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Industrial Trade Shows: Their Role and Spatial Dimension in Industrial Restructuring

by

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THESIS

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Abstract

The fundamental changes in the economic environment since the 1970s put firms under immense pressure to adjust their strategies to the increasingly dynamic and flexible global economy. The simultaneous upsurge in industrial trade show activity suggests that these events hold a central position in the process of restructuring. Therefore this study aims at theoretically examining the economic functions of trade shows and thus their role in economic restructuring.

Yet, if trade shows are significant in industrial restructuring, it is important to learn about their spatial structure and thus their accessibility to firms in different countries and regions. This is carried out at the level of the European Union as the study area both on the national as well as on the regional scale. Besides the distribution of these events the quality of the trade show environment of the different member countries is investigated. In addition to the analysis of the spatial patterns of these activities, the influential socio-economic factors responsible for their distribution are examined.

The results of the theoretical analysis reveal a multitude of economic functions of trade shows that are of significant value for the competitiveness of firms to cope with the rapidly changing business environment. Yet, as the empirical analysis showed, trade shows are highly spatially concentrated in the economically powerful core regions of the European Union. Their accessibility to firms in less supplied peripheral countries is therefore limited, staging companies in these areas at a considerable competitive disadvantage. Since the distribution of trade shows was found to be mainly determined by the developmental stage of national economies, a further widening of the competitiveness gap between the European core and the lagging periphery is to be expected.

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I Introduction

I.1 The Position of Industrial Trade Shows in the Economy

Modern industrial trade shows (ITSs) developed as a result of the industrial revolution. The change from low quantity craft production to industrial manufacturing of identical mass products demanded an institution for comparing products and increasing the market transparency. The rapidly developing ITSs answered this necessity. Since then they have developed into professional temporal market organizations enabling industrial buyers and sellers to gather and transact business. Although the multitude of opportunities these events offer to firms has been mostly acknowledged in research, their spatial aspect has been seriously neglected. The distribution of ITSs over space is an important consideration, however, since it predefines the companies that are able to participate and enjoy the advantages of these events. Thus, an unequal pattern would most probably diminish the access of small and medium sized enterprises (SMEs) in less supplied regions and so put such firms at a considerable competitive disadvantage.

I.2 Topic of Research

ITSs are not a new phenomena as mentioned above. However, their dramatic expansion since the 1960s is certainly unparalleled. While their number doubled in the 1980s (Sashi and Peretty, 1992) so did the average budget of companies allocated to this function increase threefold in the same period of time (Williams et al., 1993). Although this trend has been recognized extensively in research, it failed to put this development into a wider economic context. The growth of ITSs is mostly explained by a growing realization of firms of the sales potentials of these events.

Contrary to this 'simplistic' explanation, the expansion of ITSs is put into the framework of industrial restructuring in this paper. It is argued that the temporally parallel growth of these events with the onset and expansion of industrial restructuring is by far not a coincidence. Instead, it is hypothesized that the growth of ITSs is due to the unique advantages and opportunities they offer to firms to cope with the rapidly changing business environment. Thus, especially the abundance of opportunities at ITSs in globalizing, network building or learning about market trends and technological advancements has become crucial in firms' attempt to adjust to the dynamics of the global economy.

Since it is arguable that ITSs offer significant advantages and opportunities in the new economic environment, access to these events has assumedly a significant impact on the competitiveness of companies. Firms unable to attend ITSs and take advantage of the offered opportunities might suffer competitive disadvantages. Consequently, learning about the spatial distribution of these events is of crucial importance. A high concentration in core areas might suggest significant disadvantages for companies located in the less supplied periphery.

Since no prior geographical research on the spatial dimension of ITSs has been conducted it is necessary first to examine the general distribution of these events. For such an analysis, the countries of the European Union (EU) seem well suited as the potential study area. The heterogeneity of the member states, their continuing integration as well as their long standing tradition of ITSs allows a wide faceted examination of these events. By examining the distribution of ITSs it is possible to determine the spatial patterns and possible concentrations of these events. This allows the identification of favoured as well as disadvantaged regions with the above assumed consequences for the respective companies located in these areas. In order to explain the observed distribution, the

influential factors for ITS-location are researched.

In addition to the analysis of the distribution of ITSs, the structure of participating firms and their spatial inflow is analyzed at the example of a specific show (GLASTECH) in Dusseldorf, Germany. This is carried out over a 16-year time period in order to grasp the temporal changes brought about by globalization and European integration.

I.3 Hypothesis

The following hypotheses are researched in the study. The hypotheses are assembled into four major dimensions: industrial restructuring, space, time and firm.

Hypothesis concerning the Role of ITSs in Industrial Restructuring

- 1.) The growth in ITS-activity can be largely attributed to their central role in economic restructuring.

Hypothesis concerning the spatial structure of ITSs

- 1.) There is a strong concentration of ITSs in the economically leading countries and their major urban agglomerations, with backward and peripheral countries and regions suffering severe disadvantages due to the lack of ITSs.
- 2.) The distribution of ITSs is correlated with the
 - economic strength,
 - industrial production, and
 - innovativeness of countries and regions, as well as
 - size and
 - accessibility of urban areas and agglomerations.

Hypothesis concerning the temporal dynamics of ITS-participation

- 1.) The spatial range of ITSs has increased considerably over time.
- 2.) Although internationalization of the events is prevalent, the rise of intra-EU participation is dominant to the rest of the world.
- 3.) The participation of EU members rises parallel with the increasing integration of the member states, i.e. with the dismantling of trade barriers.

Hypothesis concerning the structure of participating firms

- 1.) Firm size decreases over distance, stating a significant disadvantage to SMEs in countries with low ITS-capacity.

I.4 Research Procedure Overview

To analyze possible links between ITSs and industrial restructuring the literature on both domains is reviewed. Since no research on the possible interconnection of these fields exists an attempt is made to analyze the position of ITSs in the framework of restructuring. Parallel the little geographic research on ITSs is reviewed, although little benefit can be drawn from these in the present study.

In an attempt to gain insight into the spatial dimension of ITSs data on such events was collected for the six months period between October 1996 and March 1997 in the EU. Altogether 1,214 shows were evaluated. Besides their geographical location, their size in terms of exhibitors, floorspace and visitors, as well as their internationalization as % of the attendees was identified. It is assumed that this allows an accurate insight into the spatial distribution of ITSs.

To analyze the structure of participating firms as well as the spatial range of ITSs, exhibitors at a chosen show (GLASTECH) in Duesseldorf were evaluated for the years 1980, 1988, and 1996.

II Literature Review

II.1 Introduction

Research on ITSs is highly concentrated within the business and economic literature, particularly marketing and to a lesser degree management science. Although the importance of the geographical aspect of ITSs is apparent, research on the spatial dimension of these events is minimal. Thus, in order to examine the spatial dimension of ITSs, literature concerning the nature of these events will be reviewed.

Chapter II is divided into two parts. The first part deals exclusively with the phenomena of ITSs. A definition, classification and a brief historical outline of the development of ITSs are presented to establish a basis for research. Following, the economic functions of fairs that are assumed to be responsible for their rapid growth are assessed. The small amount of geographic research on ITSs and related events are reviewed in the end of this section. The second part of the chapter looks at the changes in the economy since the late 1960s as a possible explanation for the surge of ITS-activity. Accordingly, the literature on industrial restructuring with the emphasis on the aspects globalization, the changing role of innovation, and networking are briefly reviewed to assess the role of ITSs in such a setting.

II.2 Industrial Trade Shows

II.2.1 Definition of ITSs

ITSs are defined as temporary market organizations to promote trade, where industrial buyers and sellers gather to transact business (Encyclopedia Britannica, 1984, Mortstiefer, 1982,

Mueller, 1985). Since ITSs are usually thought of as marketing tools, the definition of Huynen (1973) which explicitly addresses this function seems to be more accurate. According to him, ITSs stage a system "in which marketing communication and marketing information takes place via exchange of goods, services, and ideas" (p. 10). The providing of information and the advertising and selling of goods via samples are of central importance. This is made possible through the spatial concentration of individuals from a broad territory. The participants are drawn together due to some common specialized interest and are thus removed from their normal 'action-space' (Zelinsky, 1994¹). Such a branch specific concentration of companies leads to higher market transparency in the chosen segments (Graebener, 1981, Ziegler, 1987). Thus, the attendance at ITSs allows an overview of the specific market and a comparison of the offered goods and services (Hugger, 1986) that facilitate market corrections.

Since the 1980s, research has noticed a decrease in the importance of the selling function of ITSs (BfAI, 1992). Instead there has been a shift to the communication and information function (Mueller, 1985). This shows a significant change in the nature of ITSs from pure sales markets to communication markets (Strehl, 1985, Taeger and Ziegler, 1984). Information exchange is enhanced by the opportunity of active involvement, rather than just passive attendance of participants. The platform of ITSs facilitates the "interaction among strangers as well as friends, enemies, and acquaintances" (Zelinsky, 1994, p. 70). In such a setting, communication flows are optimized through instant feedback.

Generally, ITSs take place on a regular basis for a short period of time. Depending upon

¹ Although the paper of Zelinsky (1994) deals with conventions of which ITSs are clearly excluded (p. 71) the resemblance of the two events allows the use of certain definitory terms.

specification, they are either held annually or biannually (Alles, 1988). Usually ITSs are spatially inflexible, i.e. they remain in the same locations (Alles, 1988, Mortstieffer, 1982).

II.2.2 Historical Development of ITSs

Although some see the origin of ITSs in roman 'forums' and medieval markets (Mueller, 1985, Strehl, 1985) the cradle of modern ITSs lies in the industrial revolution. With the introduction of large scale machines and factories, a large number of identical products had to be marketed. Therefore, an institution for comparing products, and thus increase the market transparency, was needed. This took shape in the 'Exposition Publique des Produits de l'Industrie' in Paris in 1798. This founded the new phenomena of '*National Industrial Exhibitions*' that complimented general market fairs that existed since the middle ages. The aim of the exhibition was to give a vigorous boost to the French economy by stimulating national feelings and to draw attention to the achievements of the national industry (Huynen, 1973). For the first time in the history of exhibitions, mainly final industrial products were displayed. The success of the Paris exhibition in breaking down the isolation of manufacturers and stimulating the economy caused a rapid spread of these events throughout Europe.

Parallel to the development of industrial exhibitions, general market fairs were also transformed by industrialization. The identity of industrial products and the improvements in transportation turned these classical 'product fairs' with immediate sales into 'sample fairs' with sales occurring through orders (Hugger, 1986, Mueller, 1985).

The limiting national orientation of industrial exhibitions was torn down by the 'First World Exhibition' in London in 1851 which opened its gates to international participation. The fascination by industrial development and the realization of the export generating capability of these exhibitions

caused a rapid spread of World Exhibitions. The enthusiasm for this new type of exhibition created events of enormous proportions, like the World Exhibition in Paris in 1900. An estimated 50 million visitors and 83,000 exhibitors participated (Huynen, 1973, p. 34). Yet, the essential nature of these exhibitions lay in their informative and propaganda functions with the stimulation of sales only as their ultimate aims (Hugger, 1986, Huynen, 1973).

The thematic re-orientation from mainly exhibiting to focussing on sales generation and marketing functions occurred after World War I. The closing down of the frontiers and the stagnating national trade performances created an urgent need for new economic impulses (Huynen, 1973). These were found in the newly developing trade fairs, mainly originating from the two cities of Leipzig and Lyon. The tradition of these towns as so-called sample fairs with dominating market character enabled them to combine the positive effects of the latter market with the characteristics of industrial exhibitions. Trade fairs in their modern form were born. Initially, they were of a universal character allowing entry to all branches of industry, showing a collection of the national production as extensive and as varied as possible (Huynen, 1973). The remarkable economic impact of this new type of fair caused swift dissemination in Europe. Germany dominated the developments. By 1924, more than half of all these events were held in Germany (Huynen, 1973, p. 46).

The acceleration of technological development and the diversification of products after World War II made the continuation of universal trade fairs impossible. Their chaotic nature and vast size became counterproductive. The aim to give a representative picture of the total market became impossible. Consequently, mirroring the developments in the general economy, trade fairs became more specialized. They began to focus on specific industries and market segments (Greipl and Singer, 1980, Hugger, 1986, Mueller, 1985). Parallel to this, a differentiation into fairs for consumer goods

and fairs for industrial goods took place (Huynen, 1973). While the former was chiefly focussed on direct sales, the latter became a platform for information and orientation with preparation of future transactions.

II.2.3 Classification of ITSs

Deriving from their historical development, ITSs are generally subdivided into two groups: general and specialized fairs (referred to by some as horizontal and vertical fairs (Humbert, 1987, Kirpolani, 1985, Swandby, 1992)). General (or horizontal) trade fairs usually combine industrial and consumer goods, and in some cases even agricultural produce (Alles, 1988). They are characterized by the display of a broad range of products and services from a wide number of industries. Due to their extensive coverage, their size is most impressive, exceeding that of specialized fairs. Although they host a broad mixture of industries, a conglomeration of specific industries is observable in more sophisticated markets (Alles, 1988). This is increasingly turning general fairs into a collection of nearly independent smaller specialized fairs. A famous example of this type of ITS is the annual 'Hannover Messe' (Mueller, 1985).

Specialized (or vertical) trade shows on the contrary are focussed on a specific industry (f.e. sanitary technology) or a single market (f.e. gastronomy) (BfAI, 1992, Humbert, 1987, Strehl, 1985, Swandby, 1992). These events are of a more technical nature. To keep the concentration of industry specific knowledge high, attendance is restricted to companies in the specialized segments (Kirpolani, 1985). Although the size of vertical fairs is inferior to horizontal fairs, the industry specific quality of the attendants and exhibitors by far exceeds the latter (W&V, 1991). The rising specialization of

ITSs is increasingly turning these into platforms for scientific and technical exchange, i.e. into highly sophisticated ideas- and systems markets. To maximize this information exchange, ITSs are increasingly complemented by congresses, conferences, and symposiums (Alles, 1988, Mueller, 1985). The BfAI (1992) refers to this new type of ITSs as 'Congress Fairs' (p. 10). In order to maximize information density and interaction possibilities, committees decide upon the participation of applying companies. A 'call for papers' is becoming a frequent requirement for participation (W&V, 1991).

Although a classification of ITSs into fairs for industrial and consumer goods is possible, the increasingly blurred boundary between these two types makes such a classification difficult (Alles, 1988). In fact, such a classification is rarely encountered in the literature. However, some consumer fairs focussing on popular themes like garden, tourism, cars, antiques, and health (BfAI, 1992) have to be viewed separately. Their enormous size, which often ranges in the 100,000s (visitors), their social 'fair'-like character, and their direct sales orientation clearly distinguishes them from other ITSs (Strehl, 1985).

