2.09*

Note: \*, \*\* denote 5% and 1% level of significance respectively.

TABLE XV: PARAMETRIC AND NONPARAMETRIC TESTS ON ABNORMAL RETURNS

DAY	(0,1)AR <sub>t</sub>	(1)	(2)	(FR)AR <sub>t</sub>	(1)	(2)
-30	0.032	0.68	0.35	0.028	0.57	0.17
-29	-0.020	-0.62	-0.08	-0.057	-1.23	-0.71
-28	-0.010	-0.21	0.71	0.003	-0.23	-0.36
.	.	.	.	.	.	.
.	.	.	.	.	.	.
-10	-0.104	-1.76	-1.55	-0.109	-1.88	-1.56
-9	0.035	0.85	1.08	-0.008	0.02	0.12
-8	-0.116	-2.04*	-1.05	-0.070	-1.54	-0.85
-7	-0.070	-0.86	-1.08	-0.073	-1.14	-0.56
-6	-0.042	-0.66	-1.58	-0.086	-1.59	-0.85
-5	0.031	0.38	0.69	0.079	1.01	0.88
-4	0.047	0.80	0.90	0.114	1.78	0.64
-3	0.051	1.03	1.89	0.093	1.57	1.21
-2	-0.029	-0.31	0.47	0.005	-0.07	0.41
-1	-0.139	-2.02*	-0.91	-0.065	-1.00	-0.70
0	0.136	2.48*	2.62*	0.080	1.40	0.56
1	-0.135	-1.94	-1.03	-0.081	-1.45	-0.35
2	-0.122	-1.46	-0.67	-0.126	-1.91	-0.30
3	0.035	1.04	0.06	0.056	0.95	1.06
4	-0.061	-0.87	-1.97*	0.025	0.51	-0.25
5	-0.058	-0.85	-1.17	-0.059	-0.97	-0.65
6	-0.013	0.04	1.21	0.013	0.13	0.36
7	0.015	0.47	1.16	0.016	0.13	0.50
8	-0.079	-1.40	-0.77	-0.118	-2.32*	-1.13
9	-0.131	-1.86	-2.04*	-0.023	-0.34	-0.48
10	-0.034	-0.29	-0.51	-0.068	-1.12	-0.70
.	.	.	.	.	.	.
.	.	.	.	.	.	.
18	-0.054	-0.86	-0.37	0.053	0.81	0.19
19	0.149	2.68*	1.84	0.179	2.93*	1.80
20	0.106	2.03*	1.76	0.090	1.55	1.12
21	-0.034	-0.40	-0.23	-0.002	-0.20	-0.06
22	-0.091	-1.76	-1.30	0.062	0.69	0.90
23	-0.180	-2.39*	-2.16*	-0.069	-1.06	-0.15
24	-0.189	-3.33*	-1.33	-0.197	-3.48*	-1.45
.	.	.	.	.	.	.
.	.	.	.	.	.	.
28	-0.124	-2.16*	-0.85	-0.049	-0.88	0.20
29	-0.012	-0.10	-0.03	0.108	1.80	1.10
30	-0.194	-3.33*	-1.49	-0.172	-2.98*	-1.22

Note : \* -denote at least 5% level of significance. (0,1)AR<sub>t</sub> and (FR)AR<sub>t</sub> are average abnormal return in percentage using market adjusted and Fowler-Rorke models. Columns (1) and (2) represent the parametric and non-parametric t-values. Please refer to Appendix II for the complete table

## RESULTS AND ANALYSIS OF STUDY

The initial results for the whole sample in *table XV* and *Appendix II* show a positive significant t-value on the day of announcement only for the (0,1) model with an average abnormal return of 0.1% but no clear significant result from the market and the Fowler-Rorke (F.R.) adjusted models<sup>50</sup>. The results of the non-parametric rank test on abnormal returns also confirm the positive significant t-values for the (0,1) model on the announcement day<sup>51</sup>. Although the (0,1) model is the only model that detects significant market reaction, the result is consistent for both parametric and non-parametric rank test. Similar result is also obtained using Corrado's (1989) non-parametric rank test. This indicates the model's robustness in detecting the market reaction. A cross-sectional sign test also shows that there are more positive reactions on the day of announcement. Though a positive significant reaction was found 19 days after the announcement using the parametric test, it was not significant when the non-parametric test is used<sup>52</sup>.

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<sup>50</sup> Although the (0,1) model residuals is the only one that show significant result, it is the most robust of the four models. Furthermore the estimation of the parameters of the market model show signs of thin trading which were then adjusted using the Fowler-Rorke adjustment.

<sup>51</sup> A non-parametric rank test developed by Corrado (1989) which rank all the excess returns in the whole period was also used to test the abnormal returns. A similar result is obtained for significant market reaction using mean adjusted returns and (0,1) models.

<sup>52</sup> No information could be found to explain for the positive significant market reaction.

### 6.3.2 Results for sub-samples based on EC and ERM factors

In order to analyze for any significant market reaction of acquisitions made within European community (EC) the sample was divided into two sub-samples of acquisitions made in the European community and acquisitions made outside the community. When a non-parametric test on volatility of abnormal returns for acquisitions within EC is done positive significant t-values were found before the day of announcement when (0,1) and market models are used. In contrast acquisitions made outside EC showed positive significant reaction only when the (0,1) model is used. Though the market reaction in terms of volatility is stronger for announcements within EC it could not be considered to be significantly different from those outside EC.

The results from both parametric and non-parametric tests also show positive significant t-values when the mean the (0,1) model is used and positive but not significant when both the market and F.R. adjusted model are used for acquisitions made within the EC on the day of announcement. No significant results were obtained for the acquisitions made outside EC. Thus hypothesis  $H-IA_0$  which states that there is no significant market reaction for announcements within the community is rejected but hypothesis  $H-IB_0$  which propose significant difference in market reaction could not be rejected. The results are shown in Table XVI and

Appendices III, IV and V.

**Table XVI : NONPARAMETRIC TEST ON VOLATILITY : WITHIN AND OUTSIDE EC**

DAY	01EC	MKEC	FREC	01NEC	MKNEC	FRNEC
-30	-0.05	0.24	0.11	0.43	-0.52	-1.11
-29	1.39	1.54	2.78*	-1.22	-0.67	-0.27
-28	0.22	-0.17	-0.11	-0.61	0.47	0.63
.	.	.	.	.	.	.
.	.	.	.	.	.	.
-10	-1.18	-0.88	-0.98	-1.54	-0.06	-0.33
-9	0.23	0.40	-0.54	-2.15*	-1.03	-1.37
-8	-0.92	-0.64	-1.34	-1.42	-0.73	-0.25
-7	-2.07*	-2.39*	-2.25*	0.21	0.89	1.66
-6	-1.82	-0.40	-0.05	-0.91	-0.88	0.23
-5	0.48	-0.42	-0.21	-0.18	0.47	-0.45
-4	-0.06	-1.85	-1.57	0.95	0.00	0.39
-3	0.35	-0.29	0.66	-1.91	-1.81	-1.57
-2	-1.53	-1.03	-0.01	0.87	0.56	0.55
-1	2.89*	2.64*	1.60	2.31*	1.73	1.74
0	1.05	1.24	1.13	-0.50	0.95	1.40
1	0.66	1.10	1.21	0.08	0.02	-0.10
2	1.83	1.78	1.37	-0.20	0.06	-0.28
3	-0.45	1.08	2.61*	-0.15	-2.06*	-2.02*
4	-0.47	-0.73	-1.27	-0.16	-1.89	-1.55
5	0.67	0.33	-0.17	-1.14	-0.22	-0.09
6	-0.97	0.01	-0.51	0.91	-0.28	-0.16
7	-0.14	0.17	-0.01	-0.67	-0.30	-0.26
8	1.09	0.47	0.44	0.85	0.92	-0.10
9	1.16	1.37	1.56	0.18	-0.93	-0.95
10	-0.52	-0.84	-1.67	0.61	2.32*	1.81
.	.	.	.	.	.	.
.	.	.	.	.	.	.
28	0.48	0.08	-0.52	0.30	0.72	0.53
29	-0.11	0.52	0.45	-0.87	-0.24	0.29
30	0.70	-0.62	0.04	1.90	1.34	0.71

\* denote at least 5% level of significance  
01EC, MKEC and FREC are t-values for announcements made within EC; and 01NEC, MKNEC and FRNEC are t-values for announcements made outside EC using market adjusted, market and Fowler-Rorke adjusted models respectively. Refer to Appendix III.

## RESULTS AND ANALYSIS OF STUDY

The sample is also analyzed based on announcement of UK's entry into ERM (Exchange Rate Mechanism) on October 6, 1990. The announcements before and after UK's entry into ERM are divided into sub-samples and analyzed for significant market reaction. The non-parametric test on volatility showed significant positive market reaction on the day before the announcement for the sub-sample of 304 announcements made before U.K.'s entry into ERM for all the models as shown in *table XVII* and *Appendix VI*. On the contrary the market reactions to announcements made after U.K.'s entry into ERM are found to be positive but not significant<sup>53</sup>.

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<sup>53</sup> The other exceptional positive significant reaction is for the Fowler-Rorke model on the day of announcement after U.K.'s entry into ERM.

RESULTS AND ANALYSIS OF STUDY

Table XVII: NON-PARAMETRIC TEST ON VOLATILITY :  
PRE- AND POST-ENTRY INTO ERM

DAY	01PRE	MKPRE	FRPRE	01POS	MKPOS	FRPOS
-30	-0.42	-0.92	-1.24	1.27	0.89	0.51
-29	0.63	1.48	1.38	0.65	1.87	0.62
-28	-0.65	0.65	0.68	0.22	-1.28	-0.93
.	.	.	.	.	.	.
.	.	.	.	.	.	.
-10	-1.98*	-1.33	-1.59	-0.23	0.04	0.24
-9	-0.46	-0.20	-0.82	-0.42	0.17	-0.73
-8	-1.23	-0.71	-1.20	-0.54	-0.81	-0.99
-7	-1.69	-1.48	-1.20	-0.90	-1.32	-1.20
-6	-1.81	-1.27	-0.78	-0.82	0.65	1.21
-5	0.41	-0.34	-0.46	-0.24	-0.44	-0.40
-4	-0.16	-1.90	-1.35	1.07	-0.34	-0.55
-3	0.61	0.52	1.40	-1.47	-2.66*	-2.03*
-2	-0.88	-0.14	0.74	-0.58	-0.95	-0.42
-1	3.29*	3.51*	2.16*	1.48	0.49	0.77
0	1.21	0.65	-0.00	-0.58	1.53	2.64*
1	0.67	0.85	1.31	-0.05	0.48	0.01
2	1.60	1.88	1.41	0.82	0.24	0.22
3	0.10	0.73	1.92	-0.52	-0.21	0.42
4	-0.00	-1.25	-1.73	-0.81	-0.69	-0.62
5	-0.01	-0.45	-0.71	0.27	0.68	0.46
6	0.12	0.58	-0.45	-1.47	-1.40	-0.67
7	0.41	0.39	0.12	-1.69	-0.50	-0.57
8	2.13*	1.07	0.81	-0.67	-0.06	-0.52
9	1.24	1.42	1.43	0.11	-0.46	-0.32
10	-0.08	0.55	-0.46	-0.51	-0.79	-0.80
.	.	.	.	.	.	.
.	.	.	.	.	.	.
28	0.11	-0.08	-0.36	0.41	0.46	0.04
29	-0.90	0.15	0.59	0.29	0.19	-0.26
30	1.04	0.02	0.52	0.72	-0.14	-0.15

\* denotes at least 5% level of significance. 01PRE, MKPRE and FRPRE are t-values of volatility for announcements made in the period before U.K. into ERM for the market adjusted, market and Fowler-Rorke adjusted models. Whilst 01POS, MKPOS and FRPOS are those after the entry. Refer to Appendix VI for the complete table.

Results from the parametric test on abnormal returns of post-entry announcements for all models show positive



## RESULTS AND ANALYSIS OF STUDY

significant market reaction on the day of announcement with an average abnormal return of 0.27% as shown in *table XVIII* and *Appendix VII*. In contrast the results of announcements before the entry show positive but not significant t-values with a lower average abnormal return of 0.07%. The non-parametric test show positive significant t-values only for the mean adjusted returns model and the (0,1) model for the announcements made after UK's entry into ERM and positive but not significant for the other two models.

When the sample period is divided between announcements made before and after U.K.'s entry into the ERM, the market reactions differ according to measures of volatility and abnormal return. A significant market reaction in terms of volatility was found before the entry and a significant positive market reaction in terms of abnormal return was found after the entry. The significant volatility before the entry imply a varied market anticipation on the day before the announcement. The significant positive abnormal return after the entry imply a positive expectation of the market to the announcement. These results imply that market reaction in terms of volatility and abnormal return changes with the U.K.'s entry into the ERM. Thus the null hypothesis of  $H-IC_0$ , which propose no significant change in market reaction between the periods is rejected.

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Table XVIII: PARAMETRIC TESTS ON ABNORMAL RETURNS :  
PRE- AND POST-ENTRY INTO ERM

DAY	PRE-ERM				POST-ERM			
	(0,1)		(F.R.)		(0,1)		(F.R.)	
	AR <sub>t</sub> %	T-V	AR <sub>t</sub> %	T-V	AR <sub>t</sub> %	T-V	AR <sub>t</sub> %	T-V
-30	0.04	0.75	-0.01	0.07	0.01	0.12	0.12	0.91
-29	-0.03	-0.74	-0.08	-1.43	-0.00	-0.01	-0.00	-0.07
-28	-0.03	-0.38	-0.07	-1.19	0.02	0.19	0.16	1.33
.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.
-10	-0.08	-1.34	-0.11	-1.68	-0.15	-1.16	-0.11	-0.88
-9	0.03	0.79	-0.02	-0.06	0.04	0.34	0.01	0.12
-8	-0.21	-2.93*	-0.17	-2.69*	0.08	0.67	0.15	1.20
-7	-0.10	-0.98	-0.08	-1.07	-0.01	-0.10	-0.05	-0.46
-6	-0.04	-0.59	-0.08	-1.22	-0.04	-0.31	-0.11	-1.03
-5	-0.04	-0.56	-0.05	-0.84	0.19	1.50	0.36	3.01*
-4	0.05	0.68	0.11	1.42	0.05	0.42	0.13	1.08
-3	0.08	1.32	0.14	1.88	-0.01	-0.11	0.00	0.03
-2	-0.11	-1.11	-0.13	-1.75	0.14	1.07	0.28	2.43*
-1	-0.17	-1.99*	-0.06	-0.85	-0.08	-0.67	-0.07	-0.52
0	0.07	1.54	-0.01	0.10	0.27	2.14*	0.27	2.33*
1	-0.10	-1.18	-0.10	-1.63	-0.21	-1.70	-0.04	-0.19
2	-0.01	0.18	-0.02	-0.23	-0.36	-2.84*	-0.36	-3.03*
3	0.16	2.54*	0.14	1.85	-0.24	-1.87	-0.12	-1.01
4	-0.08	-0.93	0.04	0.62	-0.02	-0.18	0.00	-0.00
5	-0.05	-0.58	-0.03	-0.48	-0.08	-0.66	-0.12	-1.02
6	0.04	0.70	0.03	0.30	-0.12	-0.95	-0.02	-0.20
7	0.02	0.54	0.01	0.03	0.01	0.05	0.03	0.19
8	-0.09	-1.40	-0.18	-2.89*	-0.05	-0.44	0.01	0.10
9	-0.17	-2.03*	-0.05	-0.61	-0.04	-0.33	0.030	0.28
10	0.00	0.23	-0.06	-0.83	-0.11	-0.85	-0.09	-0.76
.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.
28	-0.11	-1.77	-0.03	-0.69	-0.15	-1.25	-0.08	-0.56
29	-0.02	-0.17	0.09	1.24	0.01	0.06	0.15	1.37
30	-0.25	-3.63*	-0.22	-3.27*	-0.07	-0.59	-0.06	-0.50

Note:

\* - denote at least 5% level of significance.  
(0,1) and (F.R.) represent the market adjusted  
and Fowler-Rorke adjusted models.  
AR<sub>t</sub>% and T-V are average abnormal returns and  
t-values of the models. Similar results are  
obtained when non-parametric tests are used.  
Refer to Appendix VII for the complete table.

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Further analysis is done to distinguish announcements effects within the EC by segmenting the sample according to U.K.'s into ERM, that is, 117 announcements made after the entry and 275 announcements before the entry. The non-parametric test on volatility confirm similar result as found in the earlier test on ERM factor, that is, significant positive market reaction shown on the day before the announcement in the pre-entry sub-sample as shown in *table XIX*.

The results from the parametric test also show positive significant t-values of abnormal returns on the announcement day in the post-entry sub-sample for all the models when using the parametric test with an average abnormal return of 0.33%. The non-parametric test only show positive significant values for the mean adjusted return and the (0,1) model. No significant result is obtained for announcements made within EC and before UK's entry into ERM. These results are shown in *Appendices VIII, IX, X and XI*. Their implication is that the ERM factor has a greater impact on announcements made within EC as it distinguishes the market reactions within the community.

Table XIX: NONPARAMETRIC TEST ON VOLATILITY WITHIN EC  
PRE AND POST ERM

DAY	(0,1)PRE	MKTPRE	(0,1)POS	MKTPOS
-30	-0.35	-0.47	0.98	0.92
-29	1.25	1.90	0.89	2.18*
-28	-0.88	0.46	1.04	-0.91
.	.	.	.	.
.	.	.	.	.
-10	-1.38	-1.08	-0.06	0.04
-9	0.33	0.00	-0.08	0.72
-8	-1.08	-0.65	-0.03	-0.16
-7	-2.03*	-2.06*	-0.67	-1.23
-6	-1.60	-0.94	-0.89	0.70
-5	0.67	-0.38	-0.15	-0.18
-4	-0.58	-1.88	0.78	-0.51
-3	0.61	0.81	-0.30	-1.78
-2	-1.61	-0.66	-0.35	-0.87
-1	2.80*	3.14*	1.00	0.01
0	1.56	0.57	-0.47	1.38
1	1.10	1.14	-0.48	0.27
2	1.76	2.15*	0.66	-0.04
3	0.25	1.15	-1.21	0.23
4	0.05	-0.24	-0.93	-0.96
5	0.40	-0.09	0.61	0.74
6	-0.33	0.59	-1.27	-0.90
7	0.77	0.33	-1.45	-0.19
8	1.74	0.76	-0.66	-0.30
9	1.38	1.70	0.02	-0.11
10	-0.26	0.02	-0.55	-1.58
.	.	.	.	.
.	.	.	.	.
28	0.15	-0.44	0.65	0.81
29	-0.34	0.19	0.31	0.66
30	0.48	-0.17	0.55	-0.88

Note : \* - denote at least 5% level of significance  
Please refer to Appendix VIII for the complete table.

When the standardised cumulative abnormal return of an 11 day window<sup>54</sup> is regressed with several factors, it is

<sup>54</sup> The 11 day window, that is, -5 days to +5 days, is chosen because it is the shortest window that show a positive SCAR.

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found that the *ERM* factor shows a significant positive relationship confirming the previous analysis on *ERM*. No significant relationship was found for regional factor (*EC*), industry factors (*CAPGD*, *CONGD* AND *SERV*) and the level of economic development (*GDPK*) as shown in *table XX*. The relative value of acquisition also shows a significant negative relationship (*LNRATIO*). Though the model exhibits problem of heteroscedasticity, after adjustments for heteroscedasticity using White's (1980) technique the result still shows the estimates are hetero-scedasticitic consistent and significant for both *ERM* and *LNRATIO*. In order to avoid problems with outliers from normality the regression was also estimated in a non-parametric rank form. The *ERM* coefficient still shows a significant positive relationship and the *LNRATIO* has a negative coefficient and is no longer significant. The significant relationship between *ERM* and the cumulative market reaction indicates that *ERM* is an influencing variable. This confirms the previous results which identify *ERM* as an important factor. The *LNRATIO* coefficient only demonstrates that the transfer of wealth effect from the acquiror to acquiree depends on the relative size of the acquisition.

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TABLE XX : MULTIVARIATE REGRESSION OF SCAR(-5TO+5)

Regression Results for U.K. Acquisitions in Europe from 1989 to 1991 (Dependent Variable is CAR11DAY)

Regressn	1	2	3	4
Constant	-0.518 (-1.28)	-0.718 (-1.88)	-0.741 (-1.52)	-0.982 (-1.69)
ERM	0.326 (1.67*)	0.375 (1.94*)	0.381 (1.92*)	0.367 (1.84*)
EC	0.174 (0.59)		0.156 (0.54)	0.097 (0.32)
GDPK		0.327 (1.23)	0.254 (0.87)	0.2705 (0.91)
LNRATIO	-0.0948 (-1.72*)	-0.089 (-1.63)	-0.095 (-1.70*)	-0.093 (-1.65*)
LNMKTVL	-0.037 (-0.55)	-0.028 (-0.41)	-0.040 (-0.58)	-0.028 (-0.40)
CAPGDS				0.444 (1.26)
CONSGDS				0.134 (0.38)
SERVCS				0.1713 (0.46)
R <sup>2</sup> Adj.	0.8%	1.4%	0.9%	0.7%
F value	1.65	2.2	1.58	1.29
N	334	327	320	317

Note :

CAR11DAY is the standardised cumulative abnormal return using the Fowler-Rorke model of an 11 day window

ERM = 0 before UK entry into ERM and 1 after UK entry into ERM

EC = 0 outside EC and 1 within EC

GDPK = 0 for less developed economy and 1 for more developed economy

LNRATIO= LOG<sub>e</sub> ratio of value of acquisition to market value

LNMKTVL= Log<sub>e</sub> of market value

CAPGDS = industry producing capital goods

CONGDS = industry producing consumer goods

SERVCS = industry providing services

## 6.4 Results of European joint venture announcements

The models used to analyze the joint venture announcements are market adjusted (0,1) and market models. The distribution of the estimated parameters do not indicate the presence of thin trading as shown in the table XXI. In addition to this a sophisticated Fowler-Rorke model is used but did not provide any useful results.

**Table XXI : DISTRIBUTION OF ESTIMATED PARAMETERS  
Alpha ( $\alpha$ ) AND Beta ( $\beta$ ) (N = 65)**

	MEAN	MEDIAN	TRMEAN	STDEV	SEMEAN
$\alpha$	-0.00006	-0.00010	-0.00009	0.00080	0.00010
$\beta$	0.99460	1.05900	1.00980	0.31560	0.03910
FR- $\alpha$	0.00023	0.00025	0.00020	0.00091	0.00011
FR- $\beta$	1.27020	1.27940	1.27130	0.43460	0.05390
	MIN	MAX	Q1	Q3	
$\alpha$	-0.00240	0.00294	-0.00053	0.00030	
$\beta$	0.01880	1.57390	0.79060	1.21620	
FR- $\alpha$	-0.00194	0.00337	-0.00028	0.00068	
FR- $\beta$	0.14330	2.30280	0.98720	1.61140	

Note :  $\alpha$  and  $\beta$  are estimated using the market model, and FR- $\alpha$  and FR- $\beta$  are estimated using the Fowler-Rorke adjusted model.

When both parametric and nonparametric rank tests on abnormal returns and non-parametric test on volatility are conducted, there was no clear market reaction on the official announcement day as shown in table XXII and

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Appendix XII<sup>55</sup>. Thus the hypothesis  $H-II_0$  could not be rejected based on these results.

When standardized cumulative abnormal return (SCAR) is plotted a strong positive increase is apparent from 15 day before the official announcement as shown by the (0,1) and market model<sup>56</sup> SCAR plot in figures 13 and 14. The cumulative abnormal returns, their standardised residuals and t-statistics also showed gradual increase in market reaction as in table XXIII and Appendix XIII.

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<sup>55</sup> Although the announcement date corresponds with official publication date, the difficulty to identify the period of pre-announcement negotiations of the venture not mentioned in official publications could possibly have affected the results.

<sup>56</sup> When the parameters of the market model is estimated they do not show symptoms of thin trading. A Fowler-Rorke adjustment is also made but the results were erratic.