ITSs can also be classified according to their spatial orientation, i.e. their catchment area. Regional fairs with only local attendance are distinguished from national and international events (Mueller, 1985, Shoham, 1992). While the internationalization of ITSs has become common, the grade of foreign participation generally increases with the sophistication of the market (W&V, 1994).

II.2.4 The Growing Significance of ITSs

Although analyzable data on ITSs is extremely scarce, the available data suggests a tremendous increase in the significance of ITSs from the late 1970s. This is reflected by the increase

in the number of shows, the number of their attendants as well as exhibitors, and the amount of money spent on these events. While the number of ITSs grew by an impressive 67 % between 1972 and 1982 worldwide (Ziegler, 1987, p. 1), it more than doubled between 1978 and 1988 to a total of over 9,000 (Sashi and Perretty, 1992, p. 249). This is supported by Williams et al. (1993) who reported an annual growth in the number of ITSs of 7 % between 1982 and 1987. Although no comparable global data is available for the following period, the 31 % growth in the USA and Canada between 1989 and 1994 (Trade Show Bureau², 1994, as quoted in Gopalakrishna et al., 1995, p. 75) suggests the continuation of this trend. Estimations by The Trade Show Bureau for the latter half of the 1990s project a further growth of 35 % (as cited in Gopalakrishna, 1995, p. 75).

Similar development patterns are visible in the amount of exhibit space, which increased at an annual rate of 8 % between 1974 and 1984 (Mee, 1987, as quoted by Sashi and Perretty, 1992, p. 249). The number of attendants and exhibitors experienced a parallel growth. This is shown by the Trade Show Bureau with the example of the US (cited in Gopalakrishna et al., 1995) where between 1989 and 1994 the number of attendants grew from 60 to 85 million and the number of exhibitors increased at a similar rate from 1 to 1.3 million (p. 75).

The growing significance of ITSs is also reflected by the amount of funds that companies have allocated to this function. As Golob (1988) shows, European firms spent on the average 33 % of their total marketing budget on ITSs (p. 58). Although US companies designated markedly less to this function (25 % (Golob, 1988, p. 58)), even this amounted to an annual expenditure of \$ 53 billion (Trade Show Bureau, 1994, as cited by Gopalakrishna et al., 1995, p. 75). According to an

²The Trade Show Bureau is a US consulting company that is specialized on research on ITSs. Unfortunately the libraries lack their reports as they are only available through costly mail-order purchase.

estimation of the Trade Show Bureau (1988) (as cited by Williams et al., 1993) the average budget allocation per firm has experienced a threefold increase in only 10 years, between 1977 and 1987 (p. 265). Considering this rapid growth of ITSs, it is not surprising that in 1986 more than 50 % of companies attended five or more shows a year according to a large scale study by Faria and Dickinson (1986). Furthermore, 10 % of the surveyed firms even attended 25 or more shows a year.

II.2.5 The Economic Functions of ITSs

ITSs perform a vast number of economic functions. Since they are usually seen as marketing tools, it is not surprising that their capability to generate sales has received the majority of attention. Indeed, ITSs offer an excellent opportunity to increase firms' sales volumes. According to O'Hara et al. (1993), some international companies generate up to 70 % of their annual sales at such events. The significance of ITSs in the generation of sales derives from the excellent opportunities they offer in the "industrial buying process" (Sashi and Perretty, 1992, Shaham, 1992). As research by Parasuraman (1981) points out, ITSs function as major information sources in this process, exceeding mail promotion and advertising (see also Graebener, 1981). They achieve their highest effectiveness in the 'recognition-of-need' and later in the 'search-for-alternative-vendor' phases (Moriarty and Spekman, 1984).

The effectiveness of ITSs in sales generation rests in enabling firms to simultaneously utilize all their marketing tools (Hugger, 1986, Sashi and Perretty, 1992). These can be used to create awareness and interest in new prospects, provide product or company information for evaluation purposes (through brochures, videos, samples, or hand-on experience), or reinforce existing customer relationships (Bonoma, 1985, Sashi and Perretty, 1992, Shaham, 1992). The effectiveness of these

efforts is underlined by the supportive environment. ITSs allow personal face-to-face contact in a neutral location, facilitating the development of trust and good will (Belizzi and Lipps, 1984, Shaham, 1992). Furthermore, visitors attend these events of their free will, suggesting interest and open mindedness for the sellers' message (Bello et al., 1986, Montgomery, 1975, Rothschild, 1987).

Summarising, ITSs offer a unique opportunity to identify and contact new prospects, disseminate product information and positively influence the decision makers in the shortest possible time. This gains in significance as the cost of sales calls escalate. While the average cost of a sales call was estimated to be \$ 292 in 1992, the costs of a contact leading to sales at ITSs was assessed to be only about \$ 186 (Gopolakrishna and Lilien, 1995, p. 22).

Besides the obvious sales function, more recently *non-selling functions* (Bonoma, 1985) have gained attention, acknowledging a much broader role of ITSs (Kerin and Cron, 1987, O'Hara et al., 1993). This change in perspective derives from the functional shift of ITSs in the observed time period from an order medium to a platform of communication and information exchange (Mueller, 1985, Ziegler, 1987). Direct sales have become an exception, concentrated in a few branches such as fashion (Strehl, 1985). Instead, sales occur after the events through follow-ups. This allows a thematic shift at ITSs, where non-selling social functions become dominant. However, this does not mean an objective devaluation of the sales function of ITSs as non-selling functions serve the generation of sales on the long run too (Hugger, 1986, Mueller, 1985). Such non-sales functions include a diverse set of activities that relate to a multitude of aspects of the company environment (Shaham, 1992).

ITSs allow wide scale market research at the lowest costs in the shortest possible time (O'Hara et al., 1993, Rizzo, 1982). By taking advantage of the spatial concentration of their market

segment, companies can rapidly learn about prices, costs, and product lines of their competitors and perceive trends in an early stage (Mueller, 1983). Besides the monitoring of the competition and the market developments, firms have a unique opportunity to observe consumers and research their reactions in an interactive setting. ITSs also allow to receive information about existing products (Bonoma, 1985). The direct reception of customer feedback facilitates an optimal and rapid adjustment of the product line to market demand. Assessing these information possibilities, the finding of Hugger (1986) is not surprising, that 44 % of surveyed German managers regard ITSs as their most important professional information source (p. 33). This share rises with the sophistication of branches, reaching 71 % in the electronic industry (p. 33).

ITSs are also an optimal setting for product testing (Bonoma, 1985). These events enable firms to test their products prior to the introduction to the market and so assess their market possibilities (Strehl, 1985). This can already occur in early stages of product development, that allows a continuous adaptation to the possible demand or to the product's early elimination by lagging interest (BfAI, 1992). Besides the testing of ideas and goods, ITSs are the perfect stage for launching new products (Alexander et al., 1967). The attention of the press as well as the public on the fair can easily be used to rapidly disseminate product information at minimal cost. The advantage of this possibility even has an accelerating impact on product development as companies try to finish their new products in time for the relevant ITSs (Hugger, 1986).

As the communication function has become dominant at ITSs, the possibilities to enhance corporate image have gained central importance (Bonoma, 1985). While ITSs support the broadening of the popular knowledge of the company, they can also be used to communicate specific strengths and features of firms (BfAI, 1992). This is especially useful when firms need to react rapidly to

developments in the market place and can so minimize possible PR-damage.

ITSs also function as crucial indicators of the strength of the economy (Ziegler, 1987). Thus, the concentration of the decisive actors allows the assessment of the mood in specific segments and predict their future development. Besides the appraisal of the existing situation, ITSs can amplify trends in a snow ball effect and so have serious influence on macro economic development (Mueller, 1985). Taking advantage of this effect, ITSs are often used as mouthpieces of industries and their associations for declarations and demands. They also function as a coordinating platform of specific branches.

II.2.6 Geographical Research on ITSs

ITSs have been overwhelmingly neglected in geographical research. No comprehensive analysis of their spatial dimension has ever been presented. After a thorough search of the English and German literature only three articles are known to the author dealing with related topics.

The first study focussing on the spatial aspects of ITSs was presented by Hugger (an economist) in 1985. In his research he tries to assess the regional economic impact of ITSs at the example of Friedrichshagen in Germany. Therefore, he focusses less on the geographical dimension of ITSs as on the impact of the business of trade shows on their host regions. According to his study, ITSs act indeed as powerful stimuli in regional economic development. The annually generated income in the analyzed region was estimated at 55.565,000 DM with costs reaching only 14,543,000 DM (p. 197). The major benefitors were the local accommodation industry, retail, and other tourist businesses as well as their suppliers. Besides the direct income generation, ITSs also have indirect long term effects on economic development. The improvement of the image of the host regions and

the business contacts and opportunities offered to local companies are the most important.

More recently, Halver (1995) studied the importance of four locational factors for trade show activity in North Rhine Westphalia. To achieve this, he surveyed exhibitors and visitors asking to grade the chosen factors. He concluded that the accessibility of the city is perceived as the most important. Sufficient accommodation possibilities followed by the quality of urban transport were also perceived significant. Less important was the quality of the local labour pool. However, what Halver (1995) failed to do in his rather diffuse analysis is to correlate the chosen locational factors with ITS-activity in the analyzed cities. Therefore, no conclusion can be drawn whether these locational factors are in fact decisive for the spatial distribution of ITSs.

A highly interesting study was presented by Zelinsky in 1994. Although his article focusses on conventions of which he explicitly excludes ITSs, the similarity of the two types of events make a closer look at his research worthwhile. First, he theoretically identifies decisive locational factors. While he also acknowledges the prime importance of accessibility, he points to the restrictive influence of the size of cities. Furthermore, qualitative factors such as the compatibility of the setting with the nature and purpose of event are decisive. However, a factor "overarching all" (p. 75) is the reputation and image of a convention site. In the second part of his study, he analyses the geographical distribution of these events in the US. He notices a marked unevenness in the spatial pattern with conventions being concentrated in major metropolitan areas. While conventions were mainly located in "principal nodes of transportation, commercial and manufacturing activity" (p. 80) in the 1960s, a deconcentration to newly evolving cities has occurred since then. This conclusion has to be seen critically in this context, however, as conventions - on the contrary to ITSs - are highly flexible in their location.

II.3 Economic Restructuring and the Increased Need for ITSs

ITSs have experienced an impressive upsurge since the 1970s. Although this has been extensively reported, research has failed to put this development into a wider economic context. It is usually assumed that the growth in ITS-activity is caused by the increasing realization by firms of the sales possibilities these events offer. Contrary to this simplistic view, it is argued that the parallel occurrence of the growth of ITS-activity and the process of industrial restructuring is not a coincidence. Rather, it seems arguable that the growth of ITS-activity is caused by the tremendous opportunities these events offer to firms in the new economic environment. To elaborate on this hypothesis, it is important to discuss the fundamental changes in the economy. Therefore, the underlying transition from Fordism to Flexible Specialization shall be briefly described. Following this overall theoretical review, some aspects of restructuring will be focussed upon in order to analyze the opportunities ITSs offer from their perspectives. For this analysis, the process of globalization, the changing role of innovation, and the upsurge in networking shall be focussed upon³.

II.3.1 Industrial Restructuring - From Fordism to Flexible Accumulation

Western industrial systems have been undergoing fundamental changes since the late 1960s. The rationalization of production capacity, the wave of mergers and acquisitions, plant shutdowns,

³ Unfortunately no empirical studies exist on the advantages of firms at ITSs from the mentioned aspects of restructuring. Therefore the following analysis is overwhelmingly theoretical and mainly literature based. However, besides the theoretical analysis the empirical experience of the author was decisive for the analysis and the understanding of the opportunities offered at ITSs. Of primary importance were a series of interviews with 70 manufacturing companies that were conducted in 1995 as part of a Diplom-thesis (Gosztanyi, 1996). Central aspects of the interviews were the strategies of firms to expand their networks as well as to improve their innovativeness. The frequent mentioning of ITSs in this context not only formed the basis of the following analysis but also gave the initial idea to study ITSs. Additional insight was derived from personal experience at different ITSs as an employee of an exhibiting company.

or the shifting of production to low cost areas seem to point to a radical reorganisation of production. This restructuring is conceived by a number of researchers as being rooted in the decline of Fordism and its gradual replacement by more flexible systems of production (Schoenberger, 1987, Scott, 1988).

The *Fordist Regime of Accumulation*, which flourished between 1920 and 1970, was based on the mass production of consumer goods. A central aspect of this system lay in the search of economies of scale. In order to achieve these, a standardization of output as well as work processes was necessary (Scott, 1988). This was realized by the introduction of the semi-automatic assemblyline and large scale fixed purpose machinery that allowed huge productivity gains (Schoenberger, 1988). As the standardization of production led to economies of scale, the decrease in unit costs caused an expansion of the market further leading to economies of scale in a self-reinforcing cycle (Tolliday and Zeitlin, 1987). As Schoenberger (1988) notes, mass production needs as its counterpart mass consumption to absorb the rising output. This was assured by the social contract between unions and management, granting labour a share in productivity gains (Scott, 1988). Furthermore, the introduction of the Keynesian welfare state helped flattening demand cycles and socially stabilized the system.

With the ending of the long postwar boom in the late 1960s, Fordism entered an extended period of crisis (Scott, 1988). The slowdown of productivity and the decrease in profit rates shook the formerly stable western economies. A number of causes have been identified for the '*Crisis of Fordism*'. Among the most prominent was the increasing competition from newly industrializing countries (NICs) caused by the geographical spread of Fordism. Although these countries were rapidly adopting the Fordist production technology, they failed to implement the corresponding mode

of social regulation (Schoenberger, 1988, 1989) to achieve rising consumption norms and living standards (Cooke, 1988). As a result, they introduced a price competition that firms in core countries - hampered by the wage bargain inherent in Fordism - could not withstand (Lipietz, 1986, Schoenberger, 1988). The principle of Fordist competition was thus undermined.

The increasing saturation of domestic markets in the late 1960s dealt a further serious blow to manufacturers in the core (Piore and Sabel, 1984, Tolliday and Zeitlin, 1987). This was aggravated by the growing international penetration of core markets (Storper and Scott, 1986). As the parallel productivity gains outpaced the mass consumption necessary to absorb the output (Cooke, 1988), it became difficult to achieve continued economies of scale within national boundaries (Tolliday and Zeitlin, 1987). The resulting underutilization of capacity and collapsing scale economies caused a massive rush into the markets of other core countries, thereby increasing their saturation (Piore and Sabel, 1984). The Fordist mode of production was additionally undermined by the break-up of mass markets for standardized products (Hirschhorn, 1984, Lash and Urry, 1987, Schoenberger, 1989). Since stable demand for large numbers of standardized goods is a precondition of Fordism to enable long term investment in product specific machinery (Sabel, 1982), the need for product differentiation was fundamentally incompatible with the rigid system of Fordism. The rapidity of change in these specialized product markets accentuated the obsolescence of the system.

According to Schoenberger (1988) firms were confronted with two possible responses to the crisis. The first response was to 'perfectionize' Fordist production through rationalization, an attack on the position of labour, and especially through the search for low cost production facilities in the periphery. The alternative approach was a thorough transformation of competitive strategy towards increased flexibility in order to extract competitive advantage from the growing

differentiation of the market. The startling contrast of the latter strategy (emerging in the late 1970s and 1980s) to the rigidities of Fordism has led some to perceive it not only as a business strategy but as a new 'overarching conceptual framework' (Gertler, 1988, p. 421). It was titled 'flexible accumulation' by Harvey (1988).

'Flexible production' rests on the ability of firms to rapidly respond to changes and fluctuations in the market. This is made possible through the evolution of 'flexible machines'. In contrast with fixed purpose machinery, these can be used for a range of products through simple reprogramming (Schoenberger, 1988). This allows greater specialization and differentiation of products and rapid adaptation to the fluctuating demand (Piore and Sabel, 1984, Scott, 1988). Flexibility is further enhanced through the extended social division of labour (Scott, 1988). The parallel horizontal and vertical disintegration of firms and the subsequent increase in subcontracting gives rise to many specialized subsectors. Since their services and goods can be 'bought-in' according to the current demand it improves the ability of firms to cope with the rapidly changing environment. This is further strengthened by changing capital-labour relations in terms of enhanced functional and numerical flexibility of workers (Atkinson, 1985). As this mode of production allows a better adaptation to the diversified needs of consumers, competitive advantage can be shifted from price to product characteristics and performance. Firms in core countries can, at least temporarily, flee the low-price competition from the periphery (Sabel, 1982).

Although the logic of the above described new system of regulation is appealing, it has been heavily criticized among others by Gertler (1988) and Amin and Robbins (1990). They point out that the evidence is mostly limited to a few selected sectors. This raises the question of whether their development is representative of the overall economy. Gertler (1988) cites a number of studies

showing serious obstacles to the easy adoption of the new techniques, demonstrating marked differences between theory and practice. Amin and Robbins (1990) additionally claim that the real world is more chaotic than reflected in the model of Flexible Production. They reject the polarization between flexibility and rigidity and the assumption of a clear break between the two 'regimes'. Instead, a coexistence of the two systems since the industrial revolution is assumed (Gertler, 1988, Schoenberger, 1988). Although the criticism seems valid, it is not sufficient to reject the theory of Flexible Specialization as a *model*. Whereas the model is definitely oversimplified (as models usually have to be), it seems to reflect a trend that is increasingly forming the global economy.

II.3.2 The Globalization of the Economy

The increasing globalization of the economy has arguably had an immense impact on the importance of ITSS. As Dicken (1992) shows, during the last 30 years there has been a considerable redistribution of industrial production among the developed market economies as well as towards some developing economies. Although a certain deconcentration towards the periphery has taken place, production has continued to be highly concentrated in the leading countries (Dicken, 1992). Thus, with the exception of a small number of NICs, the majority of developing countries remain relatively unimportant in the global distribution of manufacturing.

International trade has experienced an even faster growth than international production, reflecting the growing integration of the global economy (Dicken, 1993). Although the origins of trade are less concentrated than manufacturing production, there has been a high degree of continuity of the dominance of the three major groups: USA, western Europe and Japan. These accounted for 80 % of all world exports both in 1953 and 1985 (Dicken, 1992, p. 31). Two third of this trade flow

was conducted between the core countries themselves. Although trade has remained concentrated, the developing market economies managed to massively increase their share from 4.3 % to 12.4 % (1963-1985) (Dicken, 1992, p. 33).

Closely related and partly underlying the above developments are the dramatically increased flows of foreign direct investments (FDI). As multinational companies (MNCs) are the main channel of these flows, Dicken (1992) identifies them as "the single most important force creating global shifts in economic activity" (p. 47). Indeed, the sharp rise in FDIs in the 1980s with an annual growth of 20 % after 1983 (Julius, 1990, p. 14) reflects best the growing interconnection of the world economy. However, outward FDI are even more concentrated than international trade with 75% of the total originating from the G5 countries.

Concluding the brief analysis, it is evident that business has become a global activity. The location of production has become highly flexible, causing intensive crossinvestments across national boundaries. Parallel exports have soared, reflecting the significance of foreign markets for companies.

There is general agreement that the developments in transportation and communication technology have been significant preconditions of globalization (Dicken, 1992). However, there are a variety of theories for the actual reasons of this process. Among the most prevalent is the theory of the 'new international division of labour' put forward by Froebel et al. (1980) and Jenkins (1984). This theory involves a massive shift of production towards the global periphery in search of cheap and controllable labour and to escape the profitability crisis of the core economies. This theory has come under massive criticism. Fagan and Le Haron (1994) argue that the restructuring in the developed economies (Schoenberger, 1988, Scott, 1988) has undercut the advantages of relocation. Additionally, the theory overemphasizes the amount of relocation to the periphery as shown by

Dicken (1992). Furthermore, Gordon (1988) argues that a majority of MNCs relocating to the periphery aim to serve the local economies instead of reexporting commodities to the core.

Piore and Sabel (1984) explain the globalization of the economy and especially of trade as a result of the saturation of domestic markets in the leading countries. According to this view, the interpenetration of markets offered a refuge of stagnating home markets. A broader explanation was put forward by Dunning in his 'ecclectic' theory (1980). In his theory he claims that firms engage in international production if they possess so called ownership-specific advantages that place them above domestic firms. Foreign production instead of simple export occurs when market imperfections force companies to internalize the transactions. Finally, location-specific economic and political factors are decisive. Depending on their relative advantages in foreign locations, production can be shifted from the home base.

Companies face a series of difficulties and obstacles in their attempts to become global. The access to market information and influential decision makers complicates this process. ITSs offer firms a wide range of advantages in overcoming these hindrances. Companies attending foreign shows have the opportunity to carry out rapid and cheap market research in the countries they consider penetrating. A brief attendance allows firms to gather first hand experience with the prospective markets and so better assess their possibilities (Greipl and Singer, 1980, O'Hara et al. 1993). The spatial concentration of industry related companies and institutions allows companies to learn about local regulations, the strengths and weaknesses of the competitive field, as well as its reaction to 'newcomers' (Hage, 1988, Rizzo, 1982, Whittmore, 1993). The assessment of the sales potential as well as the accessibility of resources or specificities of the local labour market are additional advantages (Humbert, 1987, O'Hara et al. 1993). Furthermore, the personal interaction at these

events enables firms to better comprehend individual nations' business cultures and so better adapt to local expectations. These advantages significantly lower the risks, costs, and the time necessary for market entry (Golob, 1988).

In addition to the gathering of local market knowledge, ITSs allow rapid contact with decision makers and so further cut entry time. As research by Ryan (1993) and Mac Cune (1993) has shown, attenders and exhibitors come increasingly from higher levels of management. Thus, ITSs permit easy contact with otherwise inaccessible leading executives thereby significantly accelerating the procurement of business (Graebener, 1981).

Companies trying to avoid complex involvement in unknown markets, yet trying to extend their export range through local representatives or distributors are significantly aided by ITSs. As Rizzo (1982) and Schafer (1988) report, ITSs are strongly frequented by local agents eager to become representatives of foreign companies. Attending such events allows contact with a great number of possible representatives. The face-to-face meetings are a most effective way to assess the reliability and capability of the possible candidates and to negotiate contracts (Schafer, 1988). On the other hand, ITSs can also be used to circumvent middle salesmen and sell directly to the customers and therefore cut costs (BfAI, 1992).

The high foreign participation at ITSs allows regionally bounded firms to make worldwide contacts from their home base at a minimal cost. This allows them to widen their business connections and to become global (BfAI, 1992). Also, the interaction with foreign companies enables them to learn about foreign markets and so assess their global possibilities. The significance of this opportunity rises with diminishing resources of a company and might stage the only feasible possibility for small and medium sized firms to enter distant nation markets. Accordingly, ITSs act

as crucial gateways to global markets. Limited access to these events might pose a significant competitive disadvantage (Greipl and Singer, 1980).

The increasing competition and the decreasing market transparency accentuates the ability of ITSs to enhance the image and prominence of firms (Bonoma, 1985, Shaham, 1992, Ziegler, 1987). As Couretas (1984) shows, a skilful presentation of the company at an ITS can raise its position "from totally unknown to a prominent position in the minds of the present decision-makers" (p. 69). Improved corporate image by suppliers, customers, competitors, and the relevant press (Shaham, 1992) not only places the participating companies in a favourable position in negotiations, but has become crucial for their sheer survival and to prevent their submersion in the 'vast corporate horizon'. Interestingly, this aspect seems to have a self-reinforcing effect. Many companies feel pressured to attend these events in order not to endanger their reputation as a stable market force (Alexander et al., 1967, Bonoma, 1985).

II.3.3 Innovation as the Centrepiece of the 'New Competition'

The increasing volatility as well as the penetration of markets from low wage NICs have caused fundamental changes in the competitive strategies of firms. In reaction, the basis of competition has shifted from price to product diversity, design and performance and thus sustained product innovation (Cooke, 1988, Sabel, 1982, 1984, 1989, Lash and Urry, 1987, Piore and Sabel, 1984, Schoenberger, 1988). This move to higher quality markets gave firms a refuge from the price competition of peripheral countries (Sabel, 1982). Additionally it limited the developing countries' access to core markets by putting up technological barriers to entry (Wells and Cooke, 1991). Research and technology has been increasingly treated as a tool to defend and develop the market

power of companies (Howells, 1990, Rothwell, 1994). Acting in parallel, the rising product differentiation has allowed firms to cope with the break up of mass markets and the increasingly unstable and unpredictable demand. Specialization was encouraged by the targeting of specific groups, resulting in the ability to rapidly respond to short term trends (Zeitlin and Totterdill, 1989).

These changes in competitive strategy have altered the position of innovation in the economy. Innovation is key to diversifying products, improving the performance and quality of existing goods, and creating new markets, and has therefore become a significant factor of competitiveness (Amin and Thrift, 1994, Reichwald, 1990). Indeed, as a number of specific industry studies show, the strong promotion of product development is essential for positive performance (Best, 1989, Zeitlin and Totterdill, 1989). Freeman (1994) concludes that while R&D intensity is positively related to rapid growth, the neglect of development is often associated with stagnation or decline of firms. Interestingly, the importance of the innovative capability of firms is bound to increase in the future, as the factors causing its upsurge are of a self reinforcing nature. As already observed previously imitator countries are rapidly catching up. They profit from the continuous upgrading of their infrastructure and skill level (Sabel, 1982). As a result, these countries move to the production of higher quality goods and even become innovators in their own right (Dicken, 1992). This accelerates the competition in the core countries and increases the pressure on companies to innovate. Simultaneously, the continuous push of firms for market fragmentation and the rapid adjustment of other firms leads to an increasing segmentation of the market into smaller and smaller segments. This increases the volatility of the market and so reinforces the pressure on firms to innovate and diversify their product lines (Rothwell, 1994, Schoenberger, 1988).

While innovation has become central to competitive advantage, the nature of innovation has

changed dramatically in the new technological environment. Thus, the growing interconnectedness of disciplines has broken down the traditional barriers between scientific and technological fields (Hagedorn, 1995, Howells, 1990, Mowery, 1989, Walsh, 1991). The resulting complexity of R&D is reflected by the increasing costs and time necessary to develop new innovations (Howells and Wood, 1993). Also, the life span of innovations is being steadily eroded as technological change is speeding up (Mowery, 1989, Reichwald, 1990, Schmelzer, 1990).

These changes in the innovation environment, with the parallel growing importance of innovation, have put an immense pressure on firms to improve their efficiency in the development process. It is recognized that the linear model of innovation has become obsolete (Daghfous and White, 1994, Haeusler et al., 1994, Macdonald, 1992). Instead 'interactive' or 'circular' models are presently considered the most adequate. This reconceptualization of the innovation process incorporates notions of feedback via a complex network of backward, forward, horizontal, and lateral linkages within and among firms (Haeusler et al., 1994). From this perspective, two factors are of importance regarding this study. Firstly, the acknowledged central role of users in the innovation process. As empirical research by Lundvall (1988) or von Hippel (1988) has shown, the intensity of the interaction of manufacturers with their customers and suppliers is decisive for innovative success. While users are recognized as a decisive source of information and creative impetus in the innovation process, often they even take the lead in stimulating and organizing innovation (v. Hippel, 1988). Furthermore, their tacit knowledge regarding the produced goods is of high value in the further development and refinement of products (Freeman, 1991). Thus, Rothwell (1994) identifies efficient customer linkages and user involvement as major factors influencing the success of the innovation process.

The second important factor of the reconceptualization of innovation is its understanding of innovation as a process of information gathering and its assembly into new patterns (Macdonald, 1992). The search for adequate ways to establish links with information suppliers gains central importance (Haeusler et al., 1994, Rothwell, 1994). In addition to formal linkages (refer to next chapter), far reaching informal networks are crucial for the gathering of external scientific and technical information. The importance of informal networks increases with the acceleration of technological development and its growing complexity. In such an environment, the optimization of information flows is enhanced by an interaction based on trust and reciprocity (v. Hippel, 1987).

ITSs offer a wide range of opportunities when viewed from the innovation perspective. As Schafer (1988) points out, companies can easily take advantage of an environment where the entire spectrum of industry is laid out before them. They can see the most recent products, observe new process technologies and experience these in action. Accordingly, the unique spatial concentration of industry specific knowledge enables firms to carry out wide scale 'technology scans' (Charles and Howells, 1993). Therefore, the presence of companies in such an information-rich environment allows them to closely monitor the rapid and diverse market and technological changes and remain at the leading edge of development. In contrast with other media like scientific journals, newspapers or television, ITSs allow a much more rapid learning of new developments. Additionally, the obtained information is much more specific to the needs of the inquirer (Graebener, 1981). As the information gathering takes place in an interactive setting, it considers the interests of the participating parties. This gains in importance with the acceleration of development, where conventional print media is no longer able to communicate the increased and specialized information demand (Ziegler, 1987).