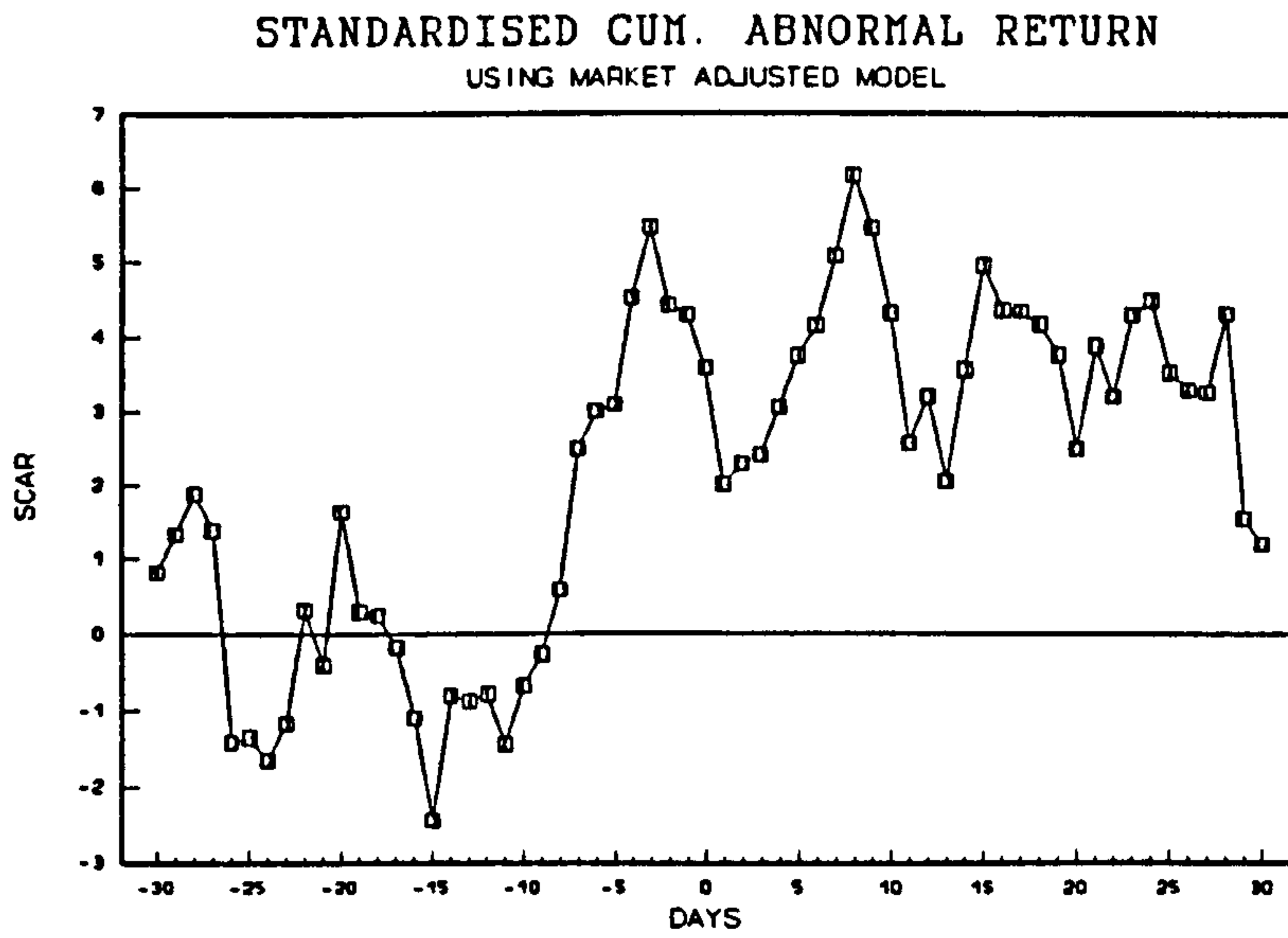


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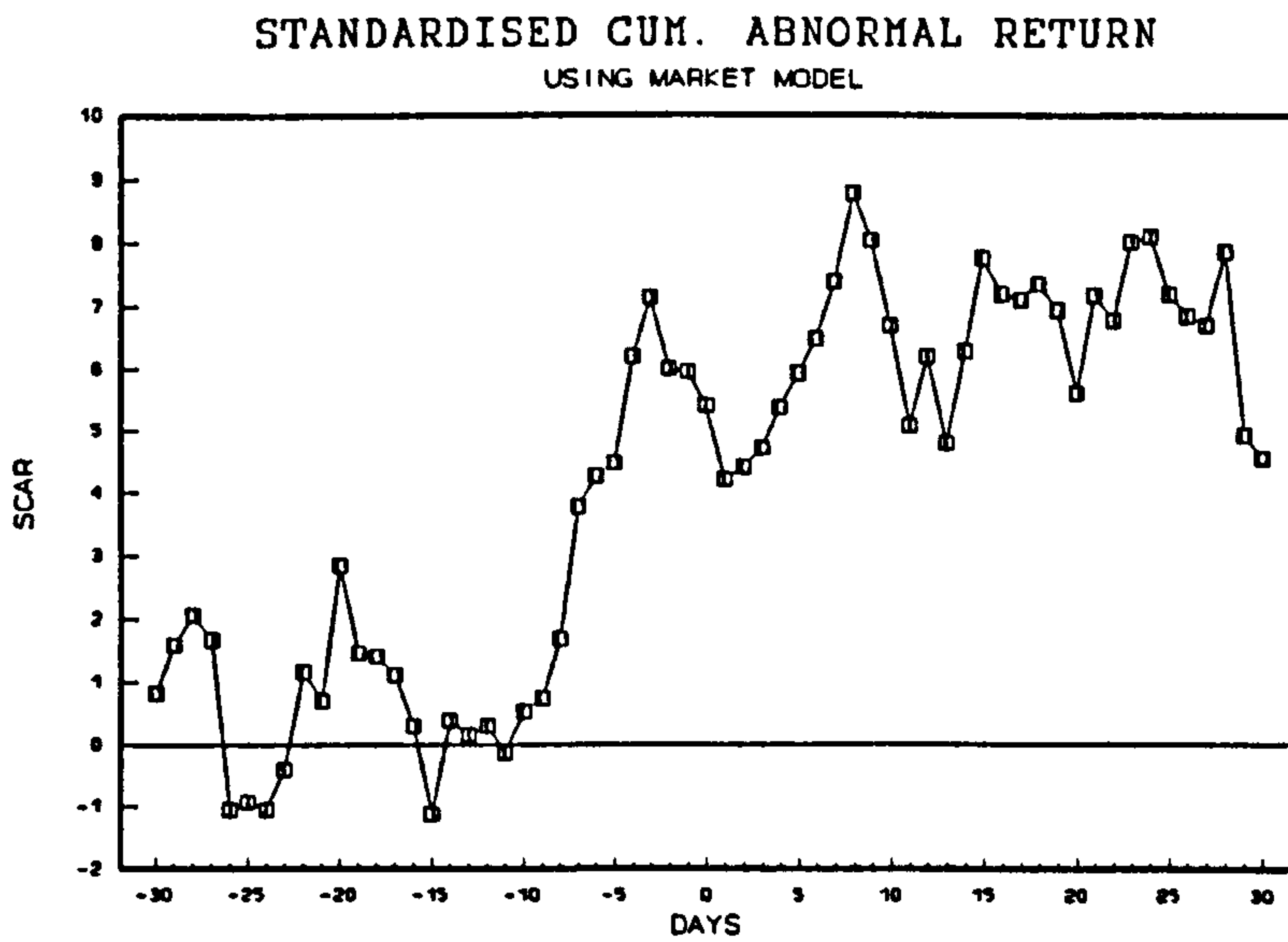
Table XXII : PARAMETRIC & NONPARAMETRIC TEST ON ABNORMAL RETURNS & VOLATILITY

DAY	MARKET ADJUSTED MODEL				MARKET MODEL			
	AR <sub>t</sub> (%)	ZV <sub>t</sub>	NPT(1)	NPT(2)	AR <sub>t</sub> (%)	ZV <sub>t</sub>	NPT(1)	NPT(2)
-30	0.12	0.67	0.69	-1.16	0.12	0.67	0.89	-1.61
-29	0.08	0.46	0.47	-0.68	0.12	0.68	0.54	-0.50
.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.
-10	0.18	1.04	0.85	-1.02	0.16	0.93	0.36	-0.96
-9	0.04	0.22	1.08	0.34	0.01	0.04	0.66	0.61
-8	0.11	0.62	0.03	-0.73	0.12	0.72	0.04	-0.45
-7	0.38	2.15*	1.58	0.02	0.41	2.35*	1.57	-0.09
-6	0.19	1.07	0.34	-0.72	0.19	1.08	0.47	-0.07
-5	-0.06	-0.36	-0.13	-0.49	-0.04	-0.21	-0.09	-0.13
-4	0.23	1.32	0.49	1.11	0.28	1.62	0.52	1.03
-3	0.11	0.60	0.34	0.28	0.10	0.59	0.08	-0.21
-2	-0.18	-1.01	-0.52	0.01	-0.19	-1.09	-1.00	0.45
-1	-0.09	-0.51	-0.33	-0.14	-0.07	-0.42	-0.37	-0.02
0	-0.12	-0.70	-0.87	0.97	-0.09	-0.50	-0.71	1.18
1	-0.27	-1.55	-0.86	1.03	-0.21	-1.19	-0.42	0.81
2	0.01	0.04	-0.10	0.47	-0.01	-0.04	-0.06	0.03
3	0.06	0.36	0.02	0.43	0.10	0.58	-0.01	0.85
4	0.10	0.59	1.08	-0.70	0.10	0.60	0.84	-0.66
5	0.12	0.70	0.75	0.09	0.10	0.57	0.48	-0.01
6	0.06	0.36	0.40	-1.51	0.09	0.50	0.58	-1.11
7	0.10	0.60	0.51	0.58	0.10	0.59	0.49	-0.26
8	0.12	0.68	0.63	-1.03	0.16	0.95	0.88	-1.07
9	-0.16	-0.93	-0.41	0.42	-0.16	-0.90	-0.58	0.94
10	-0.23	-1.30	-1.30	0.11	-0.26	-1.48	-1.67	-0.04
.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.
28	0.17	0.99	0.89	-0.33	0.19	1.08	0.92	-0.14
29	-0.58	-3.27*	-1.14	1.77	-0.60	-3.47*	-1.32	1.59
30	0.01	0.04	-0.08	-0.08	0.01	0.04	0.17	-0.35

Note: ZV<sub>t</sub> - t-values of abnormal return  
 NPT(1) & NPT(2) are non-parametric rank test on abnormal return and volatility respectively.



**Figure 13 : GRAPH OF SCAR OF JV USING MARKET ADJUSTED MODEL**



**Figure 14 : GRAPH OF SCAR OF JV USING MARKET MODEL**

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**Table XXIII : T-VALUES OF CUMULATIVE ABNORMAL RETURN IN 61 DAY WINDOW**

DAY	MARKET ADJUSTED MODEL			MARKET MODEL			-ve:+ve
	CAR <sub>t</sub> (%)	SCAR <sub>t</sub>	ZWL	CAR <sub>t</sub> (%)	SCAR <sub>t</sub>	ZWL	
-30	0.12	0.67	0.67	0.12	0.67	0.67	34:31
-29	0.20	1.13	0.80	0.23	1.35	0.95	30:35
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
-10	-0.12	-0.64	-0.14	0.09	0.59	0.13	33:32
-9	-0.08	-0.41	-0.09	0.10	0.63	0.13	31:34
-8	0.02	0.20	0.04	0.22	1.35	0.28	33:32
-7	0.40	2.36	0.48	0.63	3.70	0.76	28:37
-6	0.59	3.43	0.69	0.81	4.78	0.96	30:35
-5	0.53	3.06	0.60	0.78	4.57	0.90	32:33
-4	0.76	4.39	0.84	1.06	6.19	1.19	34:31
-3	0.87	4.99	0.94	1.16	6.78	1.28	34:31
-2	0.69	3.98	0.74	0.97	5.69	1.06	35:30
-1	0.60	3.47	0.63	0.90	5.26	0.96	34:31
0	0.48	2.77	0.50	0.81	4.77	0.86	35:30
1	0.20	1.22	0.22	0.61	3.58	0.63	35:30
2	0.21	1.26	0.22	0.60	3.54	0.62	36:29
3	0.27	1.62	0.28	0.70	4.12	0.71	36:29
4	0.38	2.21	0.37	0.80	4.72	0.80	35:30
5	0.50	2.91	0.48	0.90	5.29	0.88	37:28
6	0.56	3.27	0.54	0.99	5.79	0.95	34:31
7	0.67	3.86	0.63	1.09	6.38	1.03	36:29
8	0.78	4.54	0.73	1.25	7.32	1.17	34:31
9	0.62	3.61	0.57	1.10	6.42	1.02	33:32
10	0.39	2.31	0.36	0.84	4.94	0.77	34:31
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
29	-0.42	-2.26	-0.29	0.24	1.45	0.19	38:27
30	-0.41	-2.22	-0.28	0.24	1.50	0.19	36:29

Note : CAR<sub>t</sub> - Average cumulative abnormal return  
 SCAR<sub>t</sub> - Std. cum. average abnormal return  
 ZWL - T-value of SCAR<sub>t</sub>  
 -ve:+ve is the cumulative sign test.

A further test of cumulative abnormal return of 11 day and 5 day windows revolving over the 61 day test period also showed significant t-value for cumulative period from -17 to -2 days before the announcement day for both (0,1) and market model residuals as shown in table XXIV and

## Appendix XIV.

Table XXIV : T-VALUES OF SCAR<sub>t</sub> OF MOVING 5 DAY AND 11 DAY WINDOWS TO DETECT MARKET REACTION

PERIOD	(0,1)	MKT	PERIOD	(0,1)	MKT
1 - 5	-0.64	-0.49	1 - 11	0.40	0.75
2 - 6	-0.90	-0.72	2 - 12	-0.09	0.24
.	.	.	.	.	.
.	.	.	.	.	.
14 - 18	-0.68	-0.71	14 - 24	0.51	0.58
15 - 19	-0.57	-0.65	15 - 25	0.93	0.96
16 - 20	-0.52	-0.54	16 - 26	1.08	1.11
17 - 21	0.65	0.61	17 - 27	1.96*	2.10*
18 - 22	0.10	0.04	18 - 28	1.70	1.88
19 - 23	0.48	0.53	19 - 29	1.46	1.66
20 - 24	1.48	1.59	20 - 30	1.33	1.54
21 - 25	2.28*	2.29*	21 - 31	1.34	1.54
22 - 26	1.66	1.78	22 - 32	0.56	0.90
23 - 27	2.15*	2.49*	23 - 33	0.50	0.88
24 - 28	2.14*	2.43*	24 - 34	0.43	0.83
25 - 29	0.73	0.89	25 - 35	-0.04	0.31
26 - 30	0.02	0.22	26 - 36	-0.16	0.15
27 - 31	-0.13	0.09	27 - 37	0.06	0.37
28 - 32	-1.42	-1.17	28 - 38	-0.16	0.06
29 - 33	-1.67	-1.45	29 - 39	-0.14	0.16
30 - 34	-1.06	-0.70	30 - 40	-0.11	0.22
31 - 35	-0.56	-0.24	31 - 41	-0.35	-0.10
.	.	.	.	.	.
.	.	.	.	.	.
49 - 53	-0.79	-0.41	49 - 59	-0.41	-0.16
50 - 54	-0.24	0.01	50 - 60	-1.29	-1.23
51 - 55	0.01	0.21	51 - 61	-1.09	-1.02
52 - 56	0.26	0.53			
53 - 57	-0.54	-0.41			
54 - 58	-0.26	-0.30			
55 - 59	-0.21	-0.28			
56 - 60	-1.64	-1.74			
57 - 61	-1.21	-1.34			

Note : \* - denote at least 5% level of significance  
The significant t-values of the CAR<sub>t</sub> are found before the official announcement day thus implying a possible pre-anticipated market reaction.

Though the above results show a positive trend in the SCARs, these did not indicate a significant market reaction to the announcement of joint ventures. Thus it differ from

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previous study in US international joint ventures by Lee and Wyatt (1990) which found negative market reaction but confirm the study by Lummer and McConnell (1990) who also found an increase in the market value of the firm.

The sample is further analyzed by segmenting it according to the announcements of JVs made in the period before and after U.K.'s entry into the ERM. Using a simple regression, it was found that CAR of an 11 day window for announcements made after entry into ERM is positive and is significantly different from those before the announcement. This is shown in *table XXV*. Based on this finding the hypothesis  $H-IIA_0$  that propose no difference between the periods could be rejected<sup>57</sup>.

### 6.5 Analysis of European merger and joint venture announcements

#### 6.5.1 European merger announcements

The analysis of European merger announcements will include the significance and implications of the results compared to other studies, and their relevance to the earlier discussions on intra-European direct investment.

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<sup>57</sup> Due to the small sample size and lack of information on other possible contributing factors like value of joint venture, level of foreign exposure, percentage of equity etc and the possible occurrence of confounding events, a profile analysis is done to address these factors.

TABLE XXV : A REGRESSION OF SCAR WITH ERM

## (I) Simple Regression of CAR11DY with ERM factor

$$CAR11DY = - 0.286 + 0.662^* ERM$$

Predictor	Coef.	Stdev	t-ratio	p
Constant	- 0.2863	0.2063	- 1.39	0.170
CAR11DY	0.6620	0.3037	2.18	0.033

$$s = 1.221 \quad R\text{-sq} = 7.0 \% \quad R\text{-sq(adj)} = 5.5 \%$$

## Analysis of Variance

Source	DF	SS	MS	F	p
Regression	1	7.079	7.079	4.75	0.033
Error	63	93.870	1.490		
Total	64	100.949			

\* The regression is reiterated with ranked CAR11DY to deal with extreme values and the coefficient is still significant with a t-ratio of 2.31 and R-sq(adj) of 6.4 %.

The distinct feature of this study is that the market impact of the announcements is based on information structure that relates to both foreign direct investment and European economic integration. This is important when results are analyzed and compared with other studies. The problem of sample bias also exists in the study because the announcements only include completed mergers. There was inadequate information on nature of bids, that is the contested or the cash bids. Among the models used, the (0,1) model shows consistent results. In addition the non-parametric rank test developed by Walmsley et al (1992) is found to be robust and is particularly useful in analyzing the test on volatility.

## RESULTS AND ANALYSIS OF STUDY

The non-parametric test on volatility which showed positive and significant market impact for all models before the day of announcement indicate the diverse market reactions to information on the announcement. The market reaction to the merger announcements is also found to be significantly positive with an average abnormal return of 0.14% on the day of announcement. Although this result is significant only for the (0,1) it indicates that the market anticipates economic benefits from the news. Since the sample includes announcements in both developed and less developed economy and does not distinguish market entry as a strategy, the results differ from a previous study on announcements of international mergers which attribute significant acquiror wealth gains to market entry and FDI in less developed economy (Doukas and Travlos 1988). The SCAR in the post announcement period, however, is found to be significantly negative. In this respect Conn and Connell's (1990) findings that post negative SCAR arise from downward bias of using pre-merger returns to estimate the parameters ( $\alpha$ ,  $\beta$ ) could not be affirmed since the (0,1) model also has significantly negative SCAR. The post announcement effect of the merger are thus not favourable.

When the regional factor (EC) is used to segment the sample according to announcements made within and outside EC, the results of tests on volatility and abnormal return show positive significant reaction for those made within EC

## RESULTS AND ANALYSIS OF STUDY

which are similar to the whole sample. Also since 84% of the acquisitions are within EC, the results imply that the positive significant market reaction to the announcements is due to a possible greater impact of European economic integration on those within the EC.

The use of ERM as a factor which relates to European monetary union to segment the sample into two periods resulted in different market reaction in terms of abnormal return and volatility. The positive significant reactions to merger announcements in the post-entry period imply that investors are more optimistic of the potential economic benefits. The statistically significant volatility of the announcements before the entry signify that the information has stirred more varied reactions amongst the investors on the day before the announcement. The implication of these results is that there is a shift of market reaction between the two periods as a result of U.K.'s entry into ERM.

Further analysis of announcements of acquisitions within EC confirmed a similar but stronger result of the shift of market reaction between the periods with an average abnormal return of 0.33% in the post entry period. This imply that the announcement of U.K.'s entry into ERM also has an impact on announcements within EC.



## RESULTS AND ANALYSIS OF STUDY

The regression models of the SCAR also highlighted significant factors that could explain the market reaction. Both the *post-entry ERM factor* and *ratio of acquisition to market value* are found to have significant coefficients. The significant positive coefficient of the ERM factor confirms the earlier tests of its significant as a factor affecting the market reaction. The ratio of acquisition to market value which has a negative coefficient imply a transfer of wealth effect to the acquiree. The effect would be more pronounced in unrelated mergers (Scanlon et al 1989).

### 6.5.2 *European joint venture announcements*

In the case of the joint venture announcements, the results reported earlier (section 6.4) showed no significant market reaction to the announcement of joint venture. The graphic plot of SCAR, however, indicate a gradual positive market reaction before the announcement date. In order to detect any significant market reaction a few days prior to the announcement date, an improvised technique using a moving 5 and 11 day CAR windows are employed. The results which show positive significant CARs before the announcement date indicate that the market react positively to such announcements in anticipation of possible economic benefits.

## RESULTS AND ANALYSIS OF STUDY

In the above tests difficulty arose in identifying and distinguishing the actual announcement date from the official announcement date. This could be due to prior negotiations between the parties, a peculiar characteristic of joint ventures, not disclosed in official publications. It is a form of information leakage and may have caused the pre-anticipated market reaction. The nature of such information release distinguishes announcements of joint ventures from that of mergers where in the latter an immediate market reaction is expected.

When the sample is segmented according to the pre- and post- U.K.'s entry into ERM, the 11 day SCARs in the post-entry period are positive and is significantly different from the pre-entry period. The result signals the market preference for the entry and implies market anticipation of the benefits of economic integration. Due to the small sample size, lack of information on nature of joint ventures and the possibility of confounding events a profile analysis of joint venture is done.

### 6.6 Profile analysis of announcements of joint ventures

The profile analysis of announcements of joint ventures between U.K. plcs and their European partners will describe each joint venture and explain the market reactions to the announcements as well as other confounding events. From the synopsis of each venture certain

RESULTS AND ANALYSIS OF STUDY

characteristics would then be identified to better understand these reactions. The selection of JV announcements for the analysis is based on significant cumulative abnormal return measured from four windows<sup>58</sup> as shown in table XXVI.

**Table XXVI : T-VALUES OF CUM. ABNORMAL RETURN OF FOUR TEST PERIODS USING MARKET MODEL**

CO.	ANN.DATE	5DY	11DY	16DY	21DY
BA	10-Apr-90	0.13	1.06	1.75@	2.10*
BATS	15-May-90	-1.35	-1.62	-2.57*	-1.79
CRLC	24-Mar-92	-2.41*	-0.67	-0.03	-0.18
LOWB	19-Jan-90	-0.31	0.36	1.96*	1.82
MAXC	08-Apr-91	4.95*	6.87*	7.23*	5.38*
PILK	19-Dec-90	2.05*	1.91	2.49*	1.94
RCHM	29-May-90	0.07	0.70	1.86@	1.75@
SDWK	29-Apr-92	0.12	0.64	0.64	2.16*
STC	08-Jan-90	2.24*	2.79*	2.27*	1.38
STLY	06-Sep-90	0.14	-1.49	-0.88	-1.99*
THN	04-Sep-90	-2.98*	-2.32*	-2.01*	-0.95
WELP	04-Mar-92	2.70*	1.38	1.34	2.24*
<b>EXTREME VALUES</b>					
AMST	05-Jan-91	1.73	0.85	-0.01	0.33
BS	13-Nov-91	-9.10*	-7.10*	-6.32*	-6.62*
DAVY	06-Nov-90	-8.21*	-4.91*	-3.63*	-3.15*
MAXC	25-Mar-91	0.46	2.81*	3.16*	3.64*

Note: \* denotes at least 5% level of significance  
 @ denotes 10% level of significance  
 5DY : -2 dys to +2 dys window  
 11DY : -5 dys to +5 dys window  
 16DY : -10 dys to +5 dys window  
 21DY : -10 dys to +10 dys window

<sup>58</sup> The four windows are used to identify announcements with significant CARs around the announcement date.

## *RESULTS AND ANALYSIS OF STUDY*

The table distinguishes FOUR announcements as extreme values, as the market reactions from these announcements show significant irregularity from the collective market reaction of the sample which was shown in figures 13 and 14. The peculiar characteristics of each of these announcements are highlighted to explain their irregularities.

The JV announcements categorised under extreme values have shown that other announcements surrounding them have caused significant irregular share price movements. They are being isolated from the rest of the sample in order to observe a more consistent share price reaction to the announcement of JV.