Besides passive monitoring, the presence in such a creative environment can also lead to the

procurement of information pivotal in companies' own innovation process. The process of problem solving can be significantly accelerated through the observance and discussion of the work of colleagues (BfAI, 1992). The direct information exchange regarding scientific and technical problems is of significant help. As research by v. Hippel (1987) and Carter (1989) has shown, such crucial information exchange, referred to as 'informal knowhow trading', takes place in an extensive manner, even among direct rivals. The increasing function of ITSs as platforms of scientific exchange by staging conferences and symposiums (Alles, 1988) reinforces this advantage. Aside from the possibility to discuss problems at ITSs, these events serve as perfect grounds for creating and widening informal technology networks. As v. Hippel (1987) points out: "Network formation begins when, at conferences and elsewhere, an engineer makes private judgements as to the areas of expertise and abilities of those he meets, and builds his personal informal list of possibly useful expert contacts" (p. 292).

In addition to the learning of technological progress and the procurement of information, the creative 'milieux' of ITSs creates a significant stimuli in product development (BfAI, 1992). Thus, given the broad range of related knowledge and exhibited goods and innovations, ITSs are a highly fertile ground for the development of new ideas.

The innovative capability of firms is further enhanced through the possibility of interacting with a broad range of their customers and the users of their products at ITSs (Greipl and Singer, 1980). The direct reception of customer feedback allows an optimal and rapid adjustment of the product lines to market demand. Additionally, this interaction enables firms to profit from the tacit knowledge of their customers and incorporate this into the innovation process. The close and casual contact with users at ITSs also allows firms to benefit from their creative impetus.

ITSs also aid to confront the growing complexity and interconnectedness of a variety of disciplines and so keep up with the development in adjacent scientific and technological fields. The visit of an ITS in a related field allows a uniquely rapid overview of entire industries and scientific fields. Their complementarity to one's own needs can be rapidly assessed, information can be gathered and useful contacts made. Furthermore, new ideas can be won through analogies of related branches (BfAI, 1992).

II.3.4 Networking

Changes in the economic environment and especially pressures on firms from the accelerating technological change and increasing market uncertainty have caused the spread of networking as an organisational practice (Cooke and Morgan, 1993). Contrary to classical economic organization "in network modes of resource allocation, transactions occur neither through discrete exchanges nor by administrative fiat, but through networks of individuals or institutions engaged in reciprocal, preferential, mutually supportive actions" (Powell, 1990, p. 78). Thereby, companies do not exist by themselves but in relation to other units in a mutually dependent way. Thus, the classical approach to transactions either through markets or hierarchies appears too rigid to capture an increasing array of more complex economic activity (Taylor and Thrift, 1982). Instead, networks seem to be more efficient for complex transactions in uncertain market environments (Cooke and Morgan, 1993). They allow firms to overcome market imperfections as well as the rigidities of vertically integrated hierarchies.

As Taylor and Thrift (1982 a, b) note, such networks are based on unequal power relations. The influence of dominant, mostly large firms on interconnected companies in their network let them

perform coordinating functions that transcend their own legal boundaries (Dicken and Thrift, 1992). The two most prominent forms of economic networks are subcontracting and strategic alliances.

Subcontracting "refers to a situation where the firm offering the subcontract requests another independent enterprise to undertake the production or carry out the processing of material, component, part or subassembly for it according to specifications or plans provided by the firm offering the subcontract" (Holmes, 1986, p. 84). According to the vast literature on this subject, firms enter subcontract relations among other reasons to avoid the dangers of the structural and temporal instability of product markets. On the other hand, specialization subcontracting enables firms to access specific technologies of other firms that would be inefficient to develop in-house. A third major reasoning refers to the nature and structure of labour. Therefore, subcontracting is perceived as a potential way to regain flexibility and control over the labour process and so circumvent labour related inefficiencies. Increased contracting leads to the reduction of in-house facilities and leads to vertical disintegration of firms outside of core functions (Dicken and Thrift, 1993). Companies become dependent on their network of suppliers. A perfect example of such a networked company is Nike, where 100% of production is subcontracted (Donaghu and Barff, 1990, p. 538).

A more recently observed phenomena is the upsurge of strategic alliances that have become "central to the competitive strategies of virtually all large [...] corporations" (Dicken and Thrift, 1992, p. 286). Although cooperation has increased on all levels of economic activity there has been an unprecedented rise in collaboration in R&D activity (Contractor and Lorange 1988, Freeman 1991, Hagedoorn 1995, Mowery 1988). The literature has pointed out a number of significant benefits of inter-firm collaboration in the newly forming global economy. The spreading of costs and risks, the access to technology and specialized technical know-how, as well as the access to markets are cited

among the most important benefits (Anderson, 1993, Contractor and Lorange, 1988, Freeman, 1991, Hladik, 1988, Morris and Hergert, 1987).

In conclusion, the network form of organization seems exceptionally well suited for the challenges of the increasingly dynamic and volatile global economy. As a result, networks of differing power relations are developed in which firms become reliant on an increasing number of other companies or institutions. Firms trying to construct their networks are confronted with the considerable task of contacting and identifying potential partners, especially on a global scale. ITSs can significantly aid firms in this search and thus act as crucial gateways to the global economy.

First, the geographical proximity of a large number of related firms creates the most favourable environment to establish contacts with a large number of companies. As Williams et al. (1993) demonstrate in a case study of three firms participating at ten ITSs, the average number of attenders interested in their products ranged between 6,500 and 14,000 (p. 271). The number of possible partners increases tremendously in just a few days. As has been shown by Charles and Howells (1993) it is the establishment of close personal contact that requires close spatial proximity. Once a contact (face-to-face) has been made, spatial separation becomes less important. Clearly, ITSs serve as a perfect mediator to overcome spatial barriers and establish wide ranging contacts.

Furthermore, ITS aid in maintaining potentially cooperative contacts in existing networks. Since the home base of firms in such networks is spread over an increasingly wider geographical space, the frequent personal meetings and social interaction at ITSs help maintain and solidify existing links. The participation at social events and after-hours appointments also strengthens such relationships (Bello and Lothia, 1993). This allows an atmosphere of trust and mutual goodwill to develop. Additionally, the personal interaction usually leads to subsequent contacts, further widening

and diversifying the existing network.

It is obvious that the concentration of related companies at ITSs significantly aids firms in scanning the corporate field and identifying potential suppliers or cooperative partners. This assumption is supported by Lorimer (1993). In his interview series of 1,000 decision makers, 700 claimed to have found at least one new supplier at an ITS whom they asked for a price quotation (p. 51). Viewed from the other perspective, the presence at such events is crucial for being contacted by other firms themselves engaged in their search for new links in their networks. The importance of the latter argument rises with the diminishing size of companies. For small and medium size unknown firms, ITSs might be the only possibility for being detected by firms in their search for suppliers. Consequently, it is evident that ITSs have developed into major forums of contacts.

II.4 Summarizing Conclusions and Future Outlook

As a conclusion of the theoretical analysis, there is strong evidence of the central position of ITSs in the economy. While the importance of these events for sales generation is undeniable, non-selling functions were found to be of equal significance. As the analysis of special aspects of current economic restructuring has shown, it is arguable that it is these functions that have especially gained in relevance in the last few decades. Thus, non-selling functions seem to offer a variety of unique opportunities for firms to cope with the dynamics of the increasingly unstable and changing environment. As such, ITSs seem to have become crucial instruments in competitive strategy. The massive growth of these events supports this perspective.

The rapid developments in modern communication technology have recently started a debate considering the continuing necessity of ITSs. The start of the first virtual trade show on the internet in 1996 (Virtex) has enforced such considerations (Rominski, 1996). Although there is general agreement that the new technologies will have a significant impact on the nature of ITSs, most authors do not perceive it as a mortal danger. As Rominski (1996) notes, the perception of products consists of more than just plain 'seeing'. To experience products live, being able to touch them and test their functions and to discuss these with experts on the spot remain crucial (W&V, 1994). This is of particular significance in the investment good sector, where the rising complexity of products requires thorough explanations (Hugger, 1986). Furthermore, the increasingly social dimension of ITSs with the communication function as the dominant feature makes a replacement by modern media seem even more unlikely (Hugger, 1986). The possibilities of casual personal contact, rapid wide ranging information collection, on the spot problem solving and discussions, or the advantages of the presence in a highly creative milieu are hardly replaceable. Furthermore as Zelinsky (1994) notes,

"the history of modern communications indicates that adoption of advanced technologies does not lessen desire for face-to-face contact; indeed it may even quicken our appetites" (p. 83). Rominsky (1996) goes even further, saying, that it is exactly the rising share of electronic communication that makes personal contact rather more important. The impersonalization of communication does not only waken desire for personal meetings but becomes crucial to obtain information not communicated in words, yet critical for understanding the whole range of a subject. Although a complete replacement of ITSs by modern media seems unlikely, its capacities for improving the efficiency of fairs are undeniable.

As has been shown above, ITSs offer significant advantages and opportunities in the dramatically changing economic environment. Therefore, it is possible to argue that access to these events has a significant impact on the competitiveness of companies. Firms unable to attend ITSs and take advantage of their offered opportunities might suffer competitive disadvantages. Consequently, learning about the spatial dimension of these events is of crucial importance. A high concentration in core areas might suggest significant disadvantages for companies located in the periphery. Therefore the following part of this study shall focus on the spatial dimension of ITSs.

III The Study Area

III.1 Analysis of the Global Distribution of ITS-Activity - Selection of the Study Area

To conduct a thorough analysis of the spatial dimension of ITSs, a study area must be demarcated. To obtain an insight into the importance of different geographical areas in the sector of ITSs at the global scale, a sample was taken from the TradeShow Central database⁴. In the sample, the global distribution of all ITSs in October 1996 were assessed. This month was chosen due to its highest concentration of ITSs (Alles, 1973)⁵. A possible bias for northern or southern countries for having an overproportionate amount of ITSs in this time of the year was tested⁶, yet no significant differences were found.

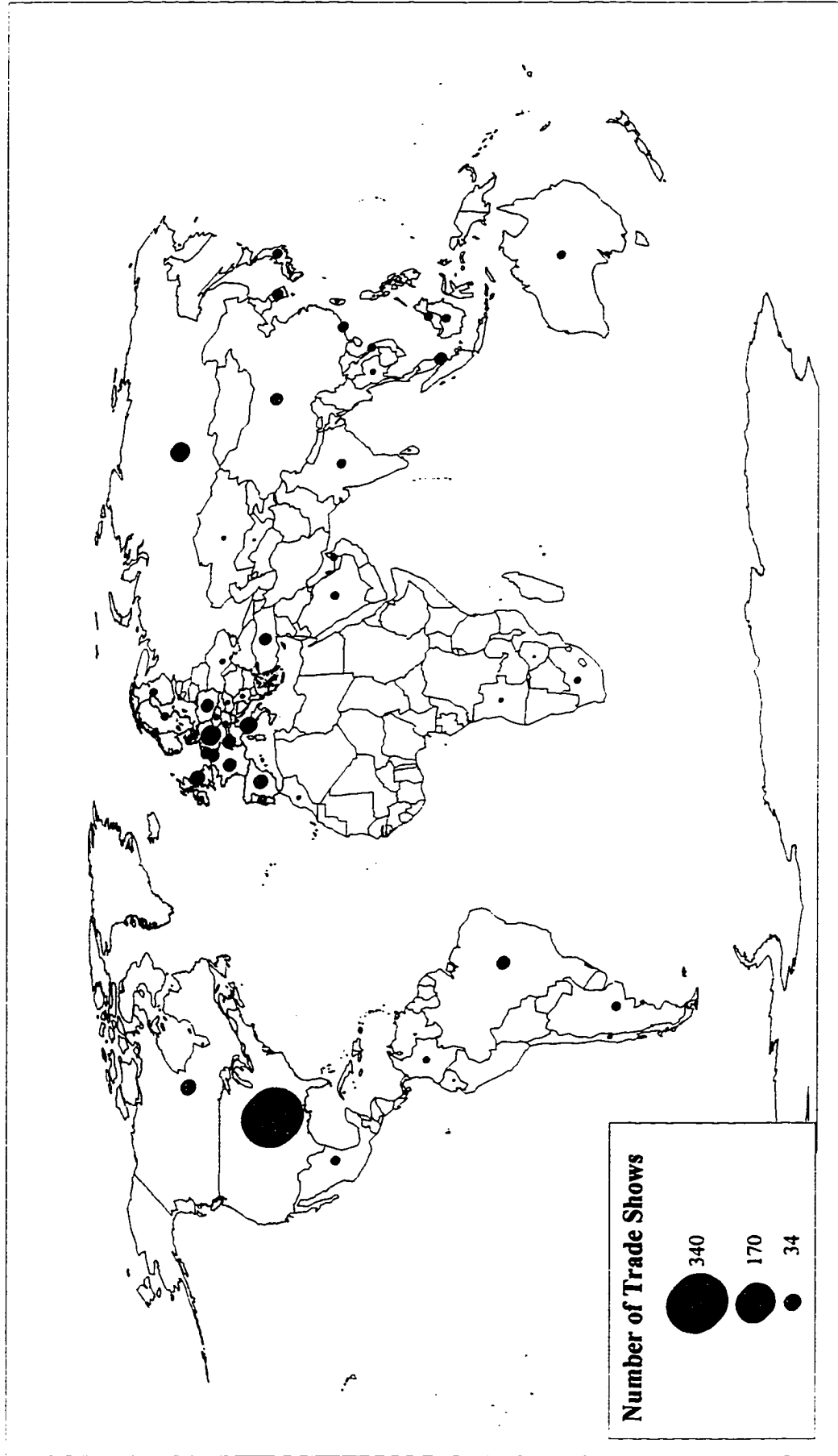
As shown in Map 3.1, ITSs are spatially highly concentrated on the global scale. ITSs in the US alone account for nearly 40 % of the total. A further concentration is visible in western Europe, where 30 % of all trade shows are located. Thus, these two major economic blocs account for over two thirds of the global ITS-activity. A third concentration is noticeable in the Asian countries. However, their low portion of 11 % of the global activity, makes this area far less significant. On the other hand, the minute role of the periphery is conspicuous. While the countries in Latin America only account for 6 % of the total, Africa, with 2.5 %, hosts even less of the studied activities.

⁴ For a description of this database, refer to the methodology section below.

⁵ Unfortunately no later study than the one in 1973 exists about the seasonal distribution of ITSs. However, a brief examination of the TradeShowCentral database seemed to confirm October as the month with the most ITSs.

⁶ In order to test a possible continental bias of the chosen time period, small samples were taken from southern and northern countries for the months October, March, and July.

Map 3.1: The Global Distribution of Industrial Trade Shows in October 1996



Source: Trade Show Central (1996)

Noticeably the states of the former USSR are also only of minor importance accounting for under 5% of the total activity.