## Extreme Values

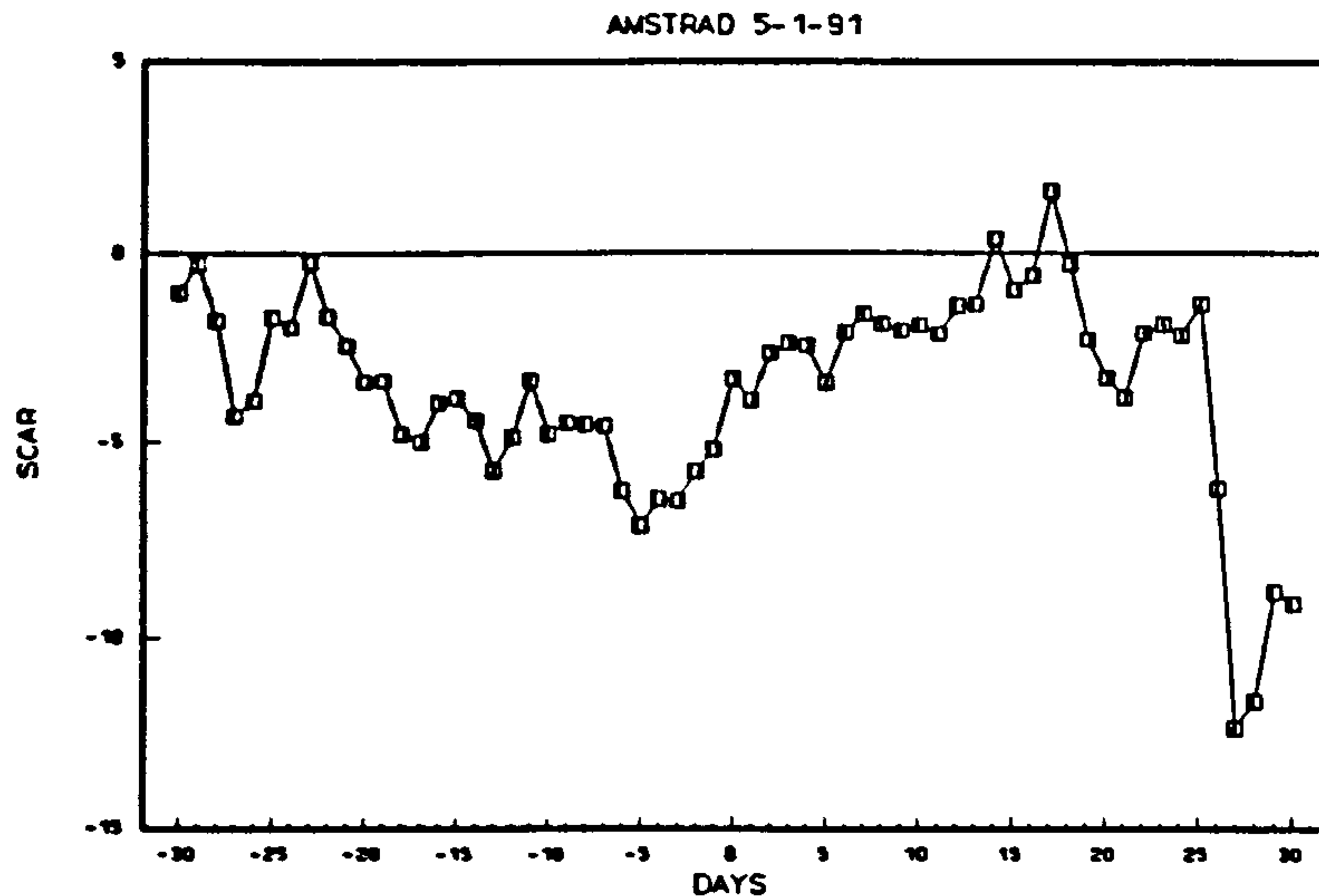
(1) Amstrad Plc - Micropolis (Greece) 5-Jan-91<sup>59</sup>

Figure 15 : AMSTRAD

A joint venture in wholesale distribution and industrial machinery is formed between Amstrad (51%) and Micropolis (49%). The joint venture child is Amstrad Hellas. On the same day it also announced its keenness to have an outright purchase of a subsidiary in Scandinavia for another JV. A sharp fall of Amstrad shares occurred 20 days after the announcement due to the unfavourable report of its poor trading statement<sup>60</sup> as shown in figure 15. The market reactions to the acquisition announcement and the financial report explained the erratic market behaviour.

<sup>59</sup> 'Amstrad in drive to boost European Sales' in Financial Times, 7 January 1991 pp.14 and 'Amstrad Earmarks new markets' in Independent, 5 January 1991 pp. 14.

<sup>60</sup> 'Amstrad shares fall on poor trading statement' in Independent, 13 February p. 25 and also in Financial Times, 13 February p 19.

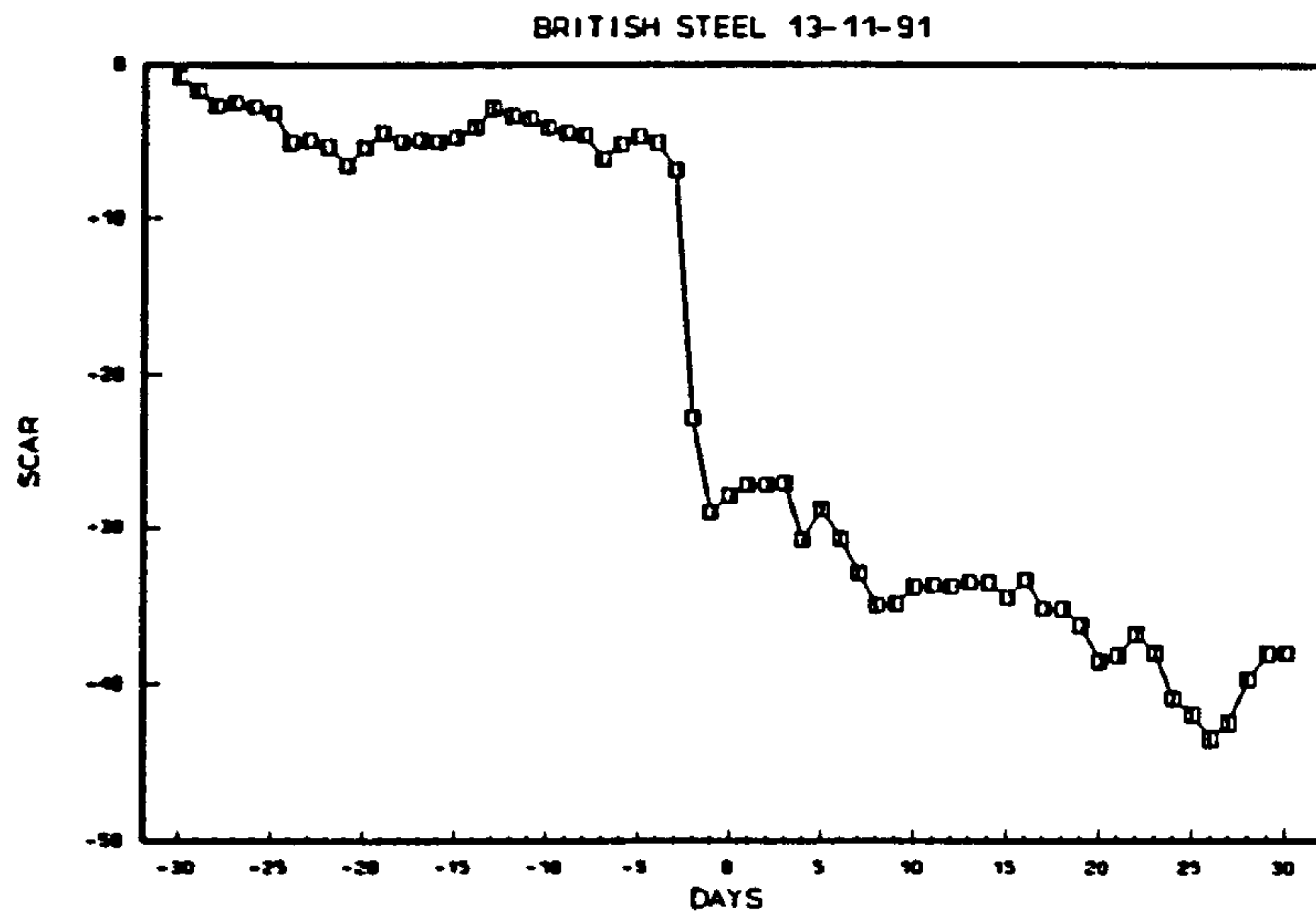
(2) British Steel - SSAB (Sweden) 13-Nov-91<sup>61</sup>

Figure 16 : SCAR OF BRITISH STEEL

A joint venture in electrical steel tubes, known as European Electrical Steel, is formed between British Steel (75%) and SSAB (25%). The strategy is to develop specific markets in Europe especially in technical expertise which is part of the company's rationalisation programme. The operations is expected to begin by 1 December 1991. Earlier in the same week British Steel dropped plans of JV with U.S. in electrical steels after failure to reach agreement with limited steel workers union<sup>62</sup> and on 11 November 1991 it also announced its gloomy interim results<sup>63</sup>. These confounding events had caused the sharp drop in its share

<sup>61</sup> 'British Steel agrees joint venture deal with Swedes' in Financial Times, November 14, 1991 pp. 28.

<sup>62</sup> 'Bethlehem Steel and British Steel terminates talks on joint venture' in Wall Street Journal Europe, 12 November 199 p. 3.

<sup>63</sup> British Steel shares slide after steep drop in profits' in Financial Times, 12 November 1991 p. 1 and 'British Steel's pre-tax profit plunges 94% eroded by recession' in Wall Street Journal, 12 November 1991 p.3.

price.

(3) Davy Corporation - Spie Batignolles (France) - ICF  
Kaiser Engineers (U.S.) 6-Nov-90<sup>64</sup>

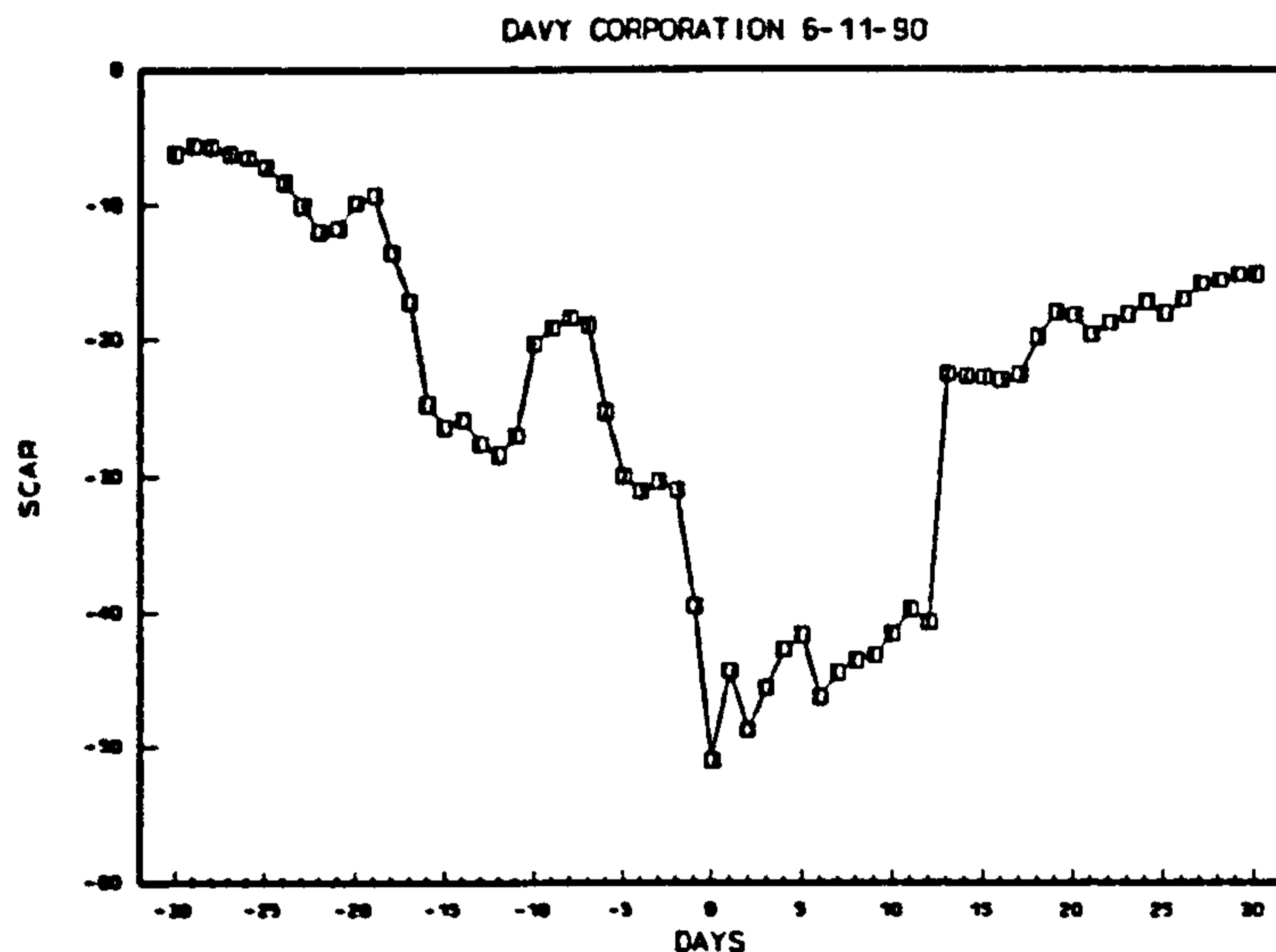


Figure 17: SCAR OF DAVY CORPORATION

The joint venture was formed to pursue engineering and construction work in the aluminium sector. The three companies said the venture will supply aluminium smelters and aluminium refineries to clients around the world. Demand for such facilities was estimated at more than \$1 billion a year over the next ten years and expected to come mostly from Australia, Latin America, the Middle East and Canada. When the announcement was made the company was confronted with a leadership problem which ended with a resignation<sup>65</sup>. The resignation could have caused the share

<sup>64</sup> 'European Business Briefs : Spie Batignolles SA ' in Wall Street Journal Europe, November 7, 1990, pp5.

<sup>65</sup> 'Davy chief on the firing line' in Sunday Telegraph, 4 November 1990 p 31, 'Davy Chief resigns as share falls' Times, 15 November 1990 p 29 and also in Financial Times on 15 November 1990 p 23.

price to drop sharply.

(4) Maxwell Communications - Phillips (Netherlands)

25-Mar-91

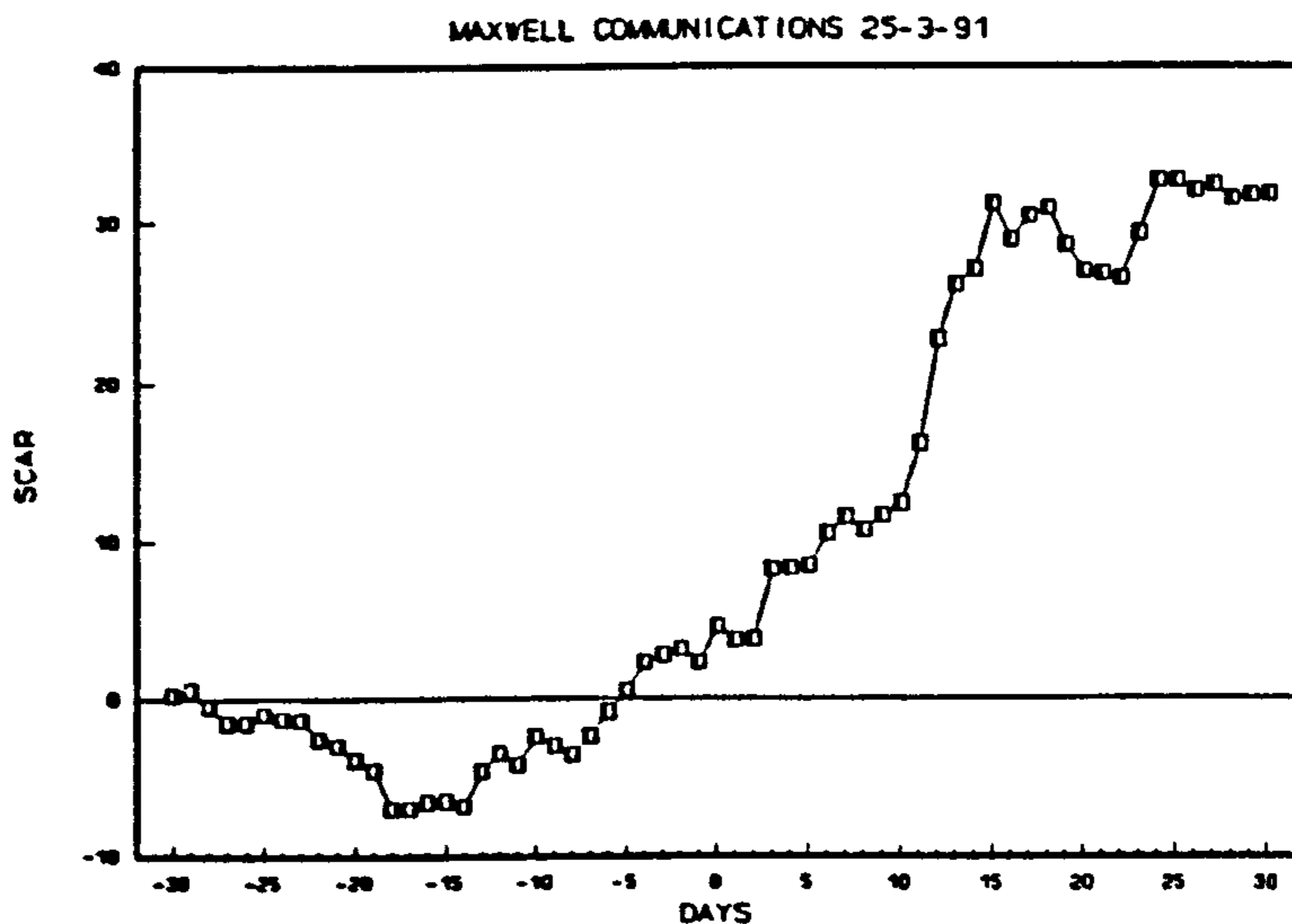


Figure 18: SCAR OF MAXWELL COMM. CORP.

A joint venture in telecommunications. No significant details is however disclosed. The change of leadership of Maxwell Group, its loss ridden New York division and loss of talented and high profile columnists are also reported in the same period<sup>66</sup>. These confounding events could have caused mixed reactions on the announcement day. A subsequent joint venture announcement by Maxwell is however dealt with in the next section.

<sup>66</sup> 'Maxwell to leave chairmanships of his group' by Tim Carrington and Patrick M. Reilley in Wall Street Journal Europe, 26 March 1991 p. 6 and 'Peter Walker surprise choice to take helm of Maxwell flagship' in Scotsman, 29 March 1991 p.19.



## RESULTS AND ANALYSIS OF STUDY

The following are the synopsis of the selected joint ventures.

- (1) *British Aerospace - Pacific Telesis International (U.S.) - Matra Communications (France) 10-Apr-90<sup>67</sup>*

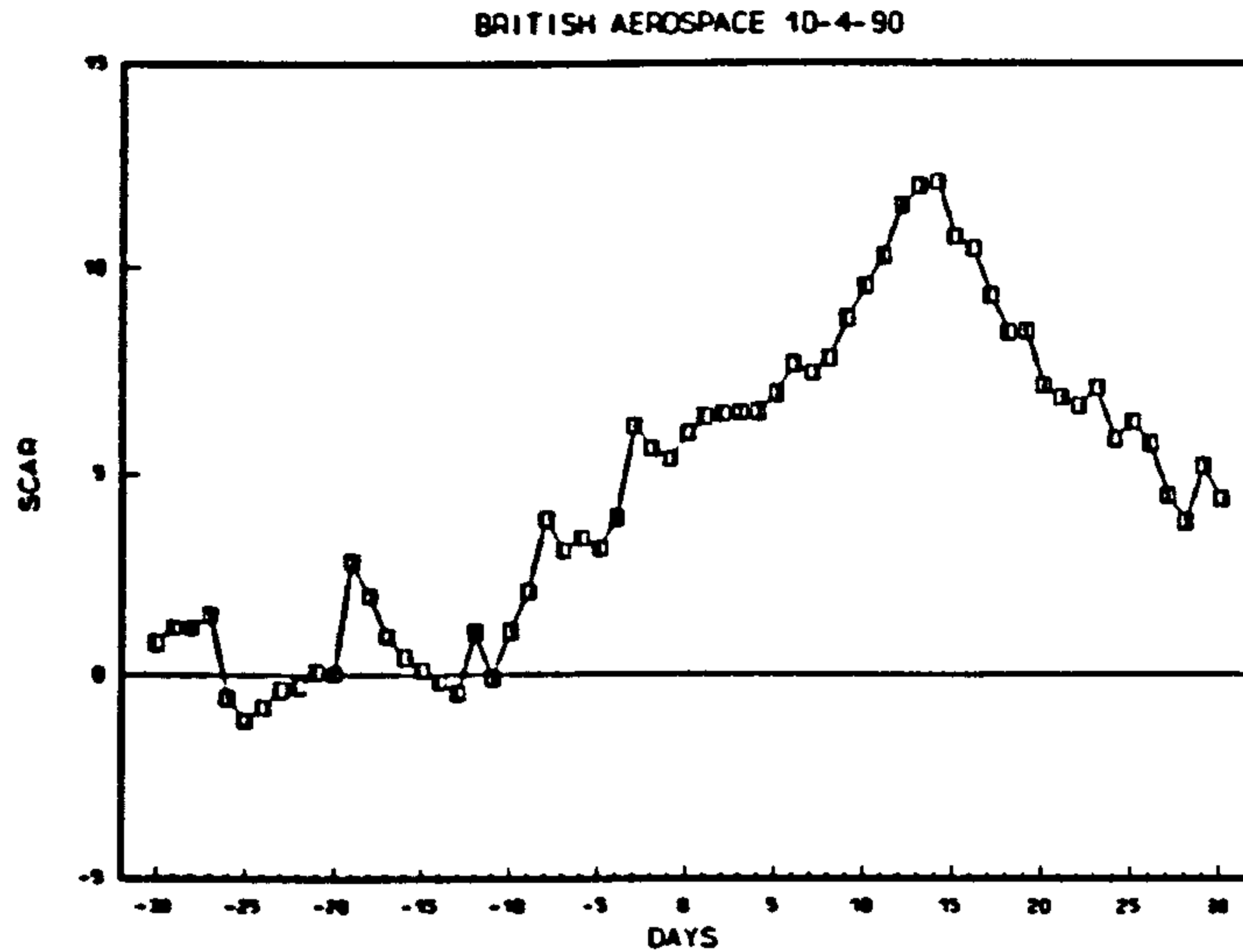


Figure 19 : SCAR OF BRITISH AEROSPACE

British Aerospace launched a joint venture with U.S. based Millicom Inc.'s unit, Pacific Telesis International Limited and France's Matra Communications SA to operate a U.K. personal communications network (PCN). British Aerospace had a majority stake in the joint venture child, Microtel Communications Ltd, which was to be operational within two years. Its chairperson, Sir Graham Day, also chaired Cadbury Schweppes Plc and Rover Group Plc. At that time, the PCN industry was dominated by British Telecommunication Plc. The announcement was made in the

<sup>67</sup> 'European Business Roundup : British Aerospace PLC' in The Wall Street Journal Europe, 11 April 1990 pg. 4.

midst of BAe facing the union's 23 week strike<sup>68</sup>.

(2) British American Tobacco - Tabacalera (Spain) 15-May-90

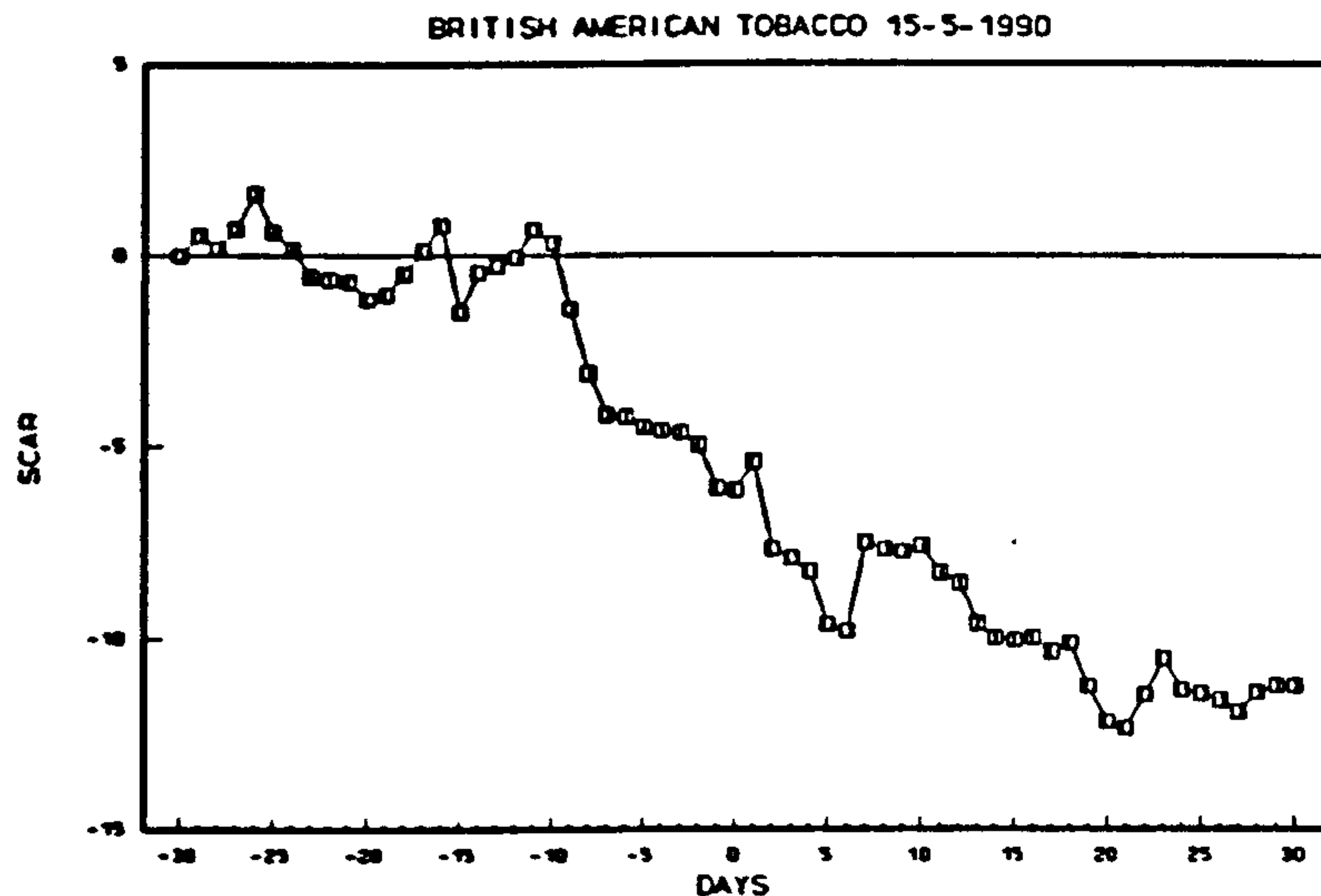


Figure 20 : SCAR OF BRITISH AMERICAN TOBACCO

A joint venture in Tobacco industry but no significant details were disclosed. The announcement was surrounded by a sell-off of its U.S. retail subsidiary<sup>69</sup> and its poor financial performance<sup>70</sup>. The confounding events could part explained the declining trend of its SCAR.

<sup>68</sup> 'Not told to repay BSP 38 million "sweeteners" in Times, 15 March 1990 pg 25. Also in Wall Street Journal Europe, 15 March 1990 pg.4 and in Financial Times, 15 Mar 1990 pg 24, 25 and 26. 'BAe Plant ends 23 week dispute' in Independent 25 April 1990 pg. 3 and in Times, 25 April 1990 pg 2.

<sup>69</sup> 'B.A.T. raises further \$110 million selling Ivey's' in Financial times, 5 May 1990 p.8 and 'B.A.T. raises further \$10 million selling Ivey's' by Nikki Talt in Wall Street Journal Europe, 7 May 1990 p.9

<sup>70</sup> 'Disappoints city with £231 million for 1st Quarter' in Financial Times, 24 May 1990 p.29.

RESULTS AND ANALYSIS OF STUDY

(3) *Carlton Communications Plc - Euphon (Italy) 24-Mar-92*

A joint venture in International film production and cinema. No significant details was disclosed. A week before the announcement the company's January bid for Pickwick was cleared by the Monopolies and Mergers Commission<sup>71</sup>. Another corporate bid for Teletext announced a week after the announcement was however not in its favour<sup>72</sup>. Due to the two confounding events the market reaction was erratic.

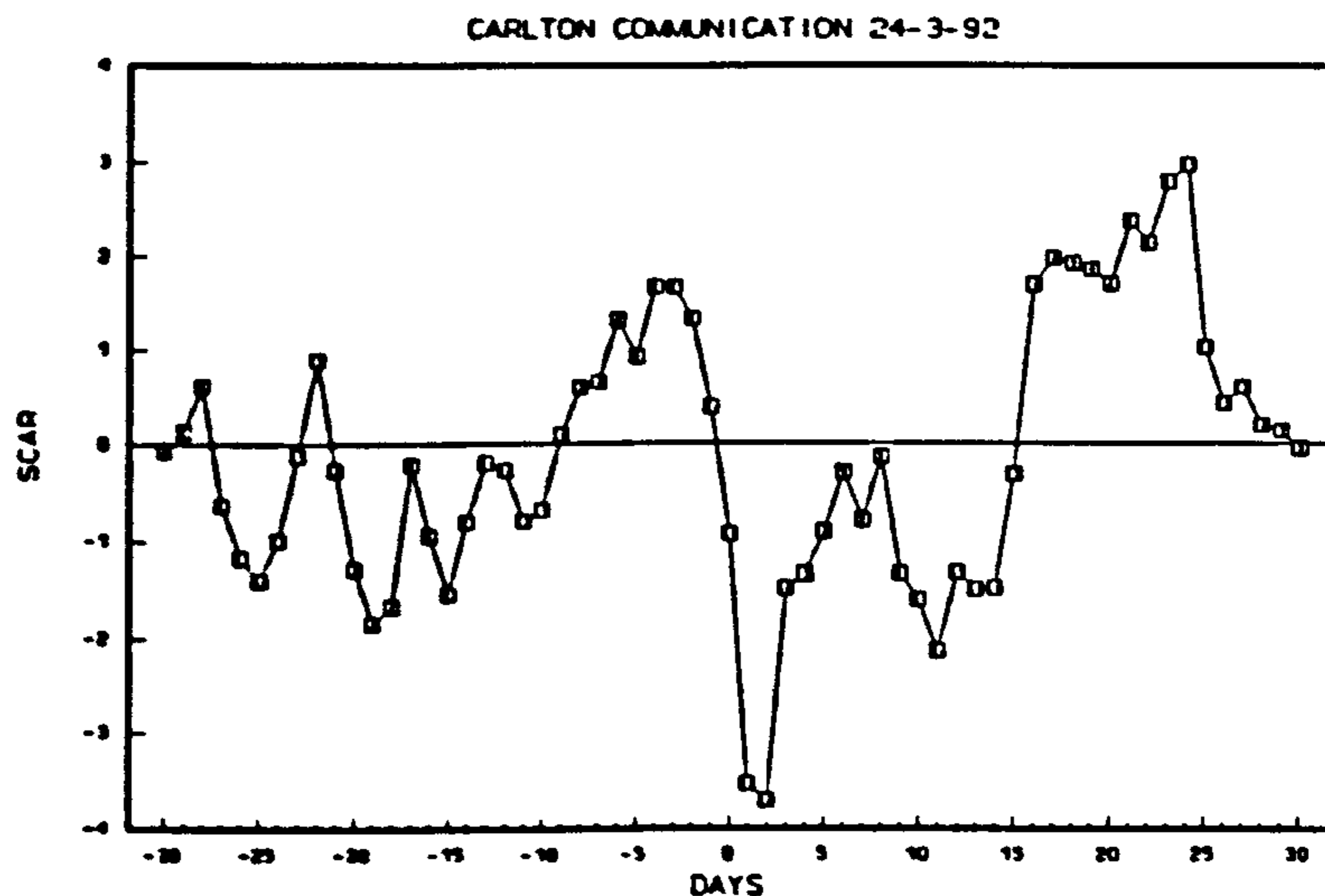
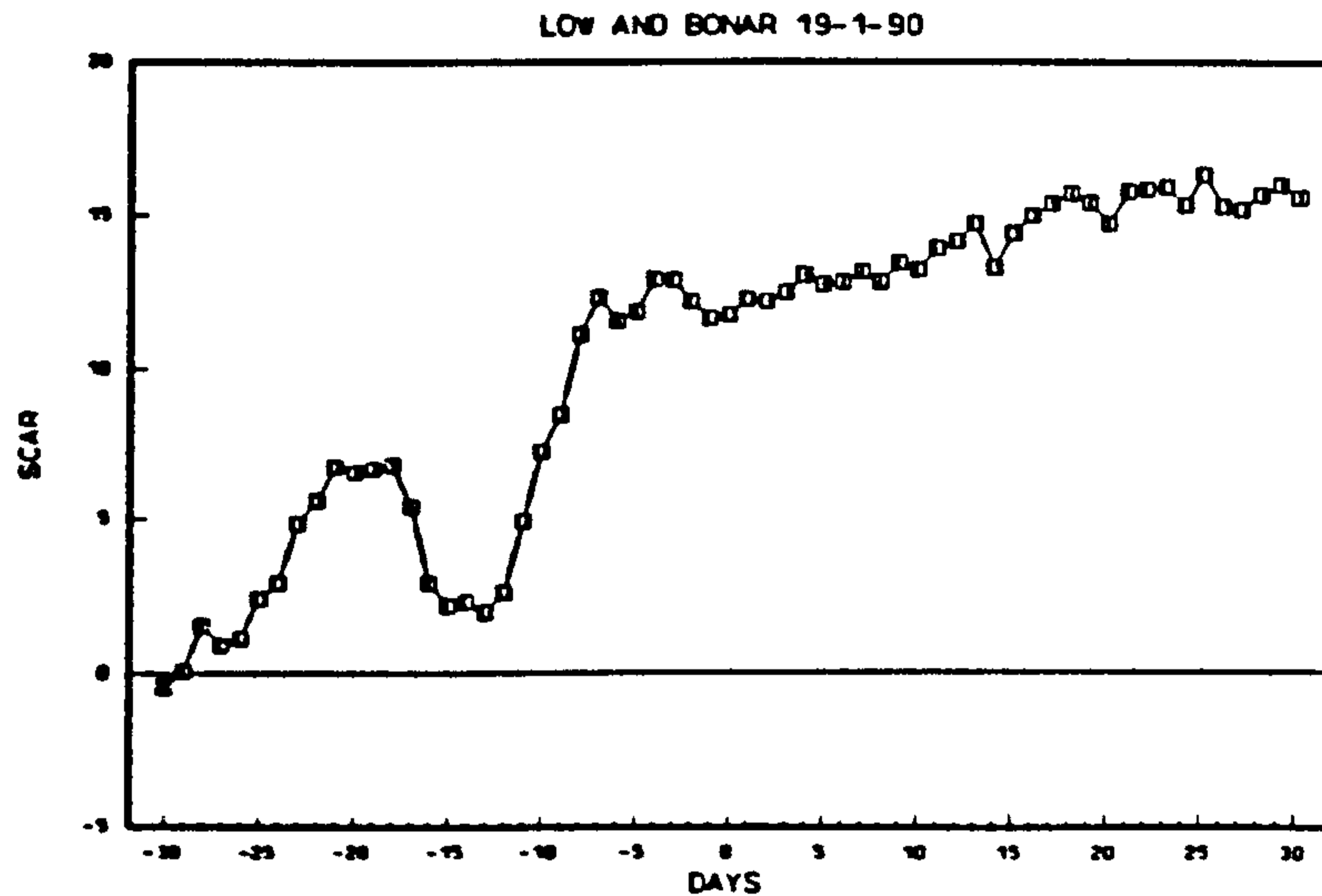


Figure 21 : SCAR OF CARLTON COMMUNICATIONS

<sup>71</sup> 'Bid Cleared in Times, 18 March 1992 p. 21.

<sup>72</sup> 'Lacks news supply for teletext bid' in Financial Times, 4 April 1992 p.4.

(4) *Low and Bonar Plc - Constantia Gp (Austria) 19-Jan-90*<sup>73</sup>


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Figure 22 : SCAR OF LOW AND BONAR

Low and Bonar, a Dundee based packaging, plastics and textiles group entered into a joint venture in flexible packaging with Constantia Group of Austria in a deal more than £8 million. Constantia, with interests in wood products and various types of packaging, bought technology together with a stake in the venture for £6 million and also subscribed £2.3 million cash to bring its holding in the new joint venture to 50%. Constantia has total annual flexible packaging sales of about \$140 million but only a small fraction of these were in the U.K. whilst L & B's two flexible packaging operations at Dundee and Derby with total sales of £25 million in that year also accounted for about a quarter of European packaging sales. The deal would create a strong commercial link with one of Europe's major

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<sup>73</sup> 'Low and Bonar packaging venture' by Clare Pearson in Financial Times, 23 January 1990 pg 21.

## RESULTS AND ANALYSIS OF STUDY

packaging groups and provided further opportunities for European expansion. There was no other major corporate event during the announcement of the joint venture.

### (5) *Maxwell Communications - France Cables and Radio (France) 8-Apr-91*<sup>74</sup>

A multi-million pound joint venture to provide satellite communications services to clients in Britain and continental Europe. The new company, Maxwell Satellite Communications Ltd combined the satellite technology and infrastructure of FCR, a subsidiary of the French state concern France Telecom, with the Maxwell group's media and communications experience. The venture which was France's Telecoms largest involvement in the U.K., was to play a role in the growing market for satellite communications in Eastern Europe. The target areas include transmission services for television broadcasts and satellite communications services for corporate users. The Maxwell group was not only a share holder but also a client to the joint venture child. The competitors in satellite communications include British Telecom, Mercury Communications and British Aerospace Communications. Specialist business channels could eventually be provided by the new joint venture although in the shorter term, the

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<sup>74</sup> 'Maxwell, FCR Enter Joint Venture offering Satellite Technology' in Wall Street Journal Europe (WSJ), Wednesday April 10, 1991. 'Maxwell joins French in Satellite Services Venture' by Raymond Snoddy in Financial Times, 9 April 1991 pg. 28.

## RESULTS AND ANALYSIS OF STUDY

emphasis would be more on creating satellite networks across Europe for companies wanting to communicate between national offices. Compared with the U.S., corporate satellite communications was still in its infancy but according to some estimates the European market could be worth up to £250 million a year within 5 years. There was only one other major corporate event which was another announcement of an earlier joint venture.

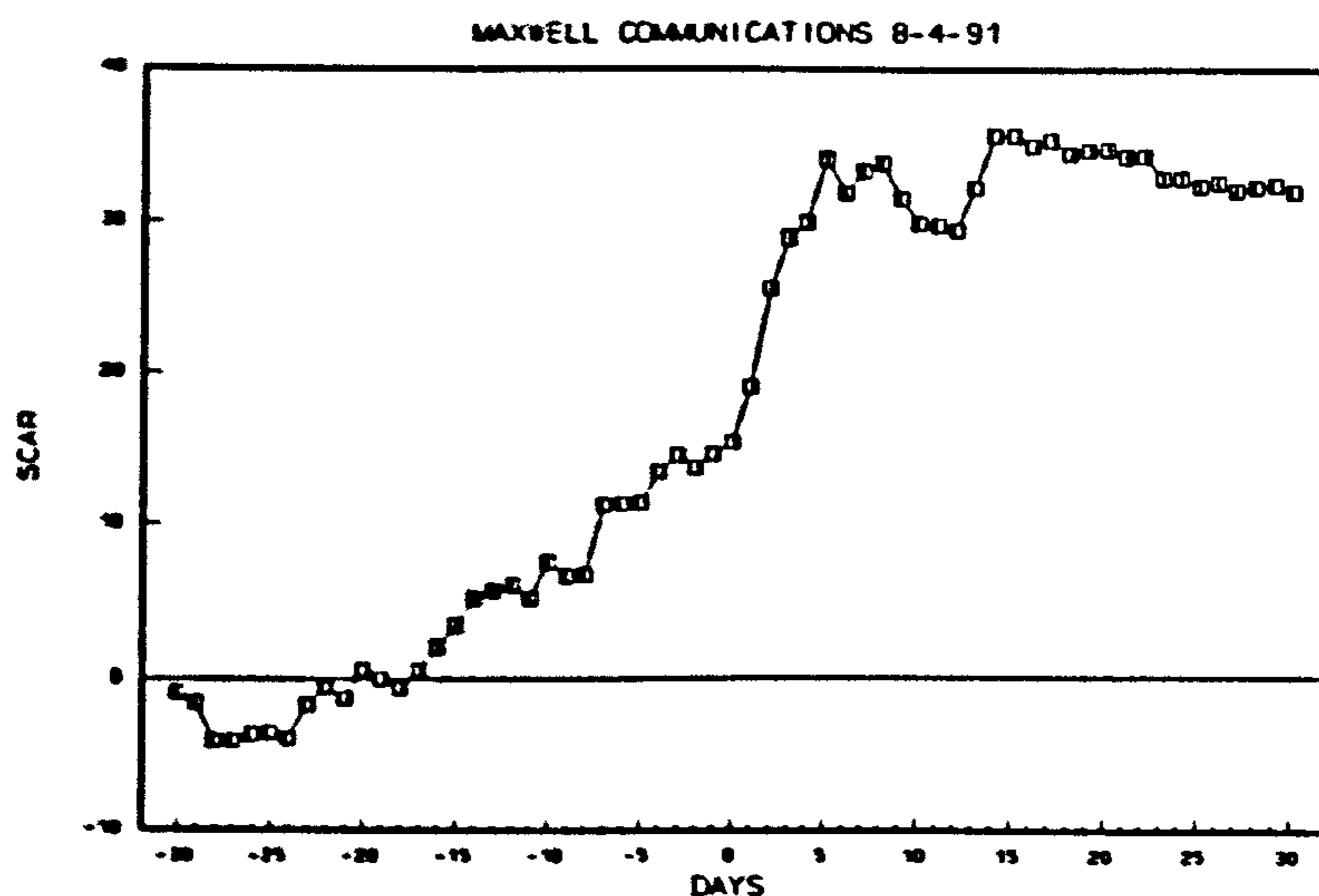


Figure 23: SCAR OF MAXWELL COMM. CORP.

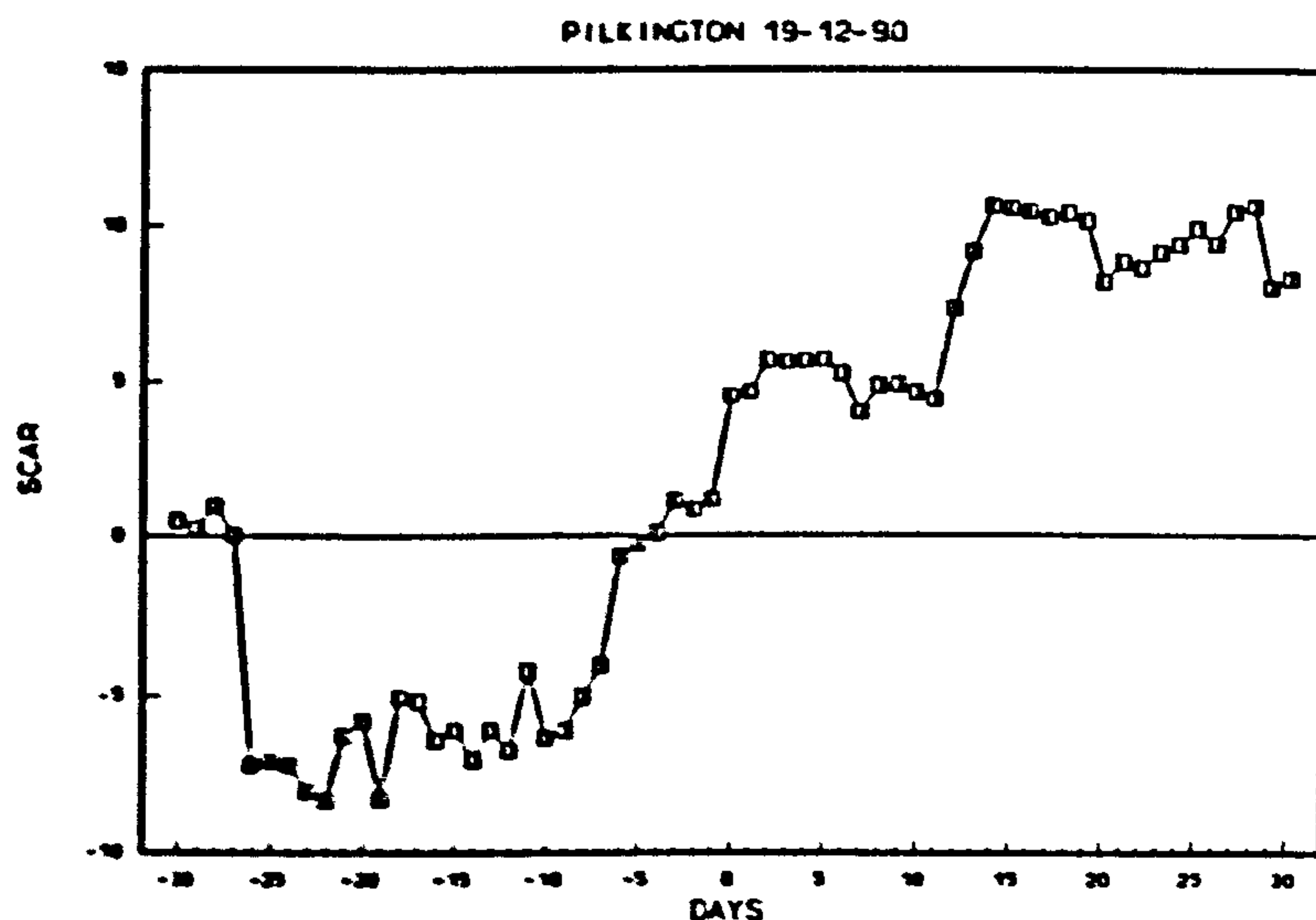
(6) Pilkington Plc - HSO Sandomierz (Poland) 19-Dec-90<sup>75</sup>

Figure 24: SCAR OF PILKINGTON PLC

The joint venture was set up to build a US\$140 million (£72.9 million) float-glass plant in Poland. Pilkington, a U.K. glass company, would hold 40% and Sandomiers, a Polish flat glass maker, would provide 30% of the equity. The rest would be held by various Polish and international investors which include the International Finance Corporation, a World Bank Associate. A loan finance was also received from the European Investment Bank. Pilkington would provide equipment and technical services for the plant, which was due to start production in early 1994. The Pilkington proposal was the largest British investment in Poland. At that time Poland had 1,500 foreign joint ventures in operation of which 5 per cent were part British. The letter

<sup>75</sup> 'European Business Briefs : Pilkington Plc' in Wall Street Journal Europe, December 20, 1990, pp.6. 'Pilkington in deal for \$140 million polish glass works' by Christopher Bobinski (Warsaw) in Financial Times, 19 December 1990 pg 3.

## RESULTS AND ANALYSIS OF STUDY

of intent was timely as the Polish government was due to discuss changes in foreign investment law. These include provision for unlimited transfer of profits abroad and removal of the need for permission for foreign joint ventures with private sector companies. Three year tax holidays were to be maintained in priority areas where foreign investment exceeds \$2 million. The poor financial performance of Pilkington was also reported a fortnight before the announcement<sup>76</sup> and BTR also increased its stake of the company a day after the announcement<sup>77</sup>.

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\* 'Tough times knocks Pilkington & Lex' in Financial Times, 7 December 1990 pg. 20,22 and also reported in Independent on 7 December 1990, pg 25. 'First Half Profit dropped 30%' in Wall Street Journal Europe on 7 December 1990 pg. 4.

<sup>77</sup> 'BTR raises stake in Pilkington Plc to 4%' and 'Flurry in Pilkington shares' in Financial Times, 20 December 1990 pg. 19 and 42 respectively.



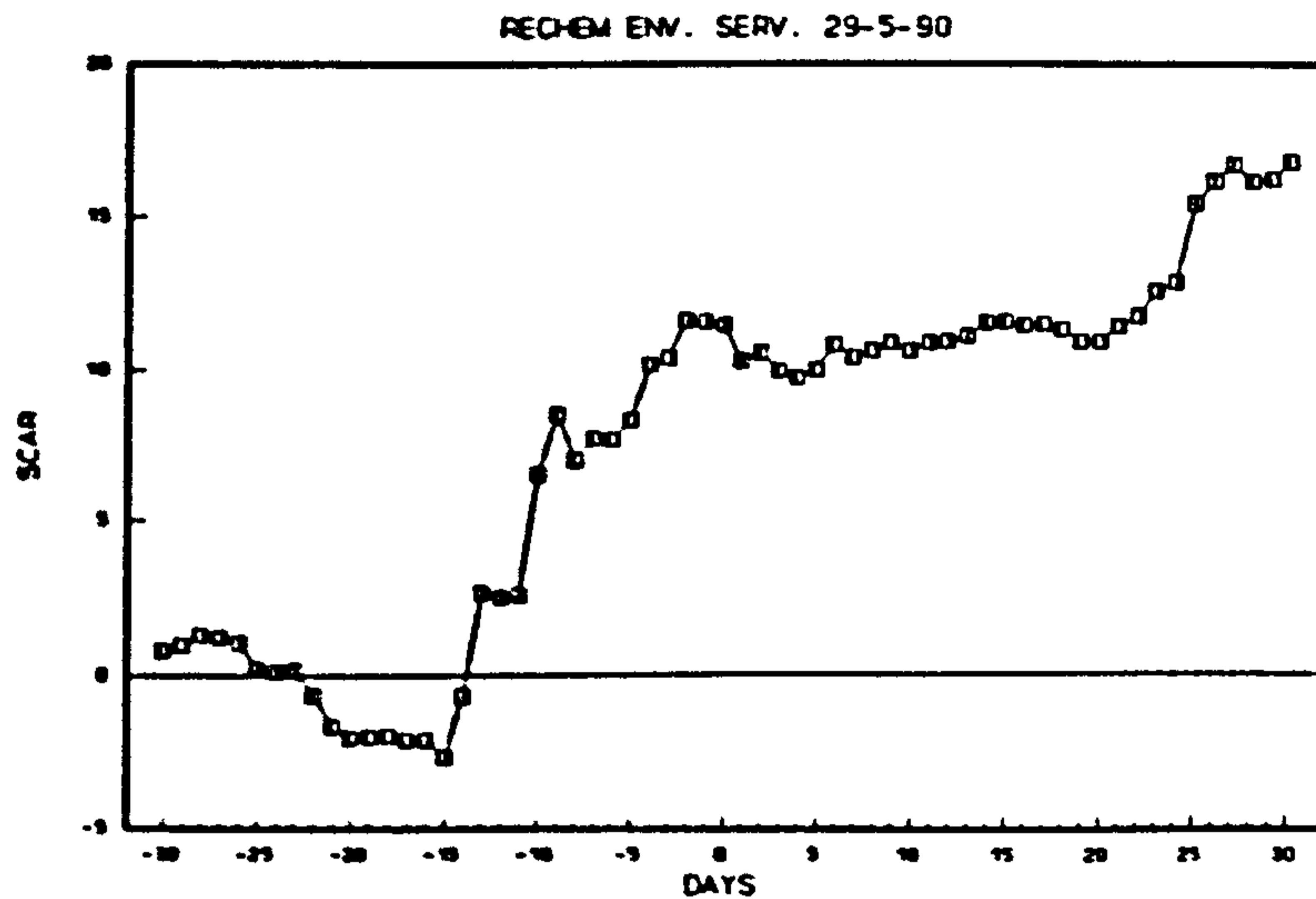
(7) Rechem Env. Servcs. - Ecodeco (Italy) 29-May-90<sup>78</sup>

Figure 25 : SCAR OF RECHEM ENV. SERV.