While the high concentration of ITSs in North America would suggest choosing this as the study area, there are a number of arguments in favour of Western Europe and especially the European Union (EU). First, the fragmentation of Europe allows an easier assessment of the important function of ITSs in the entry to foreign markets. The gradual dismantling of borders in the EU further helps in the assessment of this function. Second, the high diversity of European countries and their regions allows an easier analysis of the influencing factors for the distribution of ITSs. Third, as Huynen (1973) points out, the phenomena of ITSs is clearly of European origin. The sudden spread of ITSs in the USA is a more recent development (Wirtschaftswoche, 1989, W&V, 1991). Doubts about the long term feasibility of many of the newly established ITSs exist. Hence the present pattern might lead to a currently distorted spatial structure. Although Europe has experienced a similar boom in the 1980s and especially in the 1990s, a more stable structure can be expected. Fourth, according to current research, ITSs seem to have a higher significance among European firms than American companies. This is reflected, among others, in European firms' higher budgets reserved for these events (Golob, 1988). Furthermore, the EU member states possess a coherent dataset that makes statistical analysis feasible. Therefore, Western Europe is chosen for the study area. In Western Europe the study area is limited to the 15 member states of the EU that account for the majority of western European countries.

III.2 The European Union

Since the distribution of ITSs and the spatial inflow of their participants is highly influenced by the growing interconnection of the member countries of the EU it is necessary to review the formation of the Community. Such a review allows a better understanding of the economic environment of the study area and is crucial for the temporal analysis of the spatial inflow of the exhibiting companies. Following the historical review, the regional patterns of economic activity of the Union will be briefly outlined. A description of regional patterns is essential for the interpretation of the spatial allocation of ITS-activity. It also leads to a better understanding of the inflow patterns which are analyzed later on.

III.2.1 The Formation and Development of the European Union

European integration has been an extremely dynamic process, gaining momentum after the end of the Second World War. To ensure peace in Europe, the *European Coal and Steel Community* (ECSC) was founded, according to the Schuman Plan, following the Treaty of Paris in 1951. Its aim, although fundamentally political, was to establish institutions for the management of resources, production and trade in coal and steel, considered essential for any kind of aggression (Swann, 1988). Its members consisted of the core countries of Western Europe: France, Germany, Italy, Belgium, The Netherlands and Luxembourg. Although the UK was also invited to join, it refused. In a statement, the UK government declared that it was not prepared "to accept the principle that the most vital economic forces should be handed over to an authority that is [...] responsible to nobody" (Swann, 1988, p. 7).

Following the Korean War in 1950, the US pressed for a rearmament of Germany. This was

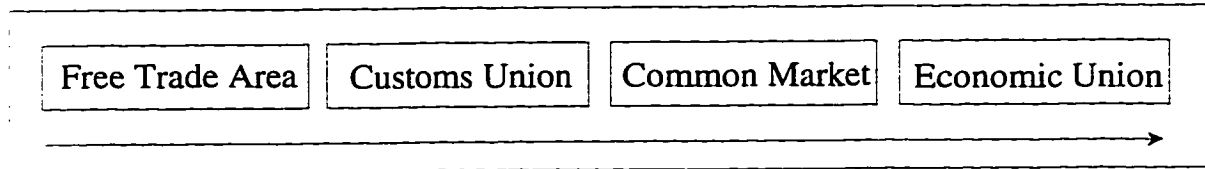
unacceptable to France, who proposed the creation of a European Army instead. The proposal was met enthusiastically and led to the establishment of the European Defence Community (EDC) in 1952. Its members were the same six countries as the ECSC. Since the pooling of defensive and offensive capabilities reduced the range for independent foreign policies, a European Political Community (EPC) was proposed in 1953. The refusal of the EPC in the French Assembly led to the abandonment of the thrust towards political unity and the collapse of the EDC (Swann, 1988).

The success of the ECSC and the growing realization of the economic advantages of a common market led the participating countries to commit themselves to further economic integration in other sectors (Cole and Cole, 1993). Initiated by the Benelux countries, the EEC was founded in the Treaty of Rome in 1957. Its long term aim was to create a common market and to achieve free trade and competition by first establishing a customs union (Jones, 1994, Swann, 1982). The UK was again invited to join. However, its opposing expectations of the establishment of a free trade area, instead of a custom union, led the UK to withdraw.

This dispute refers to the differing intensity of possible economic integration amongst countries as seen in Figure 3.1 (Dicken, 1986, Swann, 1988). The free trade area demands the least in terms of involvement. It is based on an arrangement to remove all customs duties and quotas on trade between its member countries. Countries are free to determine their own trade policies towards countries outside the area. The customs union increases the engagement of its member countries. In addition to the removal of internal quotas and tariffs, a common level of duty is established for goods entering the union from outside. The common market substantially increases the member countries integration. Additional to the free movement of goods boundaries also fall for other factors of production such as labour, capital, and enterprise. The last step towards unification is established

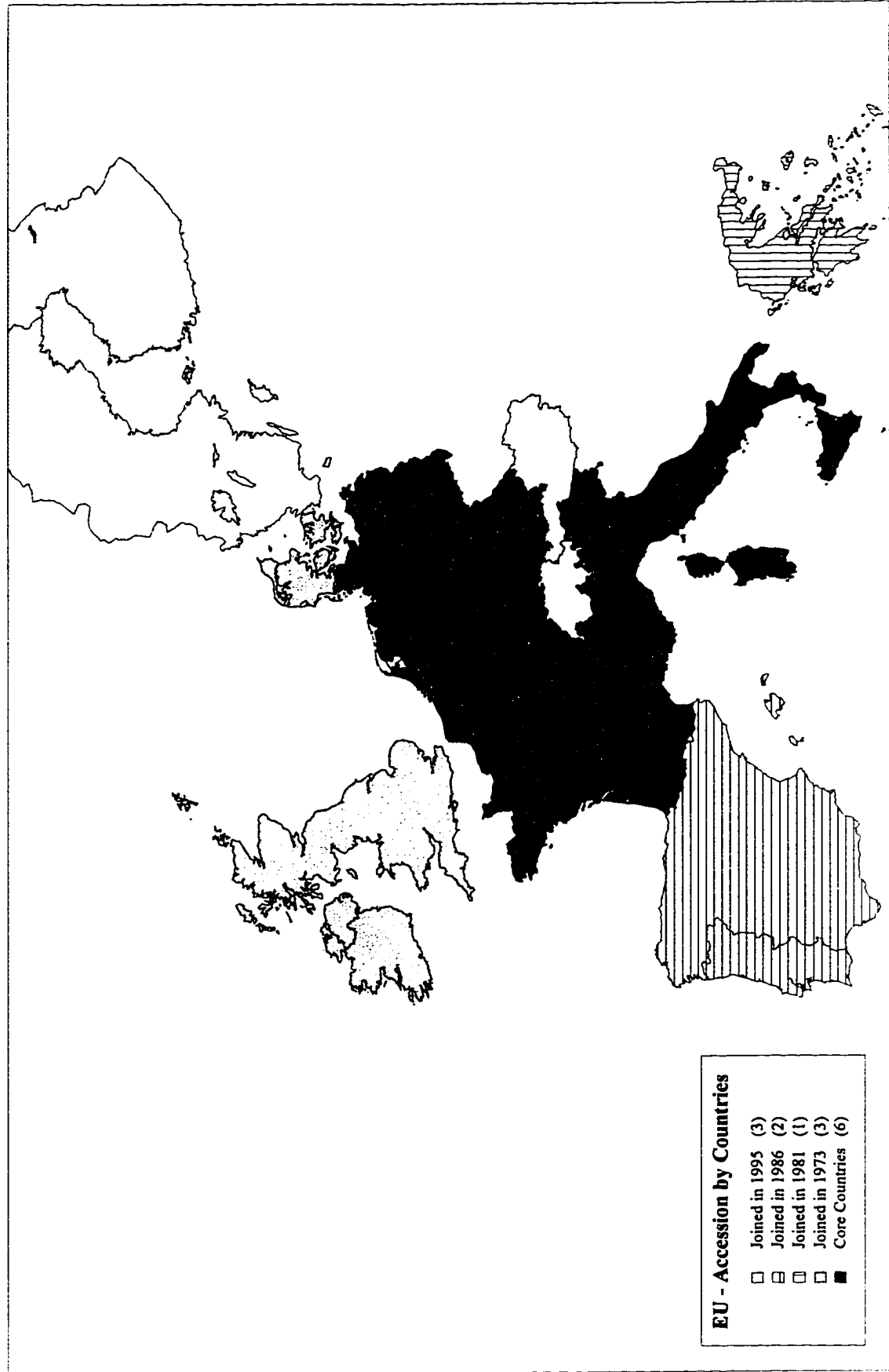
through the economic union. Additional to the features of the common market this form involves a complete unification of monetary and fiscal policies.

Figure 3.1: *The Development Line from Free Trade Area to Economic Union (according to Dicken (1986) and Swann (1988))*



The attraction of the EEC led a number of countries to apply for membership. The UK, the Irish Republic, Denmark, and subsequently Austria, Sweden, Switzerland, and even Portugal made bids for entry in the early 1960s (Swann, 1988). The negotiations with the UK proved especially complex, since it demanded modifications in the Treaty of Rome acknowledging her commitments to the Commonwealth and the European Free Trade Area. After over ten years of negotiations concessions from both sides cleared the obstacles for entry. In 1973 the United Kingdom, the Republic of Ireland, and Denmark joined the EEC raising the number of members to nine. Two further enlargements occurred in the 1980s. Greece joined in 1981 after a renewed application in 1975. Portugal and Spain followed in 1986 thereby significantly enlarging the economic disparities in the Community (McDonald and Dearden, 1992) (Map 3.2).

Map 3.2: The Chronology of EU - Accession (1957 - 1995)



The process of economic integration of the EEC advanced very swiftly in the 1960s. However, the progress towards a Common Market slowed down considerably in the 1970s and 1980s (Faulhaber and Tamburini, 1991). Continuing political debates, as well as the slowing down of the national economies have made countries increasingly reluctant to bear the adjustment costs (Gibb, 1989, Tsoukalis, 1990). Although the formal tariffs were eliminated, numerous non-tariff barriers (NTB) were erected as the governments grew more protectionist in the recession that began in the 1970s (Swann, 1988). Thus, inter-community trade was barred from free flow, severely impacting the economies of the community members. These costs of 'non-Europe' were assessed in the 'Cecchini Report' in 1988, commissioned by the European Council. The report identified red tape and border related controls, government protectionism in procurement markets, divergences in technical regulations and standards, as well as general blocks to transborder business activity as the major NTB hindering effective economic integration (Cecchini, 1988, Emerson et al., 1988). The cost of this market fragmentation was estimated to be 216 billion Ecu (Cecchini, 1988). Consequently by the 1980s a common market did not really exist in practical terms (Jones, 1994, Swann, 1988).

The Single European Act (SEA) was signed in 1987 as an attempt to revitalize the European economies as well as to accelerate their integration and so increase international competitiveness (Jacquelin and Sapir, 1988, McDonald and Dearden, 1992). The purpose of the Act was to transform the common market to an internal market via the abolition of physical, technical and fiscal barriers. The free movement of people, goods, services and capital would thus be guaranteed. An agenda was set to complete the Single Market by the end of 1992. As a symbol for closer integration the name of the Community was changed from the EEC to European Community (EC).

The closer economic integration is supposed to have other major beneficial effects beyond the

aforementioned downward pressures on costs through the elimination of barriers. Above all, it is expected to install a new competitive climate (Cecchini, 1988, Emerson et al., 1988, Quevitt, 1992). The boosted competition combined with the unhindered access to member markets offers significant benefits. First, it enhances further reduction in costs by improved exploitation of economies of scale in production and organization (Owen, 1983). Secondly, improved efficiency, accelerating industrial restructuring and the downward movement of prices through increased competition are also advantageous. Third, a reallocation of resources to the regions of real comparative advantage is expected through the break up of distortions made by protectionist industrial policies. Lastly, the new competitive climate is likely to increase the innovativeness of European industry. This is of particular importance to the EU whose international competitiveness is found to be increasingly lagging (Gertler and Schoenberger, 1992, Sadler, 1992, Winters, 1993). In addition to the micro-economic advantages, integration is also expected to have positive effects on the macro-economic environment. Considerable growth in GDP, employment creation, and possible inflation constraint are the most important of these effects (Cecchini, 1988, Emerson et al., 1988, MacDonald and Dearden, 1992).

The goals of the SEA were reiterated even more emphatically in the Treaty of European Unity signed in Maastricht in 1991. This treaty further promotes the creation of a single market without frontiers and other trade barriers. Yet the Maastricht Treaty goes far beyond that by setting a schedule for the creation of a single European currency by 1999. This fundamental and irreversible attempt at reform, combined with the increasing efforts to streamline the national social, economic and defense policies into a single European policy, shows the increasing extent of socio-economic and political integration among the member states.

In 1995 the Union experienced a further enlargement as Sweden, Finland, and Austria voted

for entry in national referendums. Although Norway was also offered a full membership, this was rejected, similar to a referendum in 1973. These accessions raised the total number of members from 12 to 15. In addition to the full members, Turkey, Cyprus, and Malta are connected to the EU through associate memberships while they wait for full member status. Thus, the continuous enlargement of the Community led to the inclusion of the vast majority of West European countries. Yet, further enlargement is expected in the near future through the possible integration of the selected Eastern European Countries. While the majority of the former communist countries has applied for membership, Poland, Hungary, the Czech Republic, and Slovenia are the most likely to join soon (The Economist, 1996).

III.2.2 The Regional Patterns of Economic Activity in the European Union

Although the continuing integration suggests a homogenic structure in Europe, this is certainly not the case. Instead the EU consists of an economically heterogenic structure of countries and regions. Within this structure different groups have varying access to wealth and education or in Clout's term to an 'environment of opportunity' (1987). The best way to analyze the economic structure of Europe and identify the powerful as well as the lagging countries and regions is through the analysis of differing employment structures as well as the spatial distribution of GDP.

A look at the GDP figures of the member countries identifies Germany with 27.6% of the total European GDP as the major economic powerhouse of the Union. It is followed with some distance by France (18.1%), Italy (14.3%), and the UK (13.6%). Conversely, smaller and peripheral countries like Belgium (3.0%), Denmark (2.0%), Greece (1.3%), Ireland (0.7%), Luxembourg (0.2%), Portugal (1.2%), and Austria (2.6%) contribute only minor shares to the total (Eurostat, 1995, p.