Rechem the waste disposal company planned an equally owned child joint venture in Italy to build and run an incineration plant for the destruction of hazardous wastes. The partner was previously an agent and this was a first JV for Rechem in Europe. The value of JV was £24 million. The technology involved construction, production and management of waste disposal. The plan's however were still at an early stage although Rechem had signed an agreement with Ecodeco, an Italian waste disposal company, taking an option to invest in the equally owned plant. The plans now depended on Ecodeco finding a suitable site, winning regulatory approval and also subjected to approval by Rechem's shareholders. The joint venture was an expansion

\* A press release by Rechem, 'Rechem Environmental Services PLC ("RECHEM") proposed investment in Italian joint venture' on 29 May 1990. 'Rechem setting up joint waste venture in Italy' by John Thornhill in *Financial Times*, 30 May 1990 pg. 28.

## RESULTS AND ANALYSIS OF STUDY

of Rechem's core overseas activities. A fortnight before the announcement Rechem reported better than the expected financial performance<sup>79</sup>.

### (8) Sedgwick Plc - Ceska Pojistovna (Czechoslovakia)

29-Apr-92<sup>80</sup>

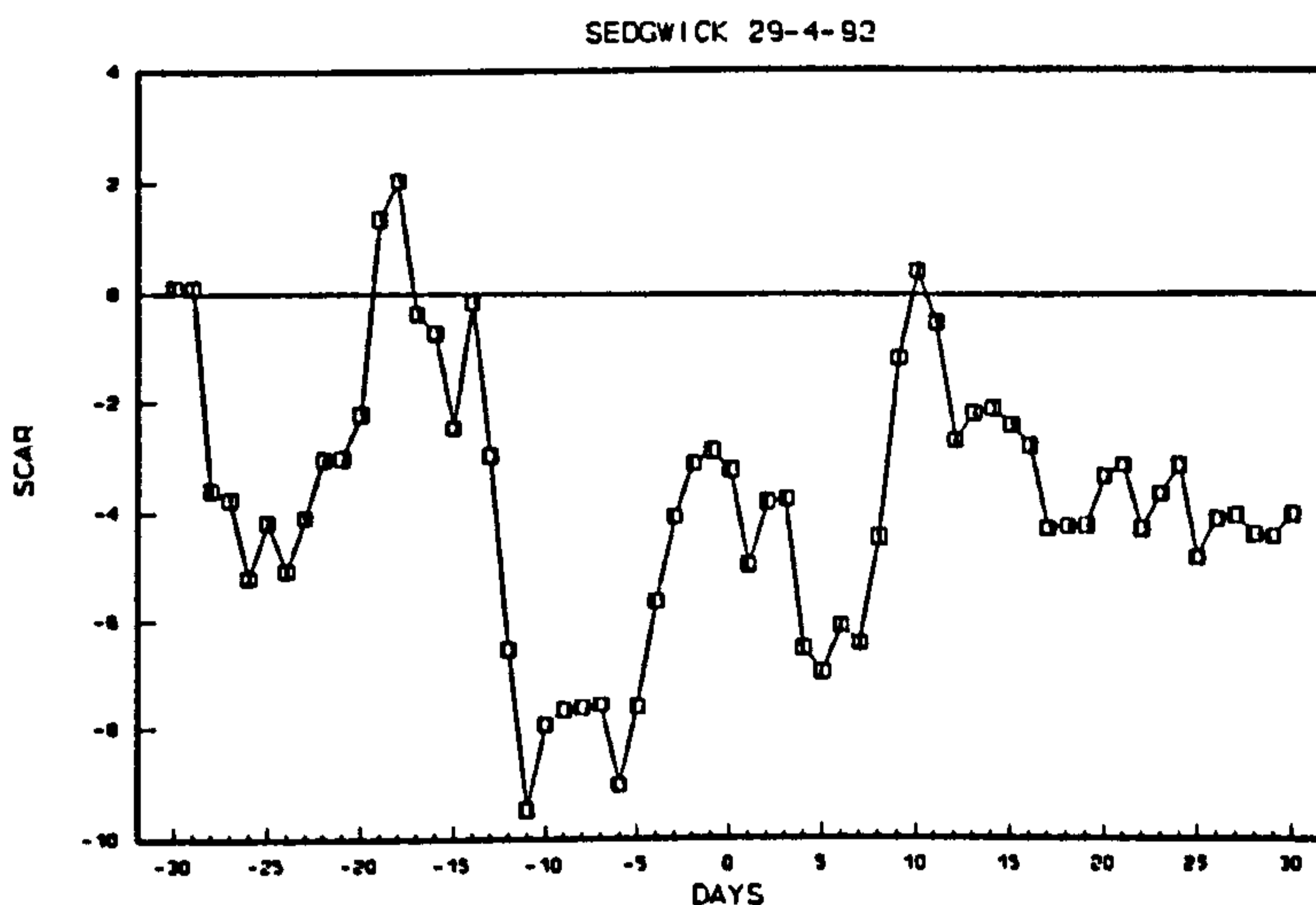


Figure 26: SCAR OF SEDGWICK PLC

The JV involved the formation of an independent child-joint venture in insurance broking, risk consultancy and financial services. It was a horizontal expansionary market strategy (market entry) and was located in Czechoslovakia. Sedgwick also had previous joint venture experience in Europe. The technology involved insurance and re-insurance expertise. The partner was state-owned and to be privatised. Despite the distinct drop of Sedgwick's share

<sup>79</sup> 'Better than expected results buoy Rechem' in Times, 16 May 1990 pg 24 and also reported in Investors Chronicle, 25 May 1990 pg. 55.

<sup>80</sup> 'Sedgwick joint venture with Czech insurer' in Financial Times, 30 April 1990 pg. 25.

price about two weeks before the announcement, no public announcement was available.

(9) *STC - Radiotronica (Spain) 8-Jan-1990*<sup>81</sup>

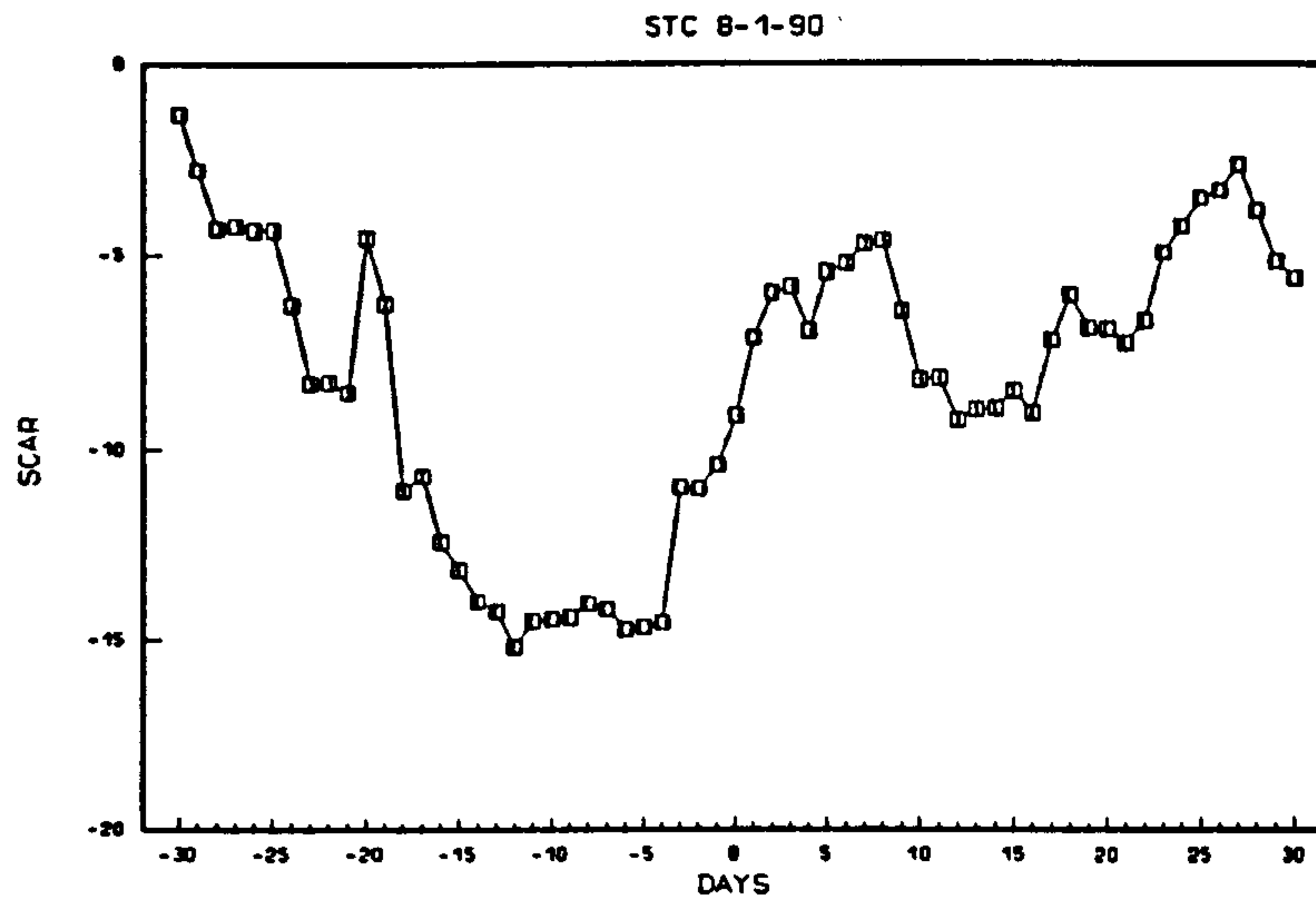


Figure 27 : SCAR OF STC

A joint venture was setup by STC, the British Electronics Group, with Radiotronica of Spain to provide Telecommunication technology to the Spanish market. Radiotronica was a subsidiary of Banco Espanol de Credito (Banesto), the Spanish industrial group. The equally owned joint venture company was named RSTC. The UK company was attracted by Radiotronica's experience in installing and maintaining telecommunication systems for Telefonica, the Spanish public network operator. The demand for new lines in Spain was running at over 1 million a year. Telefonica was expected to invest more than 1.7 billion pound a year

<sup>81</sup> 'STC moves into Spain through joint venture' by Michael Skapinker in Financial Times, 9 January 1990 pg. 20.

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in its network. The deal was STC's second European telecommunications venture. In June last year the company announced an agreement with Societe Anonyme de Telecommunications of France to tender jointly for telecommunications business. In October 1989, STC Submarine Systems Division signed a \$40 million contract with Telefonica to supply a new underwater telecommunications link between the U.K. and Spain. The Submarine System Division would continue to trade directly with Telefonica rather than through the joint venture. No other major corporate announcement was found during the period.

(10) *Steeley Plc - Imetal (France) 6-Sep-90*<sup>82</sup>

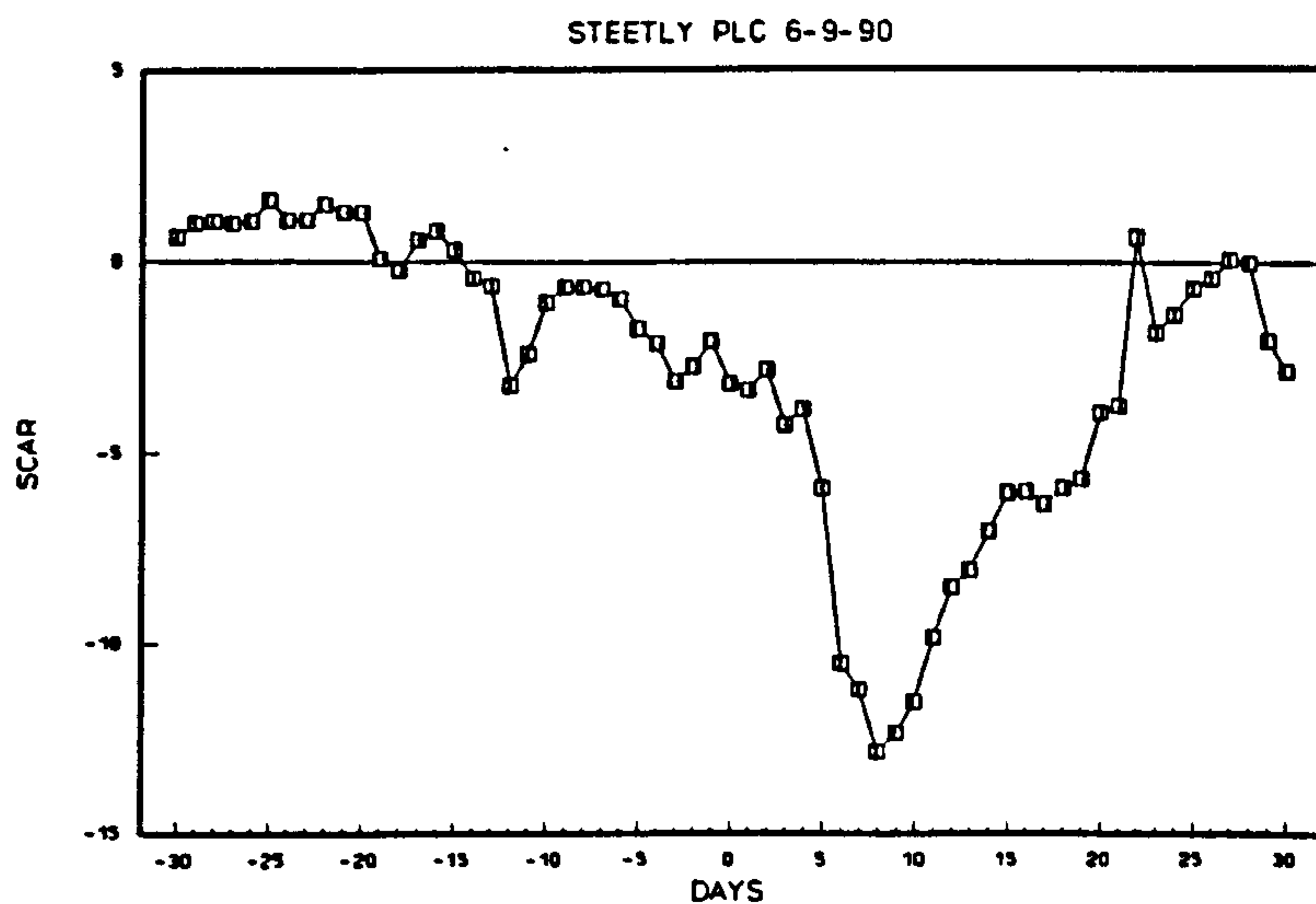


Figure 28 : SCAR OF STEETLY PLC

Steeley and Imetal of France announced a joint venture in a series of cross border joint ventures between

<sup>82</sup> 'Steeley in joint clay tile venture' by Andrew Taylor in Financial Times, 7 September 1990 pg. 26.

## RESULTS AND ANALYSIS OF STUDY

European community building materials companies. Under the terms of the deal Steetley would sell Imetals' clay tiles in the U.K. The two companies had also signed a letter of intent to fund a new £10 million plant to make large clay tiles in the U.K. Mr Richard Miles, Steetley's managing director said the new plant could be in operation by the end of next year. The enthusiasm of building materials companies to forge joint ventures, acquire stakes or takeover similar businesses in other European companies has increased in anticipation of the Single European Market. Steetley said clay tiles accounted for about 6 per cent of the U.K. roof tiles market but was gaining market share. The British group, also the largest aggregate producer in France, is the market leader, selling about half of all the clay plain tiles produced in the U.K. In the period after announcement the company faced poor financial performance but was then buffered with its European activities<sup>83</sup>.

### (11) *Thorn EMI - Societe Anonyme de (France) 4-Sep-90*

A joint venture in telecommunications was announced between Thorn EMI and Societe Anonyme de. No significant details were however disclosed. The failure to sell off its European lighting business to G.T.E. Corp of U.S., the drop in its operating profit and its uncertain future strategy that surround the announcement had caused the share price

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<sup>83</sup> 'France and Spain help Steetly limit fall' in financial times, 25 September 1990 pg 26 and 'Europe helps Steetley to £49.2 million' in Scotsman, 25 September 1990 pg 3.

to slide significantly<sup>84</sup>.

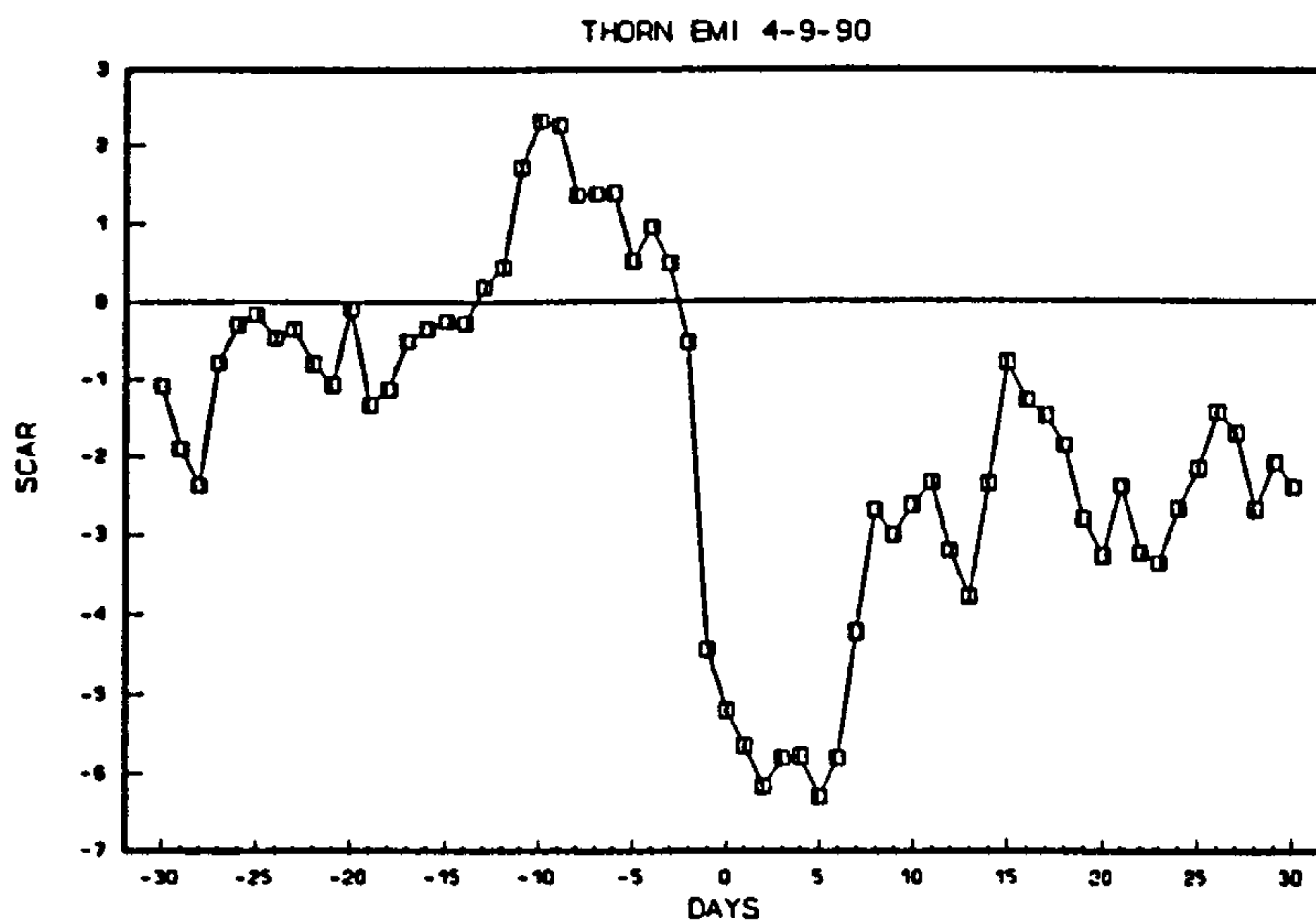


Figure 29 : SCAR OF THORN EMI

(12) *Welpac Plc - Brauckmann & Probsting (Germany)*

4-Mar-92<sup>85</sup>

A joint venture in wholesale distribution of household goods, that is, Stanley branded hardware products in that country. On the same day it also announced to raise funds for two other domestic acquisitions of Anderson and Firmin, a supplier of gardening hardware products and T.J. Harwood, a supplier and packager of door furniture and other hardware products. Most of the raised funds would pay for the acquisitions. In this respect the market reaction towards joint venture announcement could not be

<sup>84</sup> 'Thorn EMI fails in effort to sell lighting unit to G.T.E. of U.S.' in Wall Street Journal Europe, 4 September 1990 p.3 and also found in Times, 4 September 1990 p. 23.

<sup>85</sup> 'Welpac seeking £3.54m to fund acquisitions' in Financial Times in March 5, 1992, pp21.

distinguished.

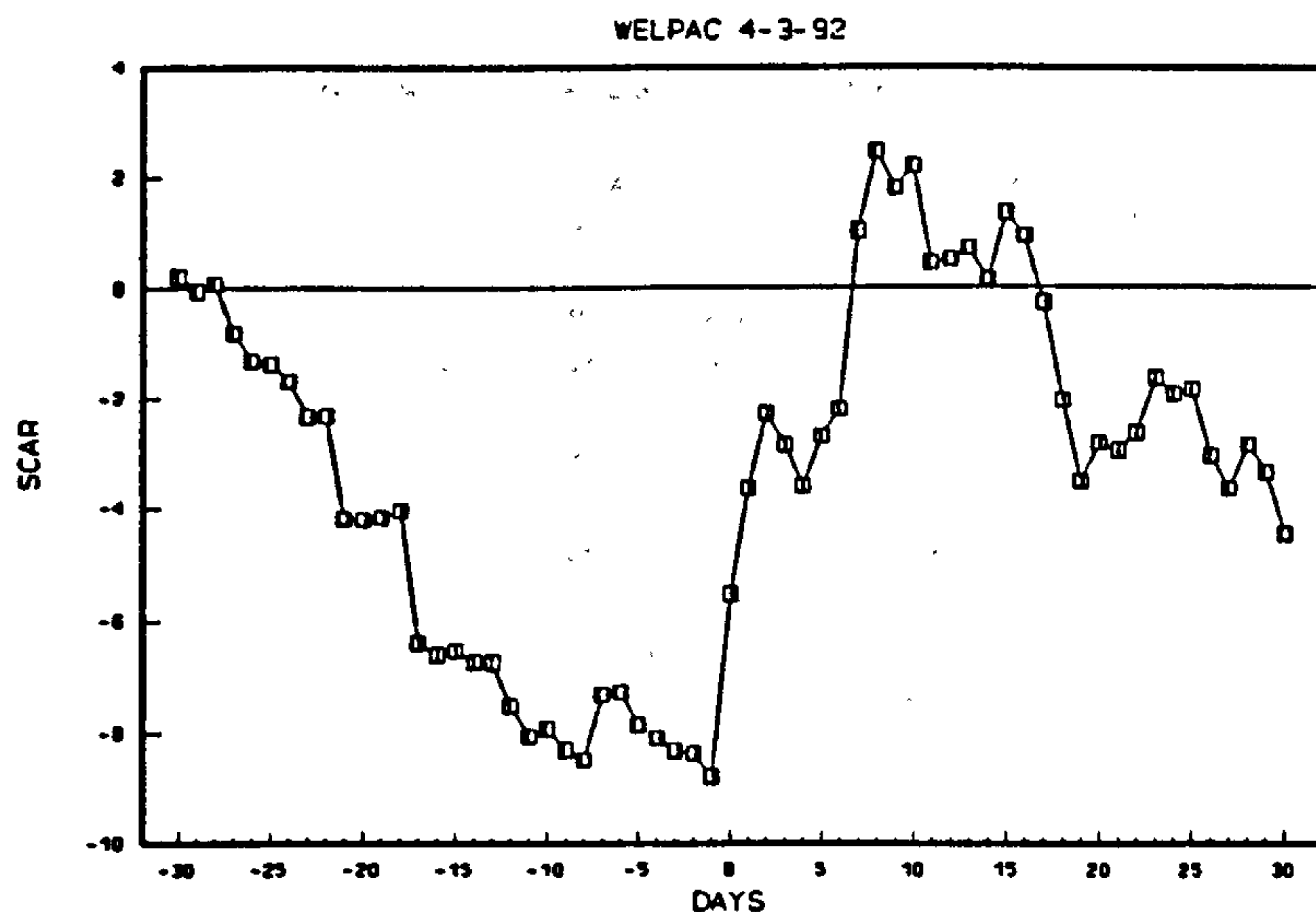


Figure 30 : SCAR OF WELPAC

A summary of the features of the joint ventures are then shown in table XXVII. These features are highlighted in order to identify any distinct characteristics which may affect market reaction. Based on the nature of disclosure of JV, an analysis is done to explain the market reaction in relation to the underpinning theory.