356). The examination of the GDP *per capita* allows a more relative analysis. According to this, Luxembourg, Germany, France and the UK distinguish themselves with rates significantly above the EU average. At the other extreme, peripheral countries, especially Greece, Portugal, and to a lesser degree Ireland and Spain have rates of up to 50% below the average (Tsoukalis, 1991, p. 206).

The examination of industrial output reveals a similar structure. As shown in Table 3.1, Germany is the most highly industrialized country. France, Italy, UK are other countries with massive industrialization. The Mediterranean states especially Greece, Portugal and Spain distinguish themselves with markedly lower rates of industrial output reflecting their strong orientation towards an agricultural economy.

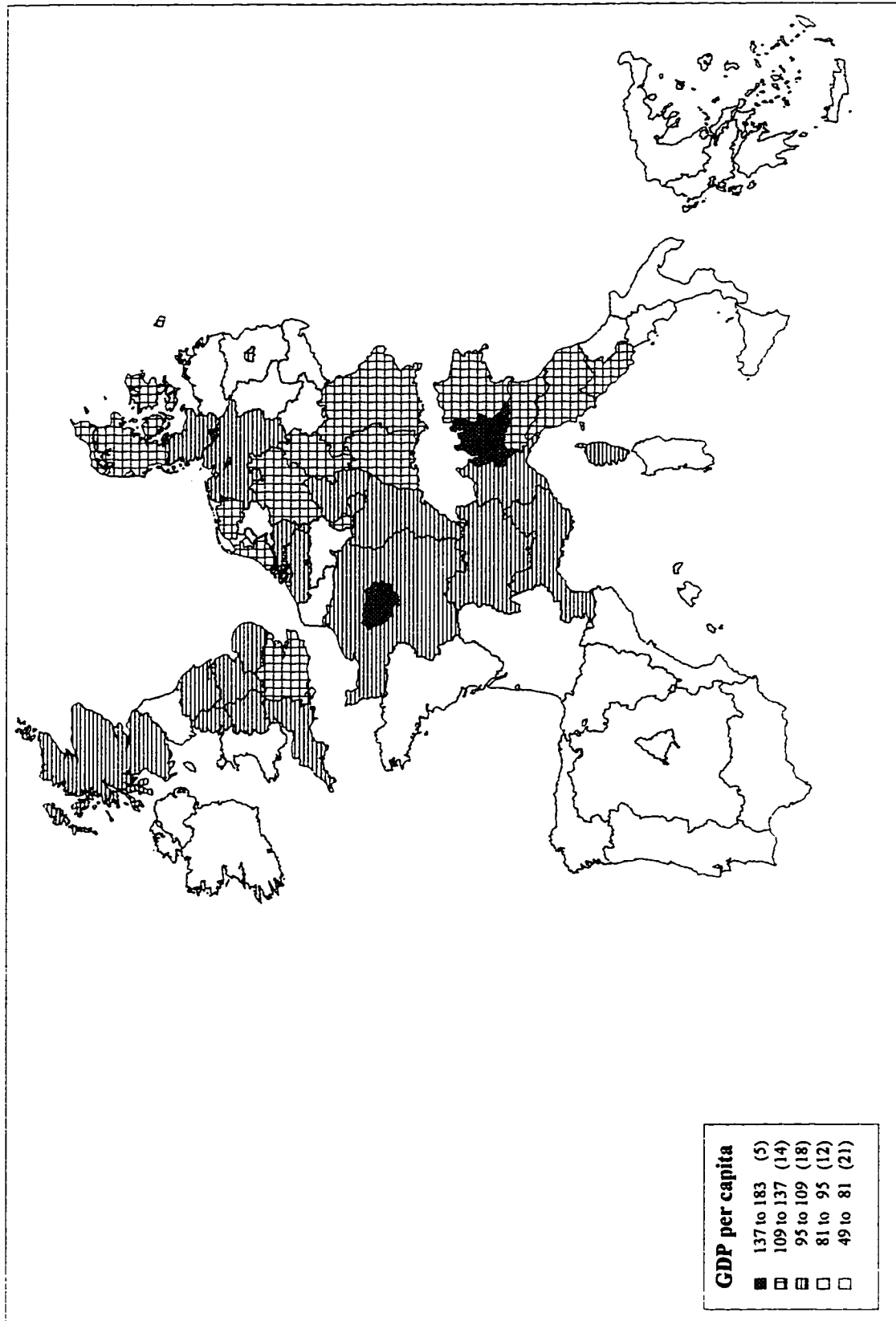
Table 3.1: *Distribution of EU Industrial Output by Country in 1995 (n=15)*

	Share of total EU population	Share of EUind. output
Germany	21.8	31.0
UK	15.8	13.4
France	15.6	15.9
Italy	15.5	13.7
Spain	10.6	6.7
Netherlands	4.1	3.9
Greece	2.8	1.0
Portugal	2.7	1.4
Belgium	2.7	2.7
Sweden	2.4	3.1
Austria	2.2	3.3
Denmark	1.4	1.5
Finland	1.4	1.3
Ireland	1.0	0.7
Luxembourg	0.1	0.2
EC	100.0	100.0

Source: Eurostat (1995)

A regional analysis of the GDP per capita at the NUTS I level reveals even more sharply a dominant core and a lagging periphery (Clout, 1986, Perrons, 1992). While the core is basically concentrated in a development axis starting from Greater London over Belgium, the Netherlands along the Rhine line ending in northern Italy, the periphery mainly consists of large parts of Spain, Portugal, Greece, southern Italy and Ireland (Map 3.3). The development axis, named the 'Blue Banana' by Brunet (1987), is marked by the highest density of population as well as level of development in the EU. Not surprisingly, the leading industries as well as the high status jobs and

Map 3.3: GDP per Capita in the EU on the NUTS I level in 1991



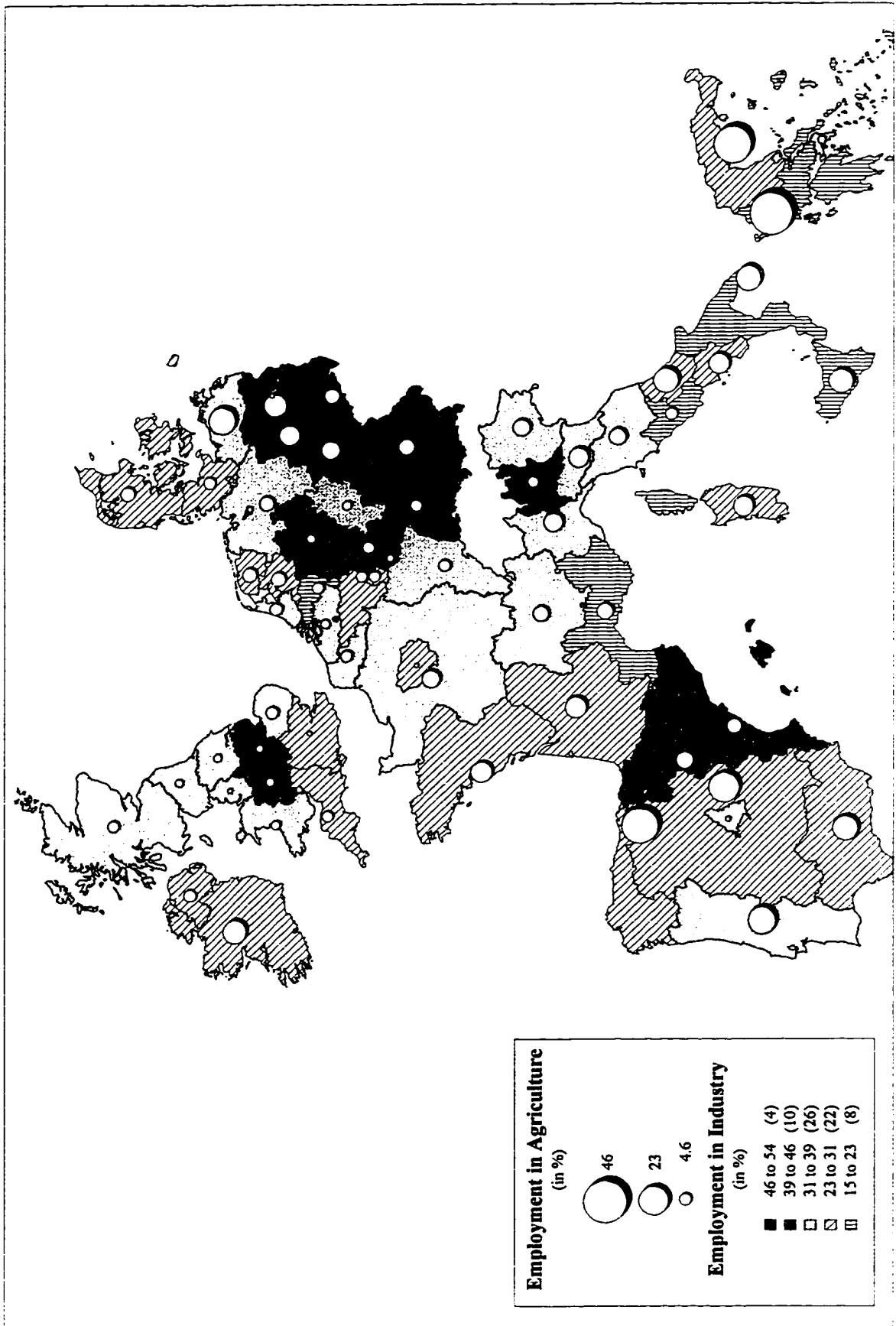
Source: Cole and Cole (1993)

services are concentrated in agglomerations in this area, including all the leading 10 % of regions according to GDP per capita (Dunford, 1993, Perrons, 1992). On the other hand, the peripheries are mainly characterized by a high share of income of agriculture, declining industries, high unemployment rates, low productivity and inferior infrastructure (Clout, 1987, Gans, 1992, Vanhove and Klaassen, 1987).

This spatial pattern of an economically powerful core and a lagging periphery is also apparent in map 3.4, depicting the distribution of industrial and agricultural employment at the NUTS I level. The relative sophistication of the regional economies is reflected by the share of employment in agriculture. Thus, the rural character of much of the periphery becomes visible. Over 15% of the workforces of Ireland, Portugal, large parts of Spain, southern Italy (Mezzogiorno), and Greece are employed in agriculture. On the other hand, fewer than 4% of those employed in the central development axis are in agriculture.

The spatial pattern of employment in industry reveals an inverse image. While the areas with high industrial employment are concentrated in the core axis, the periphery is characterized by lower shares. A similar structure though more blurred is visible in the distribution of service employment. Although a dominance of the core is visible too, the data is contradictory. This is due to the qualitatively diverse range of service activities which do not allow for a direct comparison of regions. Thus, southern regions like Sicily or Sardinia with high shares of low skilled employment in tourism have similar portions in overall service employment to most of the Benelux countries whose employment is mostly concentrated in high skilled producer services. As a result, the employment figures of the service sector are of limited use to show structural differences in the EU.

Map 3.4: Employment in Agriculture and Industry in the EU on the NUTS I Level in 1991



IV Methodology

The empirical part of this research aims at identifying the spatial structure of ITSs and the factors responsible for their distribution. Furthermore, the characteristics and the spatial inflow of attending firms is investigated, through which temporal dynamics are analyzed. To approach these research aims, two different methodologies are used. These are described in brief.

IV.1 Analysis of the Spatial Distribution of ITSs

IV.1.1 Data Sources

Analyzable data on ITSs is extremely scarce. Although a great multitude of commercial publications on specific events exists the diversity and doubtful reliability of these sources make them inappropriate for analysis. At the same time no official all inclusive directory of ITSs exists. More recently, private companies have started building global directories. Although the directories of the Euromonitor⁷ (1995) and of Webster (1993) are impressive, their databases are still limited. The total number of ITSs does not exceed 4,800 and therefore contains considerably less than 50% of the total.

Another much wider source is a global database on the internet called TradeShow Central. It covers over 10,000 of these events, which is by far the biggest data set encountered in the search. According to TradeShow Central their database contains 98 % of international events (TradeShow Central, 1996). The database depicts information on the location of the individual fairs, their schedules as well as thematic orientation. Information about the size and attraction of individual ITSs is given through the citation of the number of exhibitors as well as visitors at the last event (1996,

⁷ The name 'Euromonitor' is misleading in this context, since the listed ITSs are not only from Europe but from all over the world.

1995 or 1994). The foreign participation rate of visitors and exhibitors is also given. The database has information on the location of ITSs and their thematic orientation for future dates only. Therefore, data on prior years is unfortunately not available, which impedes an analysis of the temporal dynamics of ITS-location. The data from TradeShow Central was chosen for the first part of this analysis due its relatively high coverage of ITSs. For this research, a sample of ITSs was taken from October 1996 to the end of March 1997. This six months period was chosen for two reasons. First, research has shown that ITSs are concentrated in this time period (Alles, 1973)⁸. Second, it is assumed that the data on this time period is the most accurate, since TradeShow Central is continuously updating their database. Therefore, the completeness of months further in the future is expected to be lower. The total number of analyzed ITSs in the EU is 1,214. It is considered sufficiently large for the spatial analysis of these events in the study area.

IV.1.2 Problems with the Data

There are several minor problems with the data that have to be mentioned. First, to be included in the database, ITSs have to be internationally oriented. However, such an orientation can be minimal (1 or 2 % of exhibitors). Thus, regional and exclusively national ITSs are not included. Since national ITSs are assumedly limited in number in the age of globalization, this restriction seems acceptable.

Second, although the TradeShow Central claims a completeness of 98% (TradeShow Central, 1996), it is to be expected that a number of ITSs is not included in the dataset. Convention centres with less active management might refuse sending data to this institution and thus not show up in their

⁸ Refer to footnote 4.

directory. Since this would be completely contrary to the publicity interest of these companies, this effect is assumedly limited. A further limitation is expected through the continuous updating practice of TradeShow Central. Since updates of their datasets are carried out on a weekly basis, the data collection for this study is likely to be incomplete. Since the data collection was done between September 22 and September 30, 1996, entries after these dates are not included in the dataset. However, the effect of this drawback is considered to be minimal since a random check in December 1996 did not reveal significant differences in the quantity and pattern of the data.

A further problem lies in the nature of ITSs. Their thematic diversity makes categorization into different fields necessary, yet problematic. Altogether 36 broad thematic fields were defined to which individual shows were assigned to. Such an assortment is very complicated, however, since the brief description of the events often does not give sufficient information on the nature of the show. Consequently minor distortions are assumed through qualitative misinterpretations of the data. Furthermore, the increasingly blurred boundaries between service and industrial shows makes analysis difficult. As Alles already pointed out in 1973 ITSs in the secondary sector are increasingly attended by service sector firms. This makes a clear distinction of ITSs into secondary (or primary) and tertiary shows difficult. Therefore, it has to be kept in mind that ITSs are probably a mixture of firms from different sectors. The respective fairs were categorized according to the leading thematic orientation.