The table shows three common characteristics of European joint ventures involving UK plcs. Firstly, the joint ventures are forms of expansionary strategy and particularly relate to either market entry or strengthening market position. Secondly, they involve firms from the same industry and are horizontally related. Thirdly, these equity joint ventures have a minimum equity control of at least 40%. Finally, there are more private than government partners in the joint ventures.

**Table XXVII : A BREAKDOWN OF THE FEATURES  
OF JOINT VENTURES**

CO.	Ownership	Industry	Strategy	Oth. Ann.	Econy.	Ptner	SCAR
<i>Financial and non-financial service industries:</i>							
BA@	Dominant	P. Commn.	Mkt. entry	Yes	EC(D)	Pte	+ve
CRLC	-	Commn.	-	Yes	EC(LD)	-	-ve
LOWB	Equal	Packag.	Mkt. posn	None	nEC(LD)	Pte	+ve
MAXC	Not known	S. Commn.	Mkt. entry	Yes	EC(D)	Govt	+ve
SDWK	Not known	Insur.	Mkt. entry	Unknown	nEC(LD)	Govt	+ve
STC	Equal	Telecom.	Mkt. posn	None	EC(D)	Pte	+ve
THN	-	Telecom.	-	Yes	EC(D)	-	-ve
WELP	Not known	Distr.	Mkt. entry	Yes	EC(D)	Pte	+ve
<i>Manufacturing and processing industries:</i>							
BATS	-	Tobacco	-	Yes	EC(D)	-	-ve
PILK	Dominant	Glass	Mkt. entry	Yes	nEC(LD)	Pte	+ve
RCHM	Equal	Waste.	Mkt. posn	Yes	EC(LD)	Pte	+ve
STLY	Not known	Bldg. M.	Mkt. posn	Yes	EC(D)	Pte	-ve

**EXTREME VALUES**

AMST	Dominant	Distr.	Mkt. entry	Yes	EC(LD)	Pte	+ve
BS	Dominant	Electr	Mkt. posn	Yes	nEC(D)	Pte	-ve
DAVY@	Not known	Eng.	Mkt. posn	Yes	EC(D)	Pte	-ve
MAXC	Not known	Commns.	-	Yes	EC(D)	-	+ve

Key :- @ - an international JV involving U.S.  
 EC - location in EC country and nEC is otherwise  
 D - JV in developed economy and LD is otherwise  
 Pte - JV having a privately owned partner and Govt  
 is a government partner

From the above sub-sample of significant announcements of joint ventures only two of these announcements are made without other accompanying corporate events during the test period. Both of these announcements show significant positive cumulative abnormal return. Their common strategy is to strengthen their market position in line with the single market arguments. The presence of other confounding events during the test period for the other announcements could have affected their market reactions. In this respect the significant positive relationship between post-ERM factor and SCAR could not exclude the possible effect of



these events.

It is important to note that the sub-sample include more significant announcements from those in the service than the manufacturing industries. The market entry as a joint venture strategy shows a consistent positive market reaction to such announcements. This affirms the preference of JV as a transitory stage in FDI. Also the disclosure of technological transfer, exchange or extension in the announcements confirms the technological accumulation approach, since most of the announcements involve either technology or management expertise. Joint ventures that are located in less developed economy as well as involving government partners also stimulate favourable market reaction. The information disclosure that the U.K. firm is either a dominant or equally owned partner also caused the positive market reaction.

The profile analysis thus show that the announcements of European joint venture without any confounding events would cause a significant positive market reaction. Other factors that could possibly explain the preference for the market reaction is also discussed. However due to the small sample size, prevalence of confounding events and lack of detail information, it is inconclusive on whether the announcements significantly affect the market reaction.

## CHAPTER 7

### CONCLUSION AND RECOMMENDATIONS

#### 7.1 Introduction

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This study has adopted a three-faceted approach in discussing and explaining the effects of Foreign Direct investment from the announcements of European mergers and joint ventures by U.K. plcs. The first involves an exhaustive discussion of the theories of MNEs and foreign direct investment. The principal emphasis is the recognition of imperfect factor markets and the opportunities to internalize foreign economic transactions. Implicit in this is the recognition of competitive and location advantages. An important consideration of these theoretical arguments is the need to acknowledge the importance of real foreign investment which is represented by direct control over financial and real assets.

The second facet of this study looks at the mode of investment in the form of mergers and joint ventures. The

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choice of each mode and its effects are then examined with particular emphasis on shareholder wealth. When their distinguishing features are discussed, the fundamental factor in choosing merger or joint venture is based on the level of cooperation and control. Thirdly, this study views European economic integration as a process that affect direct investment particularly intra-European direct investment. A gradual deregulation process which removes tariff, non-tariff and fiscal barriers to promote efficiency through competition and cooperation is identified as an important phenomenon that affects direct investment. These facets are then diagrammatically represented in chapter 4 by extending theoretical models of FDI and MNE to include this phenomenon.

The empirical analysis of this study is based on event study methodology. This methodology emphasized the importance of the value of information generated from announcements of corporate events. The impact of the information to be captured by this study is mainly the potential economic benefits that could be derived from the announcements of European mergers and joint ventures. Implicit in this analysis is the recognition of information on foreign real investment and European economic integration as perceived by the market. The parametric and non-parametric methods employed to analyse the abnormal return and volatility of the share prices in this study

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provide some insight on the market reaction to the announcements. The recognition of certain factors related to the market reaction are also explored to better understand such reaction.

Based on the above approach, this study has been able to focus on the importance of European economic integration in intra-European direct investment and its effects as shown in the market impact of European mergers and joint ventures on the share prices of U.K. plcs.

### 7.2 Conclusion

The framework of this study is based on the eclectic paradigm which is used to explain FDI in Europe. The review on the effects of economic integration on ownership, location and internalization (OLI) advantages is carried out. It is found that the removal of non-tariff and fiscal barriers will strengthen the ownership advantages of firms already operating within the EC, and affect the distribution of location advantages. The economic integration which substantially reduced government interventions and restrictions will thus cause the internalization process to be more concerned with natural market imperfections when reducing or eliminating transaction costs. In this respect internalization advantages could be gained from intangible assets and public goods like research and development, technology and

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management expertise. Thus the international industry approach which focuses on intra-industry competition and its particular emphasis on technology as forms of both ownership and location advantages is also an important approach considered in this framework. The macro economic developmental approach which focus on differences between national and technological developments is particularly relevant in a heterogenous Europe.

Three different perspectives could be drawn from a comparative review of mergers and joint ventures as forms of FDI. Firstly, both mergers and joint ventures share a common characteristic of having a direct control over foreign assets. Secondly, a merger differs from a joint venture in that it has a greater control of assets whilst a joint venture placed emphasis on cooperation. Finally, joint ventures could be an option to mergers since they provide greater flexibility in exercising control. This study emphasized the first perspective and takes into consideration the other two perspectives.

### 7.2.1 *European Mergers*

The results in chapter 6 show that the announcement of European mergers have a positive impact on the share prices of the UK firms. A significant positive result of parametric test on abnormal returns is found on the announcement day when using the (0,1) model. A robust non-

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parametric test on volatility showed it to be significantly positive on the day before the announcement for all the models. However when the post announcement period is examined a significantly negative CAR was found. These results differ from previous studies on international acquisitions which show that the shareholders of acquiring firm experienced modest or negative abnormal returns.

Further analysis done by segmenting the sample according to the date of UK entry into the ERM show a significantly positive abnormal return for announcements made after the entry but not before, for all models when using the parametric test and only for the (0,1) model when using the non-parametric test. The volatility however was found to be significantly positive on the day before announcement for the announcements made before the entry.

From the above analysis it can be concluded that the announcements of European mergers have a positive impact on the share prices of U.K. acquiring firms in terms of both abnormal returns and volatility. However, a negative cumulative market reaction is found in the post announcement period. The removal of tariff and non-tariff barriers due to European economic integration and the factor of UK's entry into the ERM could have indicated the possible economic benefits from such mergers only on the announcement day but not in the subsequent period. These

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results reflect the progressive effect of European economic integration on merger announcements. It is indicative that these announcements are dissimilar from other international merger announcements.

There are several implications from these results. Firstly, the announcement of a European merger is an economic event that significantly affect the share prices of U.K. plcs. Secondly, the removal of non-tariff and fiscal barriers which have reduced market imperfections brought about by governmental regulations is an economic incentive to intra-European direct investment. This incentive is reflected by the positive significant market reaction to the announcements. Thirdly, the shift of market reaction from the period before U.K.'s entry into ERM to after the entry also indicate the importance of the process of monetary union as an extension of the internal market. The implications of this study portray that the market perceived intra-European mergers as having potential economic benefits especially when a progression is made towards a single market. This study also provides the first empirical evidence on abnormal returns and volatility of returns to U.K. shareholders of acquiring firms involved in European mergers.

### 7.2.2 *European Joint Ventures*

The results of this study as shown in chapter 6

## CONCLUSION AND RECOMMENDATIONS

confirm that European joint ventures are economic events that affect the share prices of UK firms. The positive wealth effect was however not specifically found on the announcement day but rather several days before the announcement date. This suggests that there is an anticipated market reaction prior to the official announcement of the joint venture as has been reflected by the significantly positive cumulative abnormal return. The entrance of U.K. into the ERM as an indicator of monetary integration particularly in the EC has also significantly affected the market reactions to announcements of such joint ventures.

The profile analysis of the joint ventures reveal some interesting distinguishing characteristics of the European joint ventures relating to market reactions. With the presence of European economic integration, companies tend to adopt both concentric and geographical diversification strategies. The former focuses on the existing strength of the core business within the same industry and the latter upon market entry within the region (horizontal expansionary strategy). In addition, technology and management expertise are the main advantages mentioned in the announcements. The announcements made in new markets, or which involve government partners or which are located in less developed economies are favoured by the market. The presence of confounding events have also caused some



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difficulties in analysing the cumulative market reaction. Since only two of the announcements do not have other confounding events and show a significantly positive reaction, the possibility of the effects from these events could not be ignored.

The implications of these findings is that European joint ventures are economic events which significantly affect market reactions. The nature of its disclosure, however, could not be specifically traced to a particular announcement day to measure its impact. Similar to European merger announcements positive economic gains could be anticipated especially with the market's anticipation of benefits from the single market. Despite the problems of the small sample size and the presence of confounding events, the results indicate a positive market reaction. As a first empirical study of European joint ventures involving U.K. plcs, it shows a different market reaction compared to the merger announcements.

### 7.3 Recommendations for future study

Since this is a preliminary study on European mergers and joint ventures and their market impact on share prices of U.K. plcs, there are several avenues that could be extended from this study.

In this study of European mergers the focus has only

## CONCLUSION AND RECOMMENDATIONS

been on U.K. plcs acquiring European firms. The study could also be extended by looking at U.K. target firms of European mergers. A comparative study of target and acquiror gains could then be made between acquisitions amongst European firms. In addition the performance of European mergers could also be compared with other mergers in the other triad like U.S., Japan as well as in the Far East.

The importance of European economic integration in intra-European direct investment has been emphasized in this study. Only an initial work has been done to relate the market reaction to announcements of European mergers to U.K. entry into the ERM has been done. A possible extension of the study would be to trace the developments of the single market through changes of European economic policies. Their impact could be examined by looking at both European and other international mergers. Other micro, meso and macro factors like nature of bid, industry type and level of economic development, could also be examined in relation to these developments. The firms experience in previous foreign acquisitions could also be considered as factors explaining the market impact.

A possible extension to the study of joint ventures would be to compare announcements of international joint ventures and mergers by controlling certain factors. Other

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than event study methodology like a case study approach may be employed. The process of European economic integration and the formation of international joint ventures in Europe could also be studied in order to analyse the impact of the European phenomenon.

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APPENDIX I : NONPARAMETRIC TEST ON VOLATILITY

DAY	(0,1)	MKT	FR
-30	0.37	-0.25	-0.74
-29	0.88	2.28*	1.49
-28	-0.41	-0.19	0.04
-27	0.30	0.23	0.42
-26	-0.35	-1.16	-1.12
-25	0.29	-0.94	1.21
-24	-0.32	-1.31	-0.93
-23	0.87	-0.11	-0.32
-22	-0.90	-2.03*	-2.02*
-21	-1.42	-1.19	-0.00
-20	-0.46	-0.03	-0.60
-19	0.48	0.17	0.23
-18	-0.80	-1.63	-0.55
-17	-2.76*	-1.00	-0.45
-16	-1.32	-0.75	-0.69
-15	0.83	0.40	1.04
-14	-0.39	-0.92	-1.14
-13	0.34	-0.44	-0.04
-12	-0.66	-0.61	0.01
-11	-0.62	-1.53	-1.33
-10	-1.76	-1.07	-1.18
-9	-0.61	-0.07	-1.09
-8	-1.31	-1.05	-1.55
-7	-1.90	-1.96*	-1.67
-6	-1.96*	-0.68	0.04
-5	0.21	-0.53	-0.60
-4	0.47	-1.76	-1.43
-3	-0.33	-1.08	0.01
-2	-1.05	-0.65	0.37
-1	3.55*	3.17*	2.22*
0	0.67	1.40	1.49
1	0.52	0.97	1.09
2	1.79	1.69	1.28
3	-0.21	0.48	1.81
4	-0.46	-1.42	-1.78
5	0.15	0.01	-0.33
6	-0.73	-0.32	-0.74
7	-0.62	0.04	-0.22
8	1.38	0.85	0.37
9	1.09	0.91	1.00
10	-0.35	0.01	-0.83
11	0.28	1.65	1.25
12	0.49	-0.11	0.16
13	1.48	0.41	-0.08
14	1.00	1.51	1.33
15	-0.64	-1.63	-1.22
16	0.03	0.31	1.22
17	0.36	-0.01	-0.33
18	0.38	0.05	-0.21
19	-0.14	-0.03	-0.39
20	0.16	-0.80	-1.41
21	0.33	0.34	0.12
22	1.03	0.97	1.11
23	1.28	1.85	1.00
24	1.27	2.45*	2.47*
25	0.42	1.87	0.88
26	-1.40	-0.20	0.17
27	0.19	1.20	0.79
28	0.32	0.19	-0.28
29	-0.58	0.23	0.34
30	1.27	-0.06	0.34

APPENDIX II: PARAMETRIC AND NONPARAMETRIC TESTS ON ABNORMAL RETURNS

DAY	(0,1)AR <sub>t</sub> (%)	(1)	(2)	(FR)AR <sub>t</sub> (%)	(1)	(2)	-ve:+ve
-30	0.032	0.68	0.35	0.028	0.57	0.17	216:231
-29	-0.020	-0.62	-0.08	-0.057	-1.23	-0.71	239:208
-28	-0.010	-0.21	0.71	0.003	-0.23	-0.36	230:217
-27	0.031	0.45	-0.40	0.062	0.92	-0.35	225:222
-26	-0.077	-1.32	-1.13	-0.002	-0.17	-0.77	250:197
-25	-0.094	-1.86	-0.17	-0.035	-0.60	-0.15	244:203
-24	-0.077	-1.11	-1.01	-0.033	-0.50	-1.02	234:213
-23	0.080	1.29	1.59	0.127	2.05	0.94	220:227
-22	-0.004	-0.22	0.98	0.012	-0.09	0.22	229:218
-21	0.045	1.00	1.56	0.066	1.06	0.70	232:215
-20	-0.072	-1.14	0.03	-0.055	-0.91	-0.24	234:213
-19	-0.068	-0.92	-0.84	-0.036	-0.64	-0.45	227:220
-18	0.093	1.75	1.25	0.159	2.46	1.34	210:237
-17	0.073	1.21	2.08	0.070	0.85	0.78	220:227
-16	-0.009	-0.09	0.95	0.035	0.38	0.91	220:227
-15	0.029	0.55	0.28	-0.074	-1.15	-1.05	243:204
-14	0.007	0.39	1.28	-0.015	-0.39	0.09	227:220
-13	0.023	0.49	0.32	-0.029	-0.59	-0.98	250:197
-12	0.031	0.58	-0.52	0.054	0.85	-0.65	235:212
-11	0.028	0.60	0.71	0.059	0.90	1.12	210:237
-10	-0.104	-1.76	-1.55	-0.109	-1.88	-1.56	258:189
-9	0.035	0.85	1.08	-0.008	0.02	0.12	231:216
-8	-0.116	-2.04	-1.05	-0.070	-1.54	-0.85	238:209
-7	-0.070	-0.86	-1.08	-0.073	-1.14	-0.56	226:221
-6	-0.042	-0.66	-1.58	-0.086	-1.59	-0.85	225:222
-5	0.031	0.38	0.69	0.079	1.01	0.88	215:232
-4	0.047	0.80	0.90	0.114	1.78	0.64	224:223
-3	0.051	1.03	1.89	0.093	1.57	1.21	211:236
-2	-0.029	-0.31	0.47	0.005	-0.07	0.41	213:234
-1	-0.139	-2.02	-0.91	-0.065	-1.00	-0.70	248:198
0	0.136	2.48	2.62	0.080	1.40	0.56	221:225
1	-0.135	-1.94	-1.03	-0.081	-1.45	-0.35	249:198
2	-0.122	-1.46	-0.67	-0.126	-1.91	-0.30	238:209
3	0.035	1.04	0.06	0.056	0.95	1.06	226:221
4	-0.061	-0.87	-1.97	0.025	0.51	-0.25	232:215
5	-0.058	-0.85	-1.17	-0.059	-0.97	-0.65	245:202
6	-0.013	0.04	1.21	0.013	0.13	0.36	215:232
7	0.015	0.47	1.16	0.016	0.13	0.50	221:226
8	-0.079	-1.40	-0.77	-0.118	-2.32	-1.13	248:199
9	-0.131	-1.86	-2.04	-0.023	-0.34	-0.48	239:208
10	-0.034	-0.29	-0.51	-0.068	-1.12	-0.70	244:203
11	-0.082	-0.84	0.29	-0.053	-0.75	-0.63	239:208
12	-0.028	-0.29	0.48	-0.047	-0.66	-0.28	224:223
13	-0.123	-1.92	-1.64	-0.097	-1.64	-0.44	236:211
14	0.019	0.46	0.74	0.086	1.37	1.04	214:233
15	-0.055	-0.72	-0.22	-0.063	-1.16	-0.50	230:216
16	-0.030	-0.46	0.62	-0.007	-0.28	0.37	220:227
17	-0.065	-1.08	-0.31	0.044	0.65	0.31	229:218
18	-0.054	-0.86	-0.37	0.053	0.81	0.19	224:223
19	0.149	2.68	1.84	0.179	2.93	1.80	200:247
20	0.106	2.03	1.76	0.090	1.55	1.12	208:239
21	-0.034	-0.40	-0.23	-0.002	-0.20	-0.06	225:222
22	-0.091	-1.76	-1.30	0.062	0.69	0.90	209:238
23	-0.180	-2.39	-2.16	-0.069	-1.06	-0.15	243:204
24	-0.189	-3.33	-1.33	-0.197	-3.48	-1.45	249:198
25	-0.069	-0.99	-0.30	-0.016	-0.31	0.35	234:213
26	-0.068	-0.98	-0.49	-0.036	-0.56	-0.12	226:221
27	-0.046	-0.43	1.30	-0.008	0.14	0.57	211:236
28	-0.124	-2.16	-0.85	-0.049	-0.88	0.20	231:216
29	-0.012	-0.10	-0.03	0.108	1.80	1.10	221:226
30	-0.194	-3.33	-1.49	-0.172	-2.98	-1.22	245:201

APPENDIX III : NONPARAMETRIC TEST ON VOLATILITY WITHIN AND OUTSIDE EC

DAY	01EC	MKEC	PREC	01NEC	MKNEC	FRNEC
-30	0.24	0.11	-0.43	0.43	-0.52	-1.11
-29	1.54	2.78*	1.81	-1.22	-0.67	-0.27
-28	-0.17	-0.11	0.01	-0.61	0.47	0.63
-27	0.37	0.15	0.44	-0.62	-0.66	-0.76
-26	0.10	-0.84	-0.79	-1.40	-1.24	-1.01
-25	0.50	0.85	1.12	-0.46	-0.04	-0.13
-24	-0.26	-1.39	-1.16	-0.14	-0.32	0.10
-23	1.29	0.49	0.46	-0.68	-1.51	-1.97*
-22	-0.25	-1.62	-1.48	-1.73	-1.44	-1.88
-21	-1.60	-1.46	-0.37	0.48	0.64	0.67
-20	-1.04	-0.03	-0.83	1.08	-0.37	-0.02
-19	-0.27	-0.68	-0.63	2.04*	2.33*	2.36*
-18	-1.34	-1.84	-0.92	0.85	-0.31	0.18
-17	-2.41*	-0.75	-0.25	-1.62	-1.67	-1.50
-16	-1.57	-0.79	-0.65	1.01	0.18	-0.09
-15	1.24	1.19	1.93	-0.47	-1.24	-1.18
-14	-0.20	-0.91	-1.42	-0.75	-0.37	0.45
-13	0.59	-0.57	-0.19	-0.18	0.57	1.06
-12	-0.46	-0.13	0.27	-0.46	-1.10	-0.39
-11	0.12	-0.88	-0.67	-1.88	-2.13*	-1.94
-10	-1.18	-0.88	-0.98	-1.54	-0.06	-0.33
-9	0.23	0.40	-0.54	-2.15*	-1.03	-1.37
-8	-0.92	-0.64	-1.34	-1.42	-0.73	-0.25
-7	-2.07*	-2.39*	-2.25*	0.21	0.89	1.66
-6	-1.82	-0.40	-0.05	-0.91	-0.88	0.23
-5	0.48	-0.42	-0.21	-0.18	0.47	-0.45
-4	-0.06	-1.85	-1.57	0.95	0.00	0.39
-3	0.35	-0.29	0.66	-1.91	-1.81	-1.57
-2	-1.53	-1.03	-0.01	0.87	0.56	0.55
-1	2.89*	2.64*	1.60	2.31*	1.73	1.74
0	1.05	1.24	1.13	-0.50	0.95	1.40
1	0.66	1.10	1.21	0.08	0.02	-0.10
2	1.83	1.78	1.37	-0.20	0.06	-0.28
3	-0.45	1.08	2.61*	-0.15	-2.06*	-2.02*
4	-0.47	-0.73	-1.27	-0.16	-1.89	-1.55
5	0.67	0.33	-0.17	-1.14	-0.22	-0.09
6	-0.97	0.01	-0.51	0.91	-0.28	-0.16
7	-0.14	0.17	-0.01	-0.67	-0.30	-0.26
8	1.09	0.47	0.44	0.85	0.92	-0.10
9	1.16	1.37	1.56	0.18	-0.93	-0.95
10	-0.52	-0.84	-1.67	0.61	2.32*	1.81
11	0.20	1.36	0.96	-0.35	0.50	0.51
12	-0.36	-0.47	-0.01	2.09*	1.21	0.69
13	0.81	-0.17	-0.28	1.24	0.77	-0.15
14	0.32	1.30	1.34	1.99*	0.63	-0.33
15	-0.65	-1.87	-1.45	0.01	0.24	0.38
16	-0.35	0.10	1.01	1.00	0.59	0.85
17	0.66	-0.01	-0.20	-1.16	-0.05	-0.37
18	-0.12	-0.77	-0.86	0.92	1.24	1.07
19	-0.56	0.08	-0.31	0.50	-1.22	-0.77
20	0.08	-1.06	-1.14	0.32	0.76	-0.43
21	0.89	0.64	0.41	-1.20	-0.22	-0.38
22	0.73	0.84	0.79	0.52	0.13	0.76
23	1.17	1.51	0.75	0.67	1.05	0.56
24	0.80	2.07*	2.24*	1.76	1.12	0.58
25	0.58	1.72	0.38	-0.05	0.90	1.40
26	-1.89	-0.96	-0.55	0.54	1.58	1.81
27	-0.05	1.05	0.67	0.14	0.62	0.81
28	0.48	0.08	-0.52	0.30	0.72	0.53
29	-0.11	0.52	0.45	-0.87	-0.24	0.29
30	0.70	-0.62	0.04	1.90	1.34	0.71