IV.1.3 Research Procedure

The analysis of ITS-distribution in the EU is carried out on two levels. First, the national distribution of these activities among the 15 member states is examined. Next, a regional perspective is used to better understand the spatial structure of ITSs and to better analyze the influential factors

of location. Such a regional examination is especially useful in the EU, since the marked regional disparities in the member countries make an analysis on the country level difficult. The regional analysis will be carried out on the NUTS I level, that breaks down the EU into 75 somewhat homogenous and thus representative regions.

In order to assess the geographical distribution of ITSs their absolute distribution among the member countries is first mapped. This allows an assessment of the absolute distribution of ITSs in Europe and thus the supply of companies with these events in the different countries. Additionally, the relative distribution of ITSs per capita is calculated to gain insight into the relative position of these events in the individual economies.

Second, the quality of the countries' ITS-environment is analyzed using descriptive statistics. As indicators of the quality of ITS-environment the diversity of these activities as well as their sectoral orientation is examined. This helps evaluating the different access of companies' in different economic sectors to ITSs.

Third, an attempt is made to identify the influential variables for ITS-location. This is done using correlation analysis between the number of exhibitors (absolute and relative) and a variety of socio-economic factors. The variables that will be analyzed on their impact include GDP, sectoral employment and output, R&D-intensity, population size etc..

The analysis of the spatial distribution of ITSs on the NUTS I regional level is similar to the methodology outlined for the macro level. In addition, however, following the correlation evaluation multiple regression analysis is used for the identification of the influential locational factors. It is expected that a multiple regression analysis improves the identification of the decisive variables.

IV.2 Analysis of the Spatial Range of a Chosen ITS

IV.2.1 Data Source

To analyze the spatial range of ITS participation data of a specific ITS was needed. Therefore, first a host country and a specific ITS had to be selected. For the purpose of this research Germany seemed to be the most appropriate geographical location to host the ITS. As the analysis of the distribution of ITSs in the EU showed, ITSs in Germany have the highest rate of international participation and thus the widest spatial range of exhibitors. This is an important precondition for the analysis, since the examination of the spatial range of ITSs and its dynamics over time is only possible with a large number of foreign firms. Furthermore, the central location of Germany in the EU seemed important to allow firms from all states of the EU a relatively easy access to the analyzed ITS.

Second, a specific ITS had to be selected. Considering the aim of this research, GLASTECH in Duesseldorf was chosen. This ITS seemed to be well suited for the analysis for a number of reasons. First, it is an international ITS for machinery, equipment, applications, and products involved with glass. The limited sophistication of parts of these branches allows a wide distribution of such producers over Europe and also globally, although a concentration of glass manufacturing is noticeable in Germany, UK, and Italy. Second, GLASTECH is the globally leading ITS ('Leitmesse') for glass (NOWEA, 1997) and as such has a strong appeal to all related firms to participate. Not participating companies risk missing the most important gathering of their branch. Furthermore, GLASTECH is a biannual ITS, that allows financially less powerful firms a better chance to participate than annual events, where SMEs might consider only attending every second or third event. Missing out on one GLASTECH show on the contrary means to miss out of the interaction for four years. Fourth, GLASTECH has an outstandingly high rate of foreign participation. In 1996 59.2% of the exhibitors

came from outside Germany (Messe Duesseldorf, 1996c). This high rate allows a close examination of the structure of international exhibitors and the spatial range of the ITS. Fifth, the Messe Duesseldorf agreed to support the planned research. Other ITS-locations such as Frankfurt or Hannover were contacted, yet the managements of these convention centres refused to cooperate.

It is important to note, however, that GLASTEC is not a representative show for ITSs in general. For a more representative analysis a far greater number of ITSs in a wider number of locations would have to be considered. Instead, GLASTEC is an exceptionally internationally oriented ITS that functions well for the analysis of the market range of ITSs. Therefore, it has to be kept in mind, that 'normal' ITSs are more nationally oriented with a smaller spatial range of participation.

After the ITS was chosen, data on the exhibiting firms had to be collected. However, data on exhibitors at ITSs is not easily accessible. Although convention centre managements regularly carry out thorough market research of the participants at their respective ITSs none of the contacted centre managers was willing to share this information. Therefore, data had to be collected in an indirect manner using the catalogues of GLASTEC to identify the exhibiting companies. Fortunately, the Messe Duesseldorf was willing to send the catalogues of GLASTEC for the years 1980, 1988, and 1996.

The catalogues of GLASTEC contain the names of the exhibiting firms, a short description of their activities, and their addresses. Evaluating these catalogues allowed the examination of the dynamics of the spatial range of GLASTEC for the observed time period. Furthermore, the brief description of the participants' activities made a categorization of exhibitors according to economic sectors possible. In order to gather further data on the exhibiting firms, company registers of the 15

EU-member countries were consulted.

IV.1.2 Problems with the Data

Collecting the data in the described indirect manner proved to be problematic. First, company registers of the member states are far from complete. Altogether, 353 of the exhibiting 673 companies from the EU could be identified in the registers (54%). On the remaining 46% no data is available. Although this high share seems to be suitable for a relatively representative analysis, it is expected that the firms absent from the consulted company registers are of smaller size. Therefore, a slight bias towards larger firms seems probable. Since the data availability varied between the different member states (Table 4.1) a slight distortion of the overall structure is expected. Its effect on the analysis is considered to be minimal, however, and is discussed at the respective part of the analysis.

A serious limitation of this indirect approach lies in the incompatibility of the company registers of the different member countries. The majority of company data was not comparable due either to the lack of specific datasets for a number of countries or due to different calculations of certain variables. The only variable that was homogenous for all member countries of the EU was the size of firms in terms of number of employees. Therefore, the analysis of the structure of participating firms and its flexibility to distance had to be limited to this variable.

Table 4.1: *Share of Firms on which Employment Data is Accessible According to Country of Origin at GLASTECH in 1996 (n=673)*

Country	Total number of exhibitors	Employment Data		% of data available
		available	not available	
Germany	328	148	180	45,1
Italy	135	81	54	60,0
UK	65	37	28	56,9
France	52	28	24	53,8
Belgium	29	20	9	69,0
Netherlands	26	17	9	65,4
Finland	9	6	3	66,7
Austria	8	3	5	37,5
Spain	7	5	2	71,4
Denmark	5	4	1	80,0
Sweden	3	3	0	100,0
Portugal	3	0	3	0,0
Greece	2	1	1	50,0
Ireland	1	0	1	0,0
Total and average	673	353	320	54,0

Source: Messe Duesseldorf (1996)
 Kompass (1994 a, b, 1995 a, b, c, d, 1996, 1997 a, b)
 Kraks (1996)
 Dun & Bradstreet (1993, 1997)
 calculations by the author

IV.2.3 Research Procedure

The analysis of the structure of the exhibitors and their spatial range is carried out in two steps. First, the spatial range of exhibitors is discussed for the time period between 1980 and 1996 using descriptive statistics. This allows the qualitative analysis of the market range of GLASTECH. Furthermore, the temporal dynamics and widening of participation become visible in this manner.

In the second step, the effect of distance on participation is analysed more thoroughly. Descriptive statistics as well as simple regression analysis are used to examine the relation between distance and number of exhibitors as well as size of participants.

V. The Spatial Distribution of ITSs in Europe

In the first part of the empirical analysis of ITSs, their spatial distribution is examined. This is carried out at the macro and micro levels. First, the general distribution of ITSs among the EU member states is assessed. This allows a first insight into the spatial patterns of ITSs and the identification of possible spatial concentrations. A more qualitative perspective, regarding the diversity and nature of shows, helps to evaluate the ITS-environment of the different countries. The combination of these two approaches is crucial in reflecting the attainable possibilities for local firms. Following the macro examination of the patterns, an attempt is made to identify the socio-economic factors which determine the described spatial distribution.

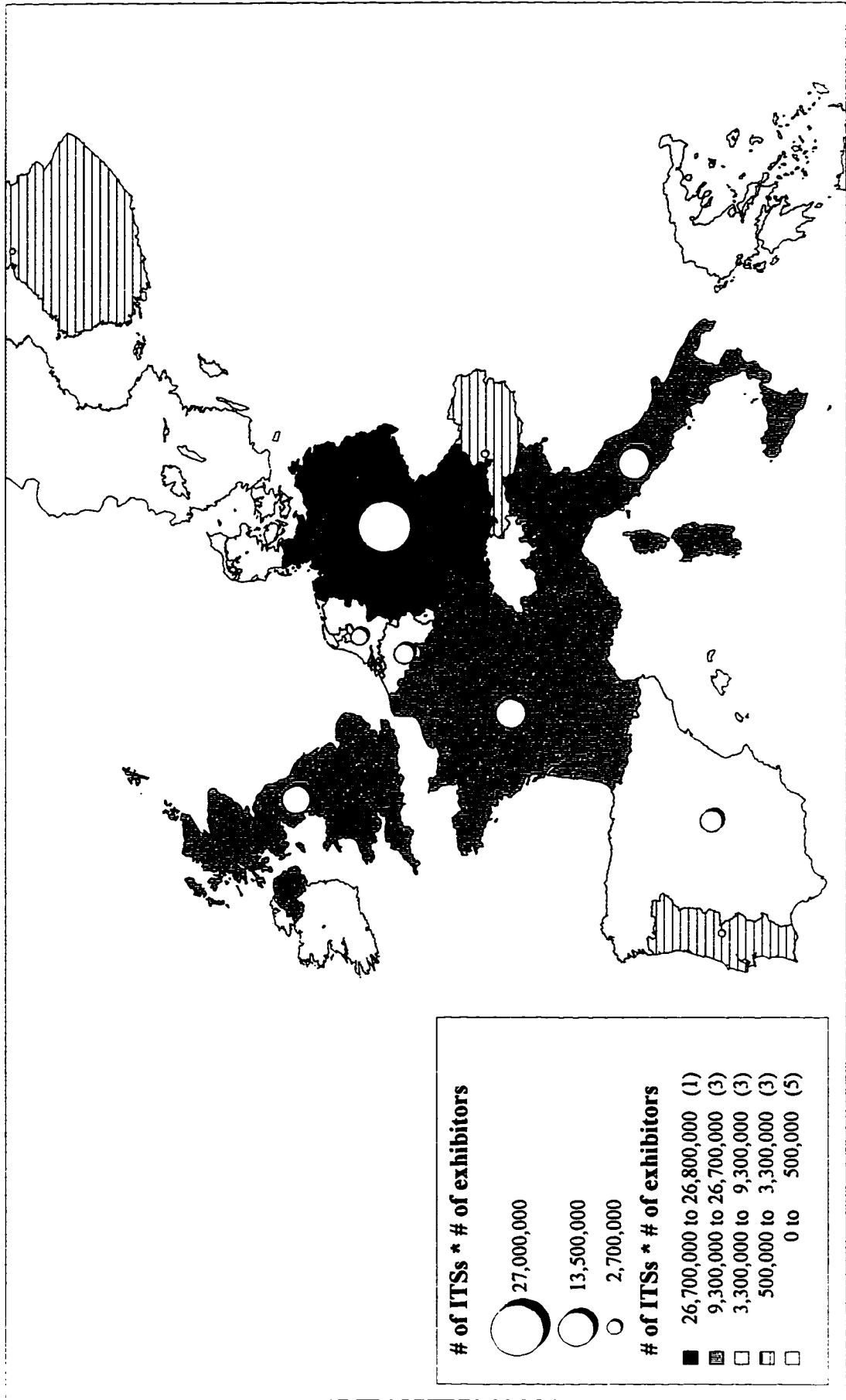
The second part of the chapter deals with the regional distribution of ITSs. This micro examination allows a more precise analysis of the spatial dimension of the events and a more exact identification of the dominating and lagging areas. The spatial entities of analysis are smaller and, therefore, more homogenous. As a result, a more accurate identification of locational factors is expected.

V.1 The Distribution of ITSs in the EU on the Country-Level

V.1.1 The Quantitative Distribution of ITS

ITSs are spatially highly concentrated in Europe and thus resemble the larger global pattern. Germany, the major economic 'power house', is by far the most dominant host country as shown in map 5.1. Seventeen percent of all ITSs and 24% of the total number of exhibitors in the EU are located here. The other economic core countries, UK, France, and Italy are also major centres of

Map 5.1: The Spatial Distribution of Industrial Trade Shows and their Exhibitors in the European Union (October 1996 - March 1997)



Source: TradeShow Bureau (1996)

ITS-activity. Each of these countries accounts for approximately 11% of the total number of shows and about 11 to 15% of the number of exhibitors. Thus, the four most economically powerful countries comprise 54% of all ITSs and 63% of the total number of exhibitors in the EU.

Significant concentrations of ITSs are still found in Spain, Belgium, and to a lesser degree the Netherlands. While Spain has a population four times that of Belgium, the countries have an equal number of ITSs. This demonstrates the decreasing importance of ITSs towards the periphery. While Portugal, Finland, and Austria still host around 4% of the total number of shows each, Greece, Ireland, Denmark, and Sweden fall even farther behind, with a minute share of ITSs.

Although the core, economic leading countries amass the majority of ITSs, the *relative distribution* of exhibitors reveals a different pattern (Table 5.1). While the leading countries fall markedly behind, smaller, mainly centrally located states reveal high ratios of exhibitors per capita. Luxembourg⁹ and Belgium, as the capital of the Community, are leading in the EU. Their rates far exceed that of other countries. They are followed in some distance by Denmark, Finland and the Netherlands. Germany with the highest absolute number of ITSs, lags far behind with a rate of 1.5. Even excluding Eastern Germany, its rating only rises to 1.92. The other dominating core countries, such as France and particularly Italy and the UK, have even lower rates and belong to the lower third of the Community. Although this distribution appears surprising, it is probably the outcome of the marked regional disparities in these countries. Thus the European-wide dominance of the core areas of these countries is blurred by the marked degree of underdevelopment in their peripheral regions (the Mezzogiorno region in southern Italy, the north of the UK and the southern part of France).

⁹ The example of Luxembourg has to be viewed with some caution, since the small number of ITSs and the small area of the country make a relative comparison with other countries difficult.

The Community's typical periphery also lags in its relative distribution of ITSs. While Ireland and Greece show the lowest concentration, Spain and Sweden also have low rates although the concentrations of the latter two countries are higher than that of Italy and the UK. Portugal is a notable exception with its concentration ratio nearly reaching that of Germany.