APPENDIX IV: PARAMETRIC TEST ON ABNORMAL RETURNS WITHIN AND OUTSIDE EC

DAY	01EC	MKEC	FREC	01NEC	MKNEC	FRNEC
-30	0.66	0.48	0.73	-0.04	-0.01	-0.25
-29	-0.18	-0.36	-0.46	-1.40	-1.73	-2.09*
-28	-0.36	-0.66	-0.71	0.46	0.97	1.03
-27	0.69	0.65	0.75	-0.41	0.60	0.80
-26	-1.02	-0.23	0.11	-0.99	-0.98	-1.06
-25	-1.32	-0.58	-0.22	-1.56	-1.13	-0.96
-24	-0.68	-0.05	0.19	-0.92	-1.08	-1.33
-23	1.37	1.61	2.18*	0.38	0.41	0.45
-22	-0.20	-0.62	-0.51	0.35	1.30	1.47
-21	1.23	0.95	1.03	-0.56	-0.35	-0.27
-20	-1.12	-0.84	-0.62	-0.51	-0.59	-0.65
-19	-1.17	-1.06	-0.83	0.65	1.13	0.84
-18	1.45	1.97*	2.31*	0.89	0.78	0.23
-17	0.79	0.63	0.80	1.90	1.67	1.13
-16	-0.35	-0.54	-0.00	0.91	1.44	1.46
-15	0.47	-0.76	-1.13	0.18	0.06	-0.03
-14	0.30	0.12	0.01	0.08	-0.75	-1.30
-13	0.57	0.10	-0.29	-0.49	-0.79	-1.40
-12	0.57	0.50	0.73	0.33	0.65	0.67
-11	0.81	0.96	1.24	-0.65	-0.76	-0.71
-10	-1.44	-1.86	-1.60	-1.28	-1.55	-1.41
-9	0.91	0.20	0.11	-0.10	-0.32	-0.42
-8	-1.88	-1.60	-1.26	-0.99	-0.94	-1.21
-7	-1.47	-1.33	-1.23	1.53	0.69	0.20
-6	-0.19	-1.03	-1.16	-0.65	-1.13	-1.45
-5	0.62	0.64	0.98	-0.39	0.12	0.30
-4	0.75	1.52	1.61	0.77	1.25	1.18
-3	0.95	1.54	1.78	0.38	0.06	-0.20
-2	-0.53	-0.29	0.19	0.24	-0.25	-0.69
-1	-2.42*	-1.93	-1.57	1.50	2.15*	2.25*
0	2.66*	1.69	1.48	0.18	0.10	-0.08
1	-2.18*	-2.02*	-1.83	0.62	1.15	1.11
2	-0.94	-1.32	-1.48	-1.43	-1.01	-1.05
3	0.85	0.87	0.95	0.33	0.21	0.37
4	-0.40	0.26	0.67	-1.22	-0.28	-0.20
5	-0.68	-0.92	-0.75	-0.38	-0.91	-0.93
6	0.38	0.25	0.45	-0.65	-0.64	-0.77
7	0.85	0.64	0.56	-1.29	-1.13	-1.07
8	-1.71	-2.54*	-2.32*	0.05	-0.22	-0.71
9	-1.56	-0.59	0.22	-1.77	-1.97*	-2.07*
10	-0.59	-1.41	-1.28	1.49	1.28	0.98
11	-0.13	-0.29	-0.14	-1.71	-1.80	-1.59
12	-0.68	-0.59	-0.58	1.08	-0.38	-0.39
13	-2.06*	-1.70	-1.31	0.39	-0.19	-0.55
14	0.63	1.40	1.56	-0.70	-0.66	-0.65
15	-0.97	-1.11	-0.99	0.55	-0.18	-0.26
16	-1.03	-0.73	-0.48	1.31	0.59	0.51
17	-0.83	0.49	0.95	-1.36	-0.97	-0.74
18	-0.88	0.40	1.05	-1.10	-1.35	-1.66
19	2.82*	3.22*	3.28*	-0.92	-0.47	-0.69
20	1.66	1.36	1.13	1.44	1.27	1.21
21	-0.41	0.12	0.39	0.06	-0.78	-1.19
22	-2.08*	-0.33	0.43	-0.04	0.71	0.97
23	-2.31*	-1.42	-1.02	-0.87	-0.17	-0.24
24	-3.73*	-3.87*	-3.38*	0.79	-0.29	-0.89
25	-1.03	-0.25	0.15	0.05	-0.99	-1.29
26	-1.10	-0.78	-0.87	-0.09	0.58	0.72
27	-0.96	-0.28	-0.21	1.30	1.07	0.89
28	-1.61	-1.25	-0.64	-1.82	-1.21	-0.80
29	0.31	1.43	2.04*	-1.36	-0.71	-0.45
30	-3.12*	-2.51*	-2.26*	-1.87	-2.33*	-2.66*

APPENDIX V : NONPARAMETRIC TEST ON ABNORMAL RETURN WITHIN & OUTSIDE EC

DAY	01EC	MKEC	FREC	01NEC	MKNEC	FRNEC
-30	0.70	0.30	0.26	-0.67	0.35	0.40
-29	0.55	-0.27	-0.45	-1.76	-1.24	-1.33
-28	0.36	-0.75	-1.09	1.19	0.73	1.07
-27	-0.08	-0.43	-0.71	-0.79	0.58	0.41
-26	-0.61	-1.14	-0.82	-1.51	-1.29	-1.22
-25	0.13	-0.18	-0.29	-0.73	-0.19	-0.05
-24	-0.66	-0.85	-1.01	-0.53	-0.66	-0.84
-23	1.73	1.64	1.58	0.67	0.14	0.21
-22	1.05	-0.01	-0.11	0.31	1.45	1.57
-21	1.99*	0.76	0.76	-0.87	-0.53	0.32
-20	-0.30	-0.20	-0.52	0.43	0.41	0.63
-19	-0.59	-0.16	-0.26	-0.88	-0.98	-1.21
-18	1.12	2.05*	2.01*	-0.12	-0.32	-0.53
-17	1.68	1.24	0.95	2.06*	1.76	1.55
-16	1.02	1.07	0.92	0.26	1.08	1.50
-15	0.24	-1.07	-1.58	0.21	-0.11	0.16
-14	0.93	0.33	0.18	0.51	0.16	-0.28
-13	0.33	-0.92	-1.41	-0.27	-0.49	-0.83
-12	-0.53	-0.94	-0.95	-0.03	-0.16	-0.09
-11	0.90	1.95	1.85	-0.52	-0.43	-0.31
-10	-1.56	-2.26*	-2.19*	-0.15	-0.98	-0.86
-9	1.33	0.84	0.47	-0.54	-0.92	-1.27
-8	-0.78	-1.42	-1.16	-1.02	-0.67	-0.45
-7	-1.71	-0.94	-1.00	1.67	0.37	0.65
-6	-1.30	-0.99	-1.11	-0.37	-0.57	-0.54
-5	0.81	1.00	1.02	0.03	0.20	0.68
-4	0.75	0.97	0.76	0.87	0.87	0.70
-3	1.81	2.02*	2.10*	0.32	-0.68	-0.62
-2	0.42	0.71	0.65	0.47	0.74	0.17
-1	-1.29	-2.09*	-1.77	1.08	1.97*	2.12*
0	2.54*	0.87	0.74	1.33	0.56	-0.05
1	-1.24	-1.71	-0.92	0.70	1.18	1.59
2	-0.32	-0.30	-0.22	-0.83	-0.19	-0.23
3	-0.01	1.50	1.61	0.40	0.76	0.52
4	-1.46	-0.44	-0.14	-1.43	-0.54	-0.57
5	-0.99	-0.99	-0.75	-0.57	-1.16	-0.73
6	1.46	0.72	0.68	-0.32	0.11	-0.33
7	1.40	0.97	0.88	-1.02	-0.36	-0.28
8	-1.17	-2.27*	-1.86	0.27	0.08	-0.25
9	-2.06*	-1.27	-0.32	-0.82	-1.43	-1.57
10	-0.55	-1.08	-0.82	0.54	0.22	0.25
11	0.25	-0.93	-1.03	0.70	0.70	0.58
12	-0.11	-0.04	-0.56	1.70	0.19	0.08
13	-1.75	-0.71	-0.46	0.39	-0.05	-0.12
14	0.55	1.20	1.38	0.26	-0.11	0.46
15	-0.63	-0.69	-0.71	1.04	0.23	-0.07
16	0.07	0.38	0.12	1.46	1.31	0.90
17	-0.27	0.21	0.56	-0.72	-0.91	-0.46
18	-0.42	0.47	0.66	-0.88	-1.66	-1.99*
19	1.87	2.76*	2.50*	-0.47	0.30	0.12
20	1.31	1.28	1.02	1.34	1.85	1.47
21	-0.31	0.62	0.48	0.42	-0.62	-1.06
22	-1.53	0.23	0.40	-0.38	2.11*	2.55*
23	-1.73	-0.69	-0.20	-1.10	0.07	0.08
24	-1.61	-2.42*	-2.24*	0.79	0.03	-0.28
25	-0.53	0.67	0.97	0.81	-1.00	-0.93
26	-0.77	-0.50	-0.79	0.11	1.56	1.67
27	0.88	0.85	0.61	1.07	0.59	0.53
28	-0.36	0.68	0.52	-1.36	-0.87	-0.67
29	0.41	1.58	1.86	-1.54	-1.18	-0.78
30	-1.34	-1.19	-1.07	-1.21	-2.36*	-2.11*

APPENDIX VI : NONPARAMETRIC TEST ON VOLATILITY BEFORE AND AFTER ERM

DAY	01PRE	MKPRE	FRPRE	01POS	MKPOS	FRPOS
-30	-0.42	-0.92	-1.24	1.27	0.89	0.51
-29	0.63	1.48	1.38	0.65	1.87	0.62
-28	-0.65	0.65	0.68	0.22	-1.28	-0.93
-27	-0.25	-0.40	-0.36	0.89	0.99	1.26
-26	-0.38	-0.46	-0.57	-0.07	-1.39	-1.15
-25	0.41	0.41	0.89	-0.08	1.06	0.83
-24	-0.45	-1.10	-0.59	0.09	-0.72	-0.80
-23	0.12	-0.47	0.05	1.37	0.48	-0.63
-22	-0.50	-0.83	-1.11	-0.87	-2.39*	-1.96*
-21	-1.70	-2.24*	-1.52	-0.04	1.16	2.22*
-20	-0.88	-0.06	-0.64	0.45	0.05	-0.13
-19	0.34	-1.01	-0.86	0.35	1.77	1.66
-18	-0.25	-0.78	-0.16	-1.05	-1.74	-0.74
-17	-2.21*	-0.88	-0.64	-1.66	-0.49	0.14
-16	-1.70	-0.62	-0.24	0.14	-0.41	-0.86
-15	0.84	0.44	1.25	0.25	0.07	0.02
-14	-0.72	-0.67	-0.84	0.36	-0.65	-0.78
-13	-0.61	-0.93	-0.80	1.48	0.57	1.08
-12	0.48	-0.38	0.10	-1.87	-0.52	-0.13
-11	-0.60	-1.99	-1.98*	-0.22	0.19	0.53
-10	-1.98*	-1.33	-1.59	-0.23	0.04	0.24
-9	-0.46	-0.20	-0.82	-0.42	0.17	-0.73
-8	-1.23	-0.71	-1.20	-0.54	-0.81	-0.99
-7	-1.69	-1.48	-1.20	-0.90	-1.32	-1.20
-6	-1.81	-1.27	-0.78	-0.82	0.65	1.21
-5	0.41	-0.34	-0.46	-0.24	-0.44	-0.40
-4	-0.16	-1.90	-1.35	1.07	-0.34	-0.55
-3	0.61	0.52	1.40	-1.47	-2.66*	-2.03*
-2	-0.88	-0.14	0.74	-0.58	-0.95	-0.42
-1	3.29*	3.51*	2.16*	1.48	0.49	0.77
0	1.21	0.65	-0.00	-0.58	1.53	2.64*
1	0.67	0.85	1.31	-0.05	0.48	0.01
2	1.60	1.88	1.41	0.82	0.24	0.22
3	0.10	0.73	1.92	-0.52	-0.21	0.42
4	-0.00	-1.25	-1.73	-0.81	-0.69	-0.62
5	-0.01	-0.45	-0.71	0.27	0.68	0.46
6	0.12	0.58	-0.45	-1.47	-1.40	-0.67
7	0.41	0.39	0.12	-1.69	-0.50	-0.57
8	2.13*	1.07	0.81	-0.67	-0.06	-0.52
9	1.24	1.42	1.43	0.11	-0.46	-0.32
10	-0.08	0.55	-0.46	-0.51	-0.79	-0.80
11	0.13	1.08	0.68	0.32	1.33	1.21
12	0.39	0.42	0.76	0.30	-0.80	-0.83
13	1.03	-0.58	-0.80	1.11	1.56	1.02
14	0.84	1.86	1.73	0.54	-0.03	-0.17
15	0.11	-0.71	-0.45	-1.29	-1.85	-1.51
16	-0.77	0.09	1.06	1.17	0.43	0.60
17	0.31	-0.17	-0.16	0.17	0.23	-0.35
18	0.45	-0.05	-0.04	0.02	0.17	-0.32
19	-0.15	-0.37	-0.53	-0.04	0.48	0.09
20	-0.00	0.60	-0.04	0.29	-2.28*	-2.44*
21	1.12	1.11	1.00	-1.05	-1.01	-1.25
22	-0.01	0.46	0.92	1.85	1.06	0.62
23	1.36	0.67	-0.28	0.27	2.30*	2.17*
24	0.40	1.69	1.83	1.66	1.86	1.70
25	0.28	0.99	-0.22	0.34	1.85	1.87
26	-0.87	-0.53	-0.05	-1.22	0.42	0.38
27	0.10	1.04	0.51	0.19	0.60	0.66
28	0.11	-0.08	-0.36	0.41	0.46	0.04
29	-0.90	0.15	0.59	0.29	0.19	-0.26
30	1.04	0.02	0.52	0.72	-0.14	-0.15

APPENDIX VII : PARAMETRIC TEST ON ABNORMAL RETURN : BEFORE & AFTER ERM

DAY	(0,1)AR <sub>t</sub> (1)	(FR)AR <sub>t</sub> (1)	(0,1)AR <sub>t</sub> (2)	(FR)AR <sub>t</sub> (2)
-30	0.040	0.75	-0.013	0.07
-29	-0.027	-0.74	-0.082	-1.43
-28	-0.026	-0.38	-0.071	-1.19
-27	-0.023	-0.25	-0.026	-0.37
-26	-0.070	-1.10	-0.040	-0.64
-25	-0.196	-2.92	-0.136	-1.73
-24	-0.105	-1.25	-0.097	-1.19
-23	0.017	0.41	0.102	1.41
-22	0.009	-0.10	-0.018	-0.55
-21	0.064	1.20	0.072	0.97
-20	-0.078	-1.04	-0.042	-0.60
-19	-0.028	-0.28	-0.014	-0.26
-18	0.126	1.99	0.146	1.88
-17	0.086	1.22	0.017	0.00
-16	0.034	0.44	0.026	0.12
-15	0.082	1.11	-0.039	-0.50
-14	-0.024	0.08	-0.047	-0.78
-13	-0.047	-0.35	-0.073	-1.05
-12	-0.023	-0.09	0.022	0.32
-11	-0.020	0.03	0.039	0.53
-10	-0.083	-1.34	-0.111	-1.68
-9	0.031	0.79	-0.019	-0.06
-8	-0.210	-2.93	-0.174	-2.69
-7	-0.097	-0.98	-0.082	-1.07
-6	-0.043	-0.59	-0.075	-1.22
-5	-0.044	-0.56	-0.052	-0.84
-4	0.045	0.68	0.107	1.42
-3	0.080	1.32	0.136	1.88
-2	-0.107	-1.11	-0.126	-1.75
-1	-0.166	-1.99	-0.063	-0.85
0	0.072	1.54	-0.007	0.10
1	-0.099	-1.18	-0.103	-1.63
2	-0.011	0.18	-0.017	-0.23
3	0.162	2.54	0.136	1.85
4	-0.078	-0.93	0.036	0.62
5	-0.046	-0.58	-0.031	-0.48
6	0.038	0.70	0.027	0.30
7	0.019	0.54	0.011	0.03
8	-0.091	-1.40	-0.178	-2.89
9	-0.174	-2.03	-0.048	-0.61
10	0.000	0.23	-0.058	-0.83
11	0.046	0.91	0.061	0.78
12	-0.044	-0.36	-0.056	-0.65
13	-0.168	-2.17	-0.140	-1.95
14	0.024	0.51	0.131	1.74
15	-0.106	-1.18	-0.086	-1.26
16	-0.037	-0.47	-0.071	-1.07
17	-0.105	-1.42	0.053	0.66
18	-0.134	-1.67	0.012	0.18
19	0.150	2.44	0.204	2.85
20	0.048	1.22	0.023	0.55
21	-0.015	-0.09	0.034	0.26
22	-0.156	-2.38	0.003	-0.27
23	-0.100	-1.00	-0.016	-0.23
24	-0.257	-3.79	-0.227	-3.44
25	-0.043	-0.53	0.037	0.39
26	-0.037	-0.46	-0.053	-0.67
27	-0.051	-0.32	0.035	0.68
28	-0.111	-1.77	-0.033	-0.69
29	-0.024	-0.17	0.089	1.24
30	-0.252	-3.63	-0.223	-3.27



APPENDIX VIII: NONPARAMETRIC TEST ON VOLATILITY WITHIN EC PRE/POST ERM

DAY	01PRE	MKPRE	FRPRE	01POS	MKPOS	FRPOS
-30	-0.35	-0.47	-0.84	0.98	0.92	0.50
-29	1.25	1.90	1.61	0.89	2.18*	0.85
-28	-0.88	0.46	0.48	1.04	-0.91	-0.73
-27	-0.20	-0.51	-0.42	0.97	1.05	1.44
-26	0.15	-0.41	-0.61	-0.05	-0.90	-0.51
-25	0.59	0.25	0.68	0.01	1.17	1.01
-24	-0.53	-1.12	-0.55	0.34	-0.83	-1.29
-23	0.19	-0.27	0.43	2.06*	1.31	0.17
-22	0.00	-0.73	-0.92	-0.46	-1.84	-1.29
-21	-1.85	-2.32*	-1.84	-0.08	0.89	2.14*
-20	-0.88	0.05	-0.63	-0.55	-0.14	-0.56
-19	-0.43	-1.83	-1.53	0.16	1.57	1.21
-18	-0.42	-0.78	-0.32	-1.79	-2.17*	-1.19
-17	-2.35*	-0.86	-0.57	-0.81	-0.05	0.41
-16	-2.12*	-0.80	-0.38	0.37	-0.22	-0.61
-15	1.20	1.06	1.85	0.43	0.55	0.69
-14	-0.22	-0.40	-0.79	-0.03	-1.04	-1.38
-13	-0.30	-0.76	-0.61	1.54	0.13	0.60
-12	0.65	-0.15	0.26	-1.85	-0.00	0.10
-11	-0.23	-1.46	-1.43	0.57	0.62	0.96
-10	-1.38	-1.08	-1.47	-0.06	0.04	0.46
-9	0.33	0.00	-0.59	-0.08	0.72	-0.09
-8	-1.08	-0.65	-1.44	-0.03	-0.16	-0.24
-7	-2.03*	-2.06*	-1.88	-0.67	-1.23	-1.23
-6	-1.60	-0.94	-0.85	-0.89	0.70	1.22
-5	0.67	-0.38	-0.28	-0.15	-0.18	0.04
-4	-0.58	-1.88	-1.26	0.78	-0.51	-0.93
-3	0.61	0.81	1.66	-0.30	-1.78	-1.34
-2	-1.61	-0.66	0.36	-0.35	-0.87	-0.57
-1	2.80*	3.14*	1.75	1.00	0.01	0.25
0	1.56	0.57	-0.02	-0.47	1.38	2.10*
1	1.10	1.14	1.45	-0.48	0.27	-0.01
2	1.76	2.15*	1.87	0.66	-0.04	-0.36
3	0.25	1.15	2.63*	-1.21	0.23	0.75
4	0.05	-0.24	-0.90	-0.93	-0.96	-0.95
5	0.40	-0.09	-0.48	0.61	0.74	0.42
6	-0.33	0.59	-0.46	-1.27	-0.90	-0.24
7	0.77	0.33	-0.08	-1.45	-0.19	0.11
8	1.74	0.76	0.84	-0.66	-0.30	-0.49
9	1.38	1.70	1.70	0.02	-0.11	0.25
10	-0.26	0.02	-0.91	-0.55	-1.58	-1.66
11	0.15	1.07	0.59	0.13	0.85	0.86
12	-0.11	0.11	0.69	-0.48	-1.04	-1.08
13	0.64	-1.10	-1.08	0.51	1.38	1.14
14	-0.11	1.12	1.17	0.76	0.65	0.65
15	0.03	-0.82	-0.62	-1.23	-2.17*	-1.70
16	-1.27	-0.19	0.96	1.31	0.49	0.38
17	0.41	0.09	0.01	0.57	-0.15	-0.39
18	0.15	-0.46	-0.41	-0.46	-0.71	-0.94
19	-0.11	-0.02	-0.26	-0.86	0.17	-0.16
20	-0.23	0.51	0.15	0.50	-2.72*	-2.31*
21	1.23	1.21	1.26	-0.26	-0.69	-1.18
22	0.20	0.67	1.00	1.03	0.51	-0.09
23	1.19	0.60	-0.22	0.32	1.85	1.72
24	0.34	1.46	1.71	0.95	1.54	1.48
25	0.54	0.95	-0.64	0.23	1.68	1.68
26	-1.26	-0.94	-0.31	-1.53	-0.32	-0.54
27	0.12	0.91	0.33	-0.28	0.53	0.72
28	0.15	-0.44	-0.76	0.65	0.81	0.22
29	-0.34	0.19	0.40	0.31	0.66	0.21
30	0.48	-0.17	0.50	0.55	-0.88	-0.69

APPENDIX IX: AVE. ABNORMAL RETURN(%) WITHIN EC, PRE & POST ERM

DAY	(0,1)PRE	MKTPRE	F.R.PRE	(0,1)POS	MKTPOS	F.R.POS
-30	0.07	0.02	0.01	-0.05	0.02	0.11
-29	-0.01	-0.02	-0.05	0.05	0.05	0.07
-28	-0.02	-0.06	-0.08	-0.04	0.04	0.10
-27	0.00	-0.03	-0.04	0.16	0.22	0.28
-26	-0.07	-0.04	-0.03	-0.03	0.08	0.14
-25	-0.16	-0.12	-0.09	0.14	0.15	0.16
-24	-0.07	-0.04	-0.05	-0.03	0.06	0.14
-23	0.04	0.07	0.11	0.21	0.18	0.22
-22	0.00	-0.03	-0.04	0.00	0.00	0.04
-21	0.09	0.08	0.08	0.00	-0.01	0.04
-20	-0.06	-0.02	-0.02	-0.13	-0.15	-0.11
-19	-0.05	-0.03	-0.02	-0.16	-0.16	-0.11
-18	0.12	0.15	0.17	-0.02	0.06	0.14
-17	0.05	0.02	0.03	0.06	0.13	0.16
-16	-0.01	-0.02	0.00	-0.06	-0.02	0.04
-15	0.07	-0.02	-0.06	-0.06	-0.12	-0.11
-14	-0.01	-0.00	-0.01	0.01	0.02	0.05
-13	-0.07	-0.05	-0.07	0.29	0.16	0.14
-12	0.00	0.02	0.04	0.11	0.06	0.07
-11	-0.02	0.04	0.05	0.19	0.12	0.16
-10	-0.09	-0.11	-0.12	-0.09	-0.11	-0.05
-9	0.03	0.00	-0.02	0.07	0.01	0.05
-8	-0.22	-0.18	-0.17	0.13	0.16	0.19
-7	-0.14	-0.10	-0.10	-0.04	-0.06	-0.05
-6	-0.03	-0.06	-0.08	0.03	-0.05	-0.01
-5	-0.03	-0.04	-0.04	0.22	0.28	0.37
-4	0.06	0.11	0.11	0.00	0.07	0.10
-3	0.06	0.12	0.14	0.05	0.03	0.05
-2	-0.14	-0.13	-0.12	0.21	0.25	0.35
-1	-0.20	-0.13	-0.09	-0.09	-0.12	-0.13
0	0.08	0.01	-0.01	0.35	0.33	0.33
1	-0.10	-0.10	-0.11	-0.30	-0.19	-0.11
2	0.02	0.01	0.00	-0.37	-0.37	-0.36
3	0.16	0.16	0.14	-0.28	-0.21	-0.13
4	-0.06	0.00	0.04	0.03	0.04	0.05
5	0.00	-0.00	0.01	-0.20	-0.21	-0.19
6	0.06	0.05	0.06	-0.10	-0.06	-0.01
7	0.05	0.06	0.05	0.02	-0.00	0.03
8	-0.10	-0.15	-0.16	-0.10	-0.10	-0.05
9	-0.15	-0.06	0.00	-0.04	-0.02	0.04
10	0.02	-0.04	-0.05	-0.23	-0.22	-0.16
11	0.07	0.06	0.07	-0.29	-0.25	-0.19
12	-0.08	-0.06	-0.07	-0.01	-0.01	0.03
13	-0.17	-0.11	-0.09	-0.08	-0.09	-0.07
14	0.05	0.12	0.13	-0.01	0.02	0.04
15	-0.11	-0.08	-0.07	0.01	-0.02	-0.01
16	-0.07	-0.07	-0.08	-0.07	0.04	0.12
17	-0.08	0.05	0.09	-0.01	-0.01	0.02
18	-0.13	-0.01	0.05	0.11	0.10	0.13
19	0.15	0.22	0.23	0.22	0.14	0.17
20	0.05	0.04	0.02	0.18	0.16	0.18
21	-0.03	0.05	0.07	-0.04	-0.06	-0.05
22	-0.17	-0.03	0.01	0.01	0.07	0.14
23	-0.11	-0.03	-0.01	-0.37	-0.28	-0.21
24	-0.27	-0.24	-0.22	-0.12	-0.21	-0.18
25	-0.04	0.05	0.07	-0.18	-0.17	-0.13
26	-0.06	-0.04	-0.07	-0.13	-0.08	-0.05
27	-0.08	-0.01	0.00	-0.11	-0.11	-0.10
28	-0.10	-0.07	-0.05	-0.08	-0.07	0.00
29	0.00	0.09	0.11	0.04	0.07	0.17
30	-0.26	-0.20	-0.20	-0.02	-0.03	0.00

APPENDIX X: PARAMETRIC TEST ON ABNORMAL RETURN WITHIN EC PRE & POST ERM

DAY	01PRE	MKPRE	FRPRE	01POS	MKPOS	FRPOS
-30	0.99	0.53	0.67	-0.31	0.07	0.76
-29	-0.46	-0.69	-1.32	0.37	0.40	0.54
-28	-0.24	-0.98	-1.07	-0.29	0.30	0.72
-27	0.08	-0.40	-0.59	1.14	1.80	2.18*
-26	-1.09	-0.67	-0.70	-0.20	0.61	1.06
-25	-2.23*	-1.43	-0.36	1.00	1.13	1.13
-24	-0.68	-0.38	0.41	-0.21	0.49	1.09
-23	0.66	0.96	0.53	1.49	1.47	1.76
-22	-0.22	-0.77	-1.02	-0.03	0.05	0.29
-21	1.46	1.16	0.54	0.02	-0.05	0.26
-20	-0.71	-0.26	-0.32	-0.95	-1.13	-0.81
-19	-0.62	-0.50	-0.19	-1.18	-1.17	-0.84
-18	1.81	2.05*	0.88	-0.12	0.46	1.08
-17	0.67	0.13	-0.20	0.41	0.95	1.18
-16	-0.12	-0.59	-0.46	-0.46	-0.07	0.40
-15	0.86	-0.31	-0.60	-0.46	-0.90	-0.87
-14	0.29	0.04	-0.16	0.10	0.15	0.36
-13	-0.68	-0.65	-0.51	2.09*	1.18	0.98
-12	0.19	0.32	0.43	0.74	0.43	0.53
-11	0.09	0.53	-0.32	1.33	0.94	1.20
-10	-1.31	-1.70	-1.00	-0.62	-0.78	-0.38
-9	0.75	0.22	0.48	0.51	0.04	0.35
-8	-2.85*	-2.69*	-2.12*	0.94	1.20	1.37
-7	-1.55	-1.26	0.35	-0.30	-0.51	-0.42
-6	-0.39	-0.95	-0.63	0.24	-0.44	-0.19
-5	-0.29	-0.63	-0.50	1.58	2.14*	2.79*
-4	0.88	1.43	0.40	0.02	0.58	0.77
-3	0.88	1.67	0.45	0.38	0.25	0.44
-2	-1.59	-1.62	-0.33	1.48	1.96*	2.71*
-1	-2.48*	-1.75	-0.59	-0.62	-0.84	-0.91
0	1.54	0.33	0.47	2.51*	2.58*	2.63*
1	-1.18	-1.52	-1.81	-2.17*	-1.37	-0.76
2	0.59	0.24	0.44	-2.63*	-2.77*	-2.75*
3	2.31*	2.11*	-0.20	-1.99*	-1.64	-1.04
4	-0.64	0.09	0.42	0.24	0.33	0.38
5	0.14	-0.07	-0.43	-1.46	-1.58	-1.50
6	0.92	0.63	-0.19	-0.73	-0.51	-0.13
7	0.93	0.80	-0.32	0.12	-0.05	0.15
8	-1.54	-2.54*	-0.55	-0.76	-0.73	-0.35
9	-1.68	-0.63	0.59	-0.28	-0.11	0.33
10	0.38	-0.62	-0.31	-1.66	-1.62	-1.24
11	1.19	0.93	0.30	-2.06	-1.95	-1.53
12	-0.78	-0.64	-0.33	-0.05	-0.10	0.24
13	-2.10*	-1.56	-0.81	-0.55	-0.71	-0.58
14	0.80	1.59	0.32	-0.08	0.13	0.26
15	-1.23	-1.16	-1.20	0.12	-0.24	-0.18
16	-0.92	-1.04	-0.73	-0.47	0.26	0.88
17	-0.97	0.66	0.18	-0.04	-0.11	0.15
18	-1.58	-0.01	-0.18	0.82	0.74	0.93
19	2.34*	3.14*	2.18*	1.56	1.07	1.23
20	1.15	0.86	0.45	1.28	1.17	1.37
21	-0.31	0.49	-0.11	-0.27	-0.52	-0.43
22	-2.49*	-0.77	-0.32	0.03	0.57	1.10
23	-1.03	-0.28	-0.00	-2.64*	-2.16*	-1.61
24	-3.88*	-3.58*	-1.50	-0.88	-1.58	-1.33
25	-0.38	0.58	0.13	-1.30	-1.35	-1.05
26	-0.70	-0.52	-0.13	-0.95	-0.63	-0.38
27	-0.62	0.17	1.30	-0.81	-0.77	-0.70
28	-1.52	-1.25	-1.28	-0.61	-0.36	0.20
29	0.21	1.25	-0.00	0.25	0.71	1.39
30	-3.64*	-2.89*	-1.95	-0.12	-0.17	0.07

APPENDIX XI:NONPARAMETRIC TEST ON ABNORMAL RETURN WITHIN EC PRE/POST ERM

DAY	01PRE	MKPRE	FRPRE	01POS	MKPOS	FRPOS
-30	1.13	0.41	0.18	-0.46	-0.08	0.20
-29	0.28	-0.82	-0.94	0.58	0.76	0.60
-28	0.17	-0.95	-1.43	0.40	0.08	0.21
-27	-0.50	-1.03	-1.59	0.61	0.79	1.14
-26	-0.66	-1.28	-0.97	-0.11	-0.13	-0.02
-25	-0.03	-0.49	-0.58	0.29	0.41	0.37
-24	-0.74	-0.58	-1.13	-0.07	-0.68	-0.11
-23	0.95	1.21	1.31	1.70	1.15	0.89
-22	0.64	-0.63	-0.43	0.94	0.94	0.45
-21	1.90	1.48	1.43	0.73	-0.88	-0.79
-20	-0.08	-0.14	-0.45	-0.43	-0.14	-0.26
-19	0.17	0.52	0.35	-1.35	-1.10	-1.02
-18	1.99*	2.34*	2.16*	-1.00	0.17	0.37
-17	1.69	0.73	0.64	0.48	1.16	0.76
-16	1.07	1.00	0.85	0.22	0.42	0.37
-15	1.15	-0.25	-0.69	-1.33	-1.59	-1.84
-14	1.06	0.63	0.57	0.08	-0.36	-0.53
-13	-0.35	-1.09	-1.46	1.14	-0.02	-0.35
-12	0.04	-0.66	-0.56	-1.03	-0.72	-0.88
-11	0.51	1.45	1.33	0.86	1.35	1.34
-10	-1.24	-2.11*	-2.05*	-0.96	-0.90	-0.86
-9	1.22	0.89	0.40	0.56	0.18	0.24
-8	-1.03	-2.26*	-1.92	0.15	0.86	0.82
-7	-1.37	-0.74	-0.67	-1.02	-0.59	-0.80
-6	-1.01	-0.87	-1.00	-0.83	-0.47	-0.49
-5	0.52	-0.08	-0.24	0.68	1.95	2.25*
-4	1.39	1.75	1.33	-0.75	-0.90	-0.64
-3	1.19	1.81	2.20*	1.49	0.92	0.47
-2	0.60	-0.09	-0.44	-0.14	1.43	1.87
-1	-1.49	-1.69	-1.02	-0.08	-1.25	-1.69
0	1.27	-0.11	-0.22	2.71*	1.76	1.69
1	-0.94	-1.84	-1.23	-0.83	-0.31	0.19
2	1.03	0.92	0.95	-2.18*	-1.96*	-1.86
3	0.62	1.14	1.27	-0.97	1.01	1.01
4	-1.75	-0.86	-0.36	0.02	0.51	0.30
5	-0.17	0.26	0.63	-1.55	-2.21*	-2.34*
6	1.49	1.09	1.05	0.39	-0.36	-0.37
7	0.56	0.53	0.71	1.71	0.97	0.53
8	-0.52	-1.47	-1.20	-1.33	-1.91	-1.58
9	-1.89	-1.10	-0.19	-0.88	-0.64	-0.30
10	0.49	-0.40	-0.32	-1.77	-1.37	-1.00
11	1.08	0.16	0.01	-1.20	-1.95	-1.90
12	0.05	-0.36	-1.01	-0.28	0.48	0.52
13	-2.38*	-1.12	-0.82	0.45	0.43	0.42
14	-0.24	1.32	1.72	1.38	0.18	-0.12
15	-0.99	-0.20	-0.16	0.36	-0.96	-1.05
16	0.48	-0.13	-0.48	-0.62	0.89	0.97
17	-1.00	-0.05	0.38	1.04	0.46	0.45
18	-1.68	0.17	0.39	1.81	0.60	0.61
19	1.43	2.92*	2.69*	1.23	0.58	0.44
20	0.72	0.89	0.73	1.29	0.97	0.76
21	-0.35	0.54	0.54	-0.03	0.30	0.05
22	-1.68	0.18	0.33	-0.22	0.15	0.23
23	-0.94	0.03	0.34	-1.72	-1.30	-0.88
24	-1.94	-2.16*	-2.11*	0.03	-1.11	-0.87
25	-0.19	1.10	1.34	-0.68	-0.45	-0.29
26	-0.87	-0.67	-0.96	-0.07	0.11	0.02
27	1.40	1.39	1.27	-0.54	-0.58	-0.82
28	-1.11	-0.09	-0.37	1.06	1.39	1.52
29	0.94	1.17	1.25	-0.69	1.10	1.49
30	-2.08*	-1.72	-1.36	0.74	0.46	0.14

APPENDIX XII: PARAMETRIC & NONPARAMETRIC TEST ABNORMAL RETURNS & VOLATILITY

MARKET ADJUSTED MODEL					MARKET MODEL			
DAY	AR <sub>t</sub> (%)	ZV <sub>t</sub>	NPT(1)	NPT(2)	AR <sub>t</sub> (%)	ZV <sub>t</sub>	NPT(1)	NPT(2)
-30	0.12	0.67	0.69	-1.16	0.12	0.67	0.89	-1.61
-29	0.08	0.46	0.47	-0.68	0.12	0.68	0.54	-0.50
-28	0.04	0.25	1.10	0.67	0.03	0.17	1.01	0.48
-27	-0.04	-0.25	-0.29	-1.08	-0.02	-0.14	-0.48	-0.99
-26	-0.46	-2.56*	-1.69	0.70	-0.44	-2.48*	-1.71	0.22
-25	0.01	0.08	0.19	-0.51	0.03	0.16	0.24	-0.58
-24	-0.04	-0.25	-0.53	-1.12	-0.01	-0.08	-0.43	-1.21
-23	0.11	0.62	0.73	-0.85	0.13	0.76	0.77	-0.63
-22	0.20	1.12	1.02	-0.40	0.21	1.21	1.28	-0.69
-21	-0.19	-1.06	-1.04	-0.32	-0.14	-0.80	-1.11	-0.28
-20	0.39	2.25*	0.66	1.42	0.40	2.33*	0.89	1.08
-19	-0.17	-0.95	-1.39	1.06	-0.17	-0.99	-1.54	1.18
-18	0.05	0.28	0.24	0.50	0.05	0.29	0.08	0.41
-17	-0.06	-0.32	0.19	1.53	-0.03	-0.17	0.29	1.48
-16	-0.15	-0.85	-0.64	-0.66	-0.12	-0.73	-0.54	-0.57
-15	-0.28	-1.58	-1.62	-0.14	-0.29	-1.66	-1.69	-0.13
-14	0.26	1.47	1.37	1.27	0.23	1.34	0.81	1.54
-13	-0.05	-0.24	-0.30	0.75	-0.07	-0.37	-0.51	0.78
-12	-0.01	-0.08	-0.02	-0.44	-0.01	-0.03	-0.06	-0.39
-11	-0.13	-0.73	-0.97	-0.15	-0.08	-0.49	-0.73	0.26
-10	0.18	1.04	0.85	-1.02	0.16	0.93	0.36	-0.96
-9	0.04	0.22	1.08	0.34	0.01	0.04	0.66	0.61
-8	0.11	0.62	0.03	-0.73	0.12	0.72	0.04	-0.45
-7	0.38	2.15*	1.58	0.02	0.41	2.35*	1.57	-0.09
-6	0.19	1.07	0.34	-0.72	0.19	1.08	0.47	-0.07
-5	-0.06	-0.36	-0.13	-0.49	-0.04	-0.21	-0.09	-0.13
-4	0.23	1.32	0.49	1.11	0.28	1.62	0.52	1.03
-3	0.11	0.60	0.34	0.28	0.10	0.59	0.08	-0.21
-2	-0.18	-1.01	-0.52	0.01	-0.19	-1.09	-1.00	0.45
-1	-0.09	-0.51	-0.33	-0.14	-0.07	-0.42	-0.37	-0.02
0	-0.12	-0.70	-0.87	0.97	-0.09	-0.50	-0.71	1.18
1	-0.27	-1.55	-0.86	1.03	-0.21	-1.19	-0.42	0.81
2	0.01	0.04	-0.10	0.47	-0.01	-0.04	-0.06	0.03
3	0.06	0.36	0.02	0.43	0.10	0.58	-0.01	0.85
4	0.10	0.59	1.08	-0.70	0.10	0.60	0.84	-0.66
5	0.12	0.70	0.75	0.09	0.10	0.57	0.48	-0.01
6	0.06	0.36	0.40	-1.51	0.09	0.50	0.58	-1.11
7	0.10	0.60	0.51	0.58	0.10	0.59	0.49	-0.26
8	0.12	0.68	0.63	-1.03	0.16	0.95	0.88	-1.07
9	-0.16	-0.93	-0.41	0.42	-0.16	-0.90	-0.58	0.94
10	-0.23	-1.30	-1.30	0.11	-0.26	-1.48	-1.67	-0.04
11	-0.31	-1.75	-1.47	0.70	-0.27	-1.59	-1.46	0.73
12	0.04	0.24	-0.14	-0.05	0.13	0.74	0.54	-0.09
13	-0.25	-1.43	-0.98	-0.08	-0.30	-1.69	-0.98	-0.34
14	0.25	1.44	1.68	-0.13	0.24	1.43	1.41	-0.34
15	0.25	1.44	2.02*	-0.82	0.26	1.49	2.02*	-1.03
16	-0.00	-0.01	-0.26	-0.98	0.01	0.03	-0.14	-1.28
17	0.03	0.14	-0.30	0.12	0.02	0.09	-0.26	0.70
18	-0.06	-0.35	-0.38	-1.85	0.02	0.09	-0.09	-1.65
19	-0.11	-0.64	-0.48	0.22	-0.11	-0.66	-0.46	-0.11
20	-0.26	-1.50	-1.48	-0.60	-0.27	-1.57	-1.40	-0.33
21	0.23	1.28	1.07	1.36	0.26	1.49	1.28	1.11
22	-0.10	-0.57	-0.34	0.43	-0.05	-0.28	-0.05	0.15
23	0.15	0.88	1.78	-0.56	0.18	1.04	2.08*	-0.74
24	-0.01	-0.08	-0.17	-0.25	-0.03	-0.20	-0.22	-0.51
25	-0.16	-0.92	-0.94	0.34	-0.15	-0.86	-0.79	0.80
26	-0.09	-0.52	-1.02	0.20	-0.11	-0.62	-1.23	0.60
27	0.01	0.05	-0.01	0.70	-0.01	-0.03	-0.10	0.57
28	0.17	0.99	0.89	-0.33	0.19	1.08	0.92	-0.14
29	-0.58	-3.27*	-1.14	1.77	-0.60	-3.47*	-1.32	1.59
30	0.01	0.04	-0.08	-0.08	0.01	0.04	0.17	-0.35

Notes : ZV<sub>t</sub> - t-values of abnormal return  
 NPT(1) & NPT(2) are non-parametric rank test on  
 abnormal return and volatility

APPENDIX XIII: T-VALUES OF CUM.ABNORMAL RETURN IN 61DAY WINDOW

DAY	MARKET ADJUSTED MODEL			MARKET MODEL			-ve:+ve
	CAR <sub>t</sub> (%)	SCAR <sub>t</sub>	ZWL	CAR <sub>t</sub> (%)	SCAR <sub>t</sub>	ZWL	
-30	0.12	0.67	0.67	0.12	0.67	0.67	34:31
-29	0.20	1.13	0.80	0.23	1.35	0.95	30:35
-28	0.24	1.38	0.80	0.26	1.52	0.88	25:40
-27	0.20	1.13	0.57	0.24	1.38	0.69	28:37
-26	-0.26	-1.42	-0.64	-0.20	-1.10	-0.49	30:35
-25	-0.24	-1.34	-0.55	-0.17	-0.95	-0.39	31:34
-24	-0.29	-1.60	-0.60	-0.18	-1.03	-0.39	29:36
-23	-0.18	-0.98	-0.35	-0.05	-0.26	-0.09	34:31
-22	0.02	0.14	0.05	0.16	0.95	0.32	35:30
-21	-0.17	-0.92	-0.29	0.02	0.15	0.05	35:30
-20	0.23	1.33	0.40	0.42	2.48	0.75	32:33
-19	0.06	0.37	0.11	0.25	1.48	0.43	33:32
-18	0.11	0.65	0.18	0.30	1.77	0.49	35:30
-17	0.05	0.34	0.09	0.27	1.60	0.43	34:31
-16	-0.09	-0.51	-0.13	0.15	0.88	0.23	33:32
-15	-0.37	-2.10	-0.52	-0.14	-0.79	-0.20	34:31
-14	-0.11	-0.63	-0.15	0.09	0.55	0.13	39:26
-13	-0.16	-0.87	-0.20	0.02	0.18	0.04	36:29
-12	-0.18	-0.95	-0.22	0.01	0.15	0.03	32:33
-11	-0.31	-1.68	-0.37	-0.07	-0.34	-0.08	33:32
-10	-0.12	-0.64	-0.14	0.09	0.59	0.13	33:32
-9	-0.08	-0.41	-0.09	0.10	0.63	0.13	31:34
-8	0.02	0.20	0.04	0.22	1.35	0.28	33:32
-7	0.40	2.36	0.48	0.63	3.70	0.76	28:37
-6	0.59	3.43	0.69	0.81	4.78	0.96	30:35
-5	0.53	3.06	0.60	0.78	4.57	0.90	32:33
-4	0.76	4.39	0.84	1.06	6.19	1.19	34:31
-3	0.87	4.99	0.94	1.16	6.78	1.28	34:31
-2	0.69	3.98	0.74	0.97	5.69	1.06	35:30
-1	0.60	3.47	0.63	0.90	5.26	0.96	34:31
0	0.48	2.77	0.50	0.81	4.77	0.86	35:30
1	0.20	1.22	0.22	0.61	3.58	0.63	35:30
2	0.21	1.26	0.22	0.60	3.54	0.62	36:29
3	0.27	1.62	0.28	0.70	4.12	0.71	36:29
4	0.38	2.21	0.37	0.80	4.72	0.80	35:30
5	0.50	2.91	0.48	0.90	5.29	0.88	37:28
6	0.56	3.27	0.54	0.99	5.79	0.95	34:31
7	0.67	3.86	0.63	1.09	6.38	1.03	36:29
8	0.78	4.54	0.73	1.25	7.32	1.17	34:31
9	0.62	3.61	0.57	1.10	6.42	1.02	33:32
10	0.39	2.31	0.36	0.84	4.94	0.77	34:31
11	0.09	0.56	0.09	0.57	3.35	0.52	36:29
12	0.13	0.81	0.12	0.70	4.09	0.62	34:31
13	-0.13	-0.62	-0.09	0.40	2.40	0.36	35:30
14	0.13	0.82	0.12	0.65	3.83	0.57	35:30
15	0.38	2.25	0.33	0.90	5.32	0.78	35:30
16	0.38	2.24	0.33	0.91	5.35	0.78	33:32
17	0.40	2.38	0.34	0.93	5.44	0.78	34:31
18	0.34	2.03	0.29	0.94	5.53	0.79	34:31
19	0.23	1.39	0.20	0.83	4.88	0.69	32:33
20	-0.04	-0.11	-0.02	0.56	3.31	0.46	34:31
21	0.19	1.17	0.16	0.82	4.79	0.66	33:32
22	0.09	0.60	0.08	0.77	4.51	0.62	31:34
23	0.25	1.49	0.20	0.95	5.55	0.76	33:32
24	0.23	1.40	0.19	0.91	5.35	0.72	33:32
25	0.07	0.48	0.06	0.77	4.49	0.60	36:29
26	-0.02	-0.04	-0.01	0.66	3.87	0.51	34:31
27	-0.02	0.01	0.00	0.65	3.84	0.50	35:30
28	0.16	1.01	0.13	0.84	4.92	0.64	37:28
29	-0.42	-2.26	-0.29	0.24	1.45	0.19	38:27
30	-0.41	-2.22	-0.28	0.24	1.50	0.19	36:29

**-APPENDIX XIV : T-VALUES OF CUM. ABNORMAL RETURN USING 5  
DAY AND 11 DAY REVOLVING TEST PERIOD**

PERIOD	(0,1)	MKT	PERIOD	(0,1)	MKT
1 - 5	-0.64	-0.49	1 - 11	0.40	0.75
2 - 6	-0.90	-0.72	2 - 12	-0.09	0.24
3 - 7	-1.22	-1.06	3 - 13	-0.14	0.13
4 - 8	-1.06	-0.80	4 - 14	-0.32	0.03
5 - 9	-0.44	-0.19	5 - 15	-0.50	-0.15
6 - 10	0.22	0.56	6 - 16	-0.20	0.09
7 - 11	1.19	1.53	7 - 17	0.21	0.45
8 - 12	0.88	1.12	8 - 18	0.22	0.36
9 - 13	0.73	0.91	9 - 19	0.01	0.12
10 - 14	0.09	0.29	10 - 20	-0.55	-0.39
11 - 15	0.18	0.32	11 - 21	0.09	0.13
12 - 16	-1.53	-1.46	12 - 22	-0.52	-0.56
13 - 17	-0.45	-0.42	13 - 23	-0.05	-0.04
14 - 18	-0.68	-0.71	14 - 24	0.51	0.58
15 - 19	-0.57	-0.65	15 - 25	0.93	0.96
16 - 20	-0.52	-0.54	16 - 26	1.08	1.11
17 - 21	0.65	0.61	17 - 27	1.96*	2.10*
18 - 22	0.10	0.04	18 - 28	1.70	1.88
19 - 23	0.48	0.53	19 - 29	1.46	1.66
20 - 24	1.48	1.59	20 - 30	1.33	1.54
21 - 25	2.28*	2.29*	21 - 31	1.34	1.54
22 - 26	1.66	1.78	22 - 32	0.56	0.90
23 - 27	2.15*	2.49*	23 - 33	0.50	0.88
24 - 28	2.14*	2.43*	24 - 34	0.43	0.83
25 - 29	0.73	0.89	25 - 35	-0.04	0.31
26 - 30	0.02	0.22	26 - 36	-0.16	0.15
27 - 31	-0.13	0.09	27 - 37	0.06	0.37
28 - 32	-1.42	-1.17	28 - 38	-0.16	0.06
29 - 33	-1.67	-1.45	29 - 39	-0.14	0.16
30 - 34	-1.06	-0.70	30 - 40	-0.11	0.22
31 - 35	-0.56	-0.24	31 - 41	-0.35	-0.10
32 - 36	0.06	0.23	32 - 42	-0.67	-0.43
33 - 37	0.92	0.99	33 - 43	-0.12	0.15
34 - 38	1.16	1.27	34 - 44	-0.57	-0.34
35 - 39	1.31	1.43	35 - 45	-0.24	-0.09
36 - 40	0.63	0.76	36 - 46	0.01	0.18
37 - 41	-0.27	-0.16	37 - 47	-0.20	0.02
38 - 42	-1.21	-1.09	38 - 48	-0.27	-0.11
39 - 43	-1.37	-1.02	39 - 49	-0.55	-0.26
40 - 44	-2.31*	-2.20*	40 - 50	-0.95	-0.74
41 - 45	-1.25	-1.16	41 - 51	-1.12	-0.94
42 - 46	-0.02	0.17	42 - 52	-0.34	-0.04
43 - 47	0.75	0.89	43 - 53	0.01	0.35
44 - 48	0.70	0.60	44 - 54	0.21	0.44
45 - 49	1.19	1.40	45 - 55	0.61	0.89
46 - 50	0.25	0.47	46 - 56	-0.10	0.20
47 - 51	-1.06	-0.90	47 - 57	-0.69	-0.43
48 - 52	-0.48	-0.25	48 - 58	-0.67	-0.45
49 - 53	-0.79	-0.41	49 - 59	-0.41	-0.16
50 - 54	-0.24	0.01	50 - 60	-1.29	-1.23
51 - 55	0.01	0.21	51 - 61	-1.09	-1.02
52 - 56	0.26	0.53			
53 - 57	-0.54	-0.41			
54 - 58	-0.26	-0.30			
55 - 59	-0.21	-0.28			
56 - 60	-1.64	-1.74			
57 - 61	-1.21	-1.34			