Table 5.1: *The Relative Distribution of Exhibitors in the EU per 1,000 population*

Countries	Exhibitors per capita (1,000)
Luxembourg	4.74
Belgium	3.68
Denmark	2.32
Finland	2.21
Netherlands	1.97
Austria	1.82
Germany	1.55*
Portugal	1.33
France	1.25
Sweden	1.19
Spain	1.14
Italy	1.00
UK	0.93
Greece	0.64
Ireland	0.09

* excluding East Germany: 1.92

Source: Eurostat (1995)
calculated by the author

V.1.2 Qualitative Assessment of the ITS-Environment in the Analyzed Countries

The absolute distribution of ITSs demonstrates an abundant supply of these activities for companies located in the core and a limited supply for firms based in the periphery. However, the above approaches only reflect the quantitative distribution of ITSs. This can be misleading as the quality of the ITS-environment in a country is strongly influenced by the diversity of the offered events. Thus, the range of ITSs, in addition to their quantity, determines what share of companies can

take advantage of the opportunities of these events.

To assess the diversity of the ITS-environment, the share of the hosted ITS-groups, in relation to the total number of thematic groups, is calculated (Table 5.2). This examination reinforces the strong position of the core countries and thus the advantages of companies located within them. While core countries offer ITSs in the majority of branches (above 80%), peripheral states, with the exception of Portugal, offer events in only half or even less of the categories. The advantage of the leading countries is additionally reinforced by the variety in the hosted groups. Whereas the peripheral countries only offer between one and two shows in each category on the average, the core countries offer four to six. This ensures a higher frequency of interaction between companies. It also allows a higher specialization and focus of ITSs with higher levels of industry- specific information flows.

Table 5.2: *The Diversity of the ITS Environment in the Examined Countries*

Country	# of ITSs	# of thematic ITS-Groups (total=36)	Range of ITSs*	Average # of ITSs per thematic ITS-Group
UK	169	35	0.97	4.8
Germany	210	33	0.92	6.0
Italy	135	32	0.89	4.4
France	141	31	0.86	4.0
Netherlands	77	29	0.81	2.7
Belgium	128	28	0.78	4.6
Spain	126	26	0.72	4.7
Portugal	51	25	0.69	2.0
Sweden	35	21	0.58	1.7
Finland	44	18	0.50	2.3
Austria	47	18	0.50	2.8
Denmark	29	17	0.47	1.7
Greece	13	11	0.31	1.2
Luxembourg	6	7	0.19	1.0
Ireland	3	3	0.08	1.0
EU-Average	80.93	22.3	0.62	3.0

* total number of thematic ITS-groups (minimum of five events in the EU, total: 36) / number of hosted groups
Source: calculated by the author

In addition to examining the range of the offered ITSs, it is necessary to analyze the sectors in which these events take place in the different countries. Such an examination allows an assessment of the economic orientation of the member countries. It also identifies the sectors in which domestic companies are able to benefit from the opportunities of ITSs. On the other hand, it pinpoints the economic sectors in which firms in different countries predictably have significant disadvantages due to their limited access. To assess the sectoral orientation of the member countries, the 36 broad classifications are grouped into the classical sectoral categorization. However, due to the broad range of industries in the secondary and tertiary sector, it is deemed necessary to further subdivide these into groups of 'low' and 'high' sophistication (Table 5.3)¹⁰.

¹⁰ Such a classification is extremely difficult due to the high qualitative variety in the majority of economic branches. Even within sectors that are usually seen as low sophisticated, firms of high sophistication can mostly be distinguished. The used categorization is thus vague and general and is strongly influenced by personal perspective,

The sectoral examination clearly shows the prime importance of the secondary sector (especially in branches of lower sophistication) in the field of ITSs. They are followed by the tertiary sector in which branches of lower sophistication are also the most frequent. Although marked differences in the orientation of the countries are observable, the diversity makes a categorization difficult. However, with some generalization three groups can be identified: the core countries (excl. Italy), the Mediterranean countries, and the northern periphery.

although a broad review of the literature served as a basis. Therefore the following categorization has to be seen as a general, not qualitative classification that is only used to obtain a vague insight into the sectoral structure of ITSs in the different countries. The classification is as follows:

- branches of low sophistication in the *secondary sector*: construction, fashion, furniture, etc.,
- branches of low sophistication in the *tertiary sector*: tourism, leisure, gastronomy, etc.,
- branches of high sophistication in the *secondary sector*: chemicals, pharmaceutical, environmental technology, medical technology, electronics, etc.,
- branches of high sophistication in the *tertiary sector*: business services, banking, educational industries, etc..

Table 5.3: *The Distribution of Exhibitors According to the Economic Sectors of their Branches for the Countries of the EU (in %)*

Countries	# of ITS	PRIMARY (in %)	SECONDARY (in %)		TERTIARY (in %)		N.A.* (in %)	Total
			'low' sophistication	'high' sophistication	'low' sophistication	'high' sophistication		
Germany	210	1.9	47.3	22.7	14.8	10.8	2.6	100
UK	169	3.1	40.4	21.8	16.3	9.6	8.8	100
France	141	3.9	45.4	28.7	13.4	8.6	0.0	100
Italy	135	5.7	44.0	21.6	23.6	4.8	0.3	100
Belgium	128	4.0	49.6	11.0	24.3	5.6	5.5	100
Spain	126	5.6	46.4	25.8	15.8	5.5	0.8	100
Netherlands	77	2.6	37.1	23.4	23.7	13.1	0.0	100
Portugal	51	4.7	51.6	17.3	17.8	5.8	2.8	100
Austria	47	1.8	46.6	27.9	22.7	0.2	0.9	100
Finland	44	7.7	49.0	25.4	8.5	5.0	4.5	100
Sweden	35	4.1	32.7	48.6	8.0	1.0	5.7	100
Denmark	29	5.5	30.7	15.4	14.9	33.5	0.0	100
Greece	13	23.1	38.6	2.2	24.3	3.7	8.1	100
Luxembourg	6	0.0	62.4	0.0	13.2	24.4	0.0	100
Ireland	3	0.0	36.6	63.4	0.0	0.0	0.0	100
EU-Average**	92.5	5.7***	43.0	22.5	17.5	8.2	3.1	100

* mainly horizontal 'international trade fairs' that are open to a wide range of branches (agr., ind., and services)

** The averages are calculated excluding Ireland and Luxembourg, since the low number of cases would distort the results

*** 4.2 without the outlier of Greece

Source: calculated by the author

The *core countries*, Germany, France, UK, Belgium, and the Netherlands¹¹, are characterized by remarkably low shares of ITSs in the primary sector and significantly above average ratios in the secondary and tertiary sectors. ITSs in 'highly' sophisticated services and industries are disproportionately present. On the contrary, the *Mediterranean countries* have an above average share of ITSs in the primary sector, as well as in the secondary and tertiary sectors in the lower sophisticated branches. Whereas higher sophisticated tertiary ITSs are significantly underrepresented

¹¹ Luxembourg as well as Ireland are excluded from this discussion due of their minimal number of ITSs.

in all of these countries, Italy and Spain have relatively high shares in advanced secondary shows, such as computers and electronics. The *northern periphery* is similar to the Mediterranean countries insofar as ITSs in the primary sector are overrepresented. As a marked difference, however, they are characterized by high shares of shows in highly sophisticated secondary industries, such as electronics and medical technology. As a further distinction they lack the high share in the lower scale tertiary shows. This is due to the lower significance of tourism and leisure industries.

Besides the relative characterization of the countries' ITS-environment, it is important to analyze the distribution of the total ITS-activity in the different sectors among the members of the EU. This allows the assessment of the absolute importance of individual countries in certain economic sectors and thus the identification of spatial patterns of specific fields.

Due to its highest share of the total activity, the concentration of all sectors in the core is not surprising. However, the extent of concentration differs significantly in the various sectors (Table 5.4). It is apparent that concentration increases with the sophistication of activities. While the share of the three most important countries in the primary sector only account for 44.5%, this rate increases to 58.8% in the field of highly sophisticated services.

The various sectors seem to have different spatial patterns of concentration in the EU. The activities of the *primary sector*, though most evenly distributed, are centred in Italy, France and Spain. This reflects the continued strong agricultural aspect of large parts of these countries. The relative importance of Greece, that hosts 8% of the total exhibitors, is impressive as it exceeds its share of all sectors by a factor of nearly six. On the other hand, Germany's extremely low share of 12.1% compared to its share of the total of 25.5% is remarkable.

Table 5.4: *The Share of Countries of the Total Number of Exhibitors According to the Economic Sectors (in %)*

Countries	# of ITS	PRIMARY (in %)	SECONDARY (in %)		TERTIARY (in %)		% of total exhibitors
			'low' sophistication	'high' sophistication	'low' sophistication	'high' sophistication	
Germany	210	12.1	27	25.3	21.9	31.8	25.5
UK	169	8.7	9.9	10.5	10.3	12.3	11.0
France	141	14.6	15	18.4	11.4	14.7	14.7
Italy	135	16.9	11.5	11	15.9	6.4	11.7
Belgium	128	7.8	8.4	3.6	10.6	4.9	7.6
Spain	126	13	9.4	10.2	8.3	5.8	9.1
Netherlands	77	4	5.1	6.3	8.4	9.4	6.1
Portugal	51	3.2	3.1	2	2.8	1.8	2.7
Austria	47	1.4	3.1	3.6	3.9	0.1	3.0
Finland	44	4.5	2.5	2.5	1.1	1.3	2.3
Sweden	35	2.2	1.5	4.5	1	0.2	2.1
Denmark	29	3.4	1.7	1.7	2.1	9.6	2.5
Greece	13	8	1.2	0.1	1.9	0.6	1.4
Luxembourg	6	0	0.5	0	0.3	1.1	0.4
Ireland	3	0	0.1	0.2	0	0	0.1
Total	1,214	100	100	100	100	100	100
Share of 3 largest	XXX	44.5	53.5	54.7	49.2	58.8	51.9

Source: calculated by the author

ITSs in *manufacturing* are more concentrated in the EU. Germany is the leader in both low and high sophistication industries, hosting slightly more than one quarter of all exhibitors. Although less significant, France is the second most important gathering place for these industries, accounting for 15% of low and 18% of high sophistication industries, respectively. Besides these main industrial congregation centres, Spain, UK, Italy, and, to a lesser degree Belgium, host around 10% of the exhibitors. The remarkably low shares of small and peripheral countries in highly sophisticated industries is conspicuous. However, the significance of countries differs strongly according to specific industries. Germany for example dominates the computer industry hosting 44.6% of all exhibitors. At the same time, its share of 1.3% in chemical and pharmaceutical industry is negligible compared

to the share of 28% of Spain or the 25% of Austria. Similarly, the electronic industry is strongly concentrated in France with 44.2%, while Germany, Italy, Spain and the UK only account for approximately 10% each. When looking at specific branches, the limited length of the analyzed time has to be taken into consideration, however. Thus, the limitation of the chosen six months might cause distortions in the analysis if ITSs of a certain branch take place in an other time period.

While low sophisticated service industries are relatively less concentrated, high sophisticated service industries are the most clustered sectors. Germany alone accounts for 32% of all exhibitors. Together with France and the UK, they account for nearly 60% of the total. Besides Denmark and the Netherlands (9.6% and 9.4%), other countries including Italy and Spain have only minute shares. Similar to highly sophisticated manufacturing branches, sophisticated service branches are even more concentrated in selected countries. ITSs in the education industry for example are concentrated in Germany, with 56.3% of the total. Similarly ITSs in business services are mostly confined to Germany and Britain, with each accounting for approx. 32% of the total activity. Interestingly, the centre for marketing seems to be located in Denmark, accounting for 43.6% of all exhibitors in this field.

As the last measure of the quality of the ITS-environment in the individual countries the foreign participation at these events is assessed (Table 5.5). Foreign participation is an important measure because it reflects the attraction of a country and its market to foreign firms. On the other hand, the share of foreign exhibitors shows the interconnection of the national economies in the global industry-specific flow of information. Therefore a low portion suggests significant disadvantages for local firms in learning about global trends, innovations, and other crucial competitive information.

The EU-average of foreign exhibitors of 17.1% is remarkable and confirms the ongoing globalization of the analyzed economies. However, foreign exhibitors still represent less than one fifth

of all participants, which demonstrates that European ITSs still have a largely domestic orientation. Core and thus central countries have significantly higher rates of foreign participation than the peripheral states. Germany, France and Denmark are leading in the internationalization of ITSs, distinguishing their events as being the most diverse. These three countries are followed in some distance by Italy and the Netherlands. On the other hand, Austria, Sweden, Finland and Portugal, at the periphery of the Union, have significantly below average portions of foreign exhibitors, making their ITSs more nationally dominated events.

Table 5.5: *The Share of Countries of Foreign Exhibitors (in %)*

Country	Exhibitors				
	TOTAL		FOREIGN		
	#	% of EU-Total	#	% of the country	% of EU-Total
Germany	126,621	25.6	33,040	26.1	31.5
France	72,135	14.6	18,129	25.1	17.3
Italy	57,621	11.6	11,183	19.4	10.7
UK	54,766	11.1	9,437	17.2	9.0
Spain	44,483	9.0	6,999	15.7	6.7
Belgium	37,896	7.7	6,724	17.7	6.4
Netherlands	30,799	6.2	5,816	18.9	5.5
Luxembourg	1,887	0.4	3,208	17.0	3.1
Denmark	12,147	2.5	2,898	23.9	2.8
Portugal	13,432	2.7	1,894	14.1	1.8
Austria	14,564	2.9	1,631	11.2	1.6
Sweden	10,360	2.1	1,547	14.9	1.5
Greece	6,590	1.3	1,181	17.9	1.1
Finland	11,385	2.3	1,159	10.2	1.1
Ireland	251	0.1	19	7.4	0.0
<i>EU-Total and Average</i>	<i>494,937</i>	<i>100</i>	<i>104,864</i>	<i>17.1</i>	<i>100.0</i>

Source: calculated by the author

A possible explanation for this divergence is that the smaller, poorer and technically less sophisticated economies are less attractive to internationally active companies. Their geographically peripheral position and poorer accessibility might act as further hurdles in attracting foreign companies. At the same time, the lower internationalization of the peripheral countries probably derives from the lower importance of ITs in sophisticated industries. Since internationalization generally increases with the sophistication of industries, the strong orientation of these countries towards the primary sector hinders their internationalization.

The absolute distribution of foreign exhibitors in the EU again confirms Germany as the major nodal point of the European economy. With nearly one third of all foreign exhibitors concentrated in Germany, local firms probably greatly benefit from the interaction possibilities. After Germany, France follows with 17.3% at a great distance. Thus, these two countries comprise around 50% of all foreign exhibitors in the EU. At the same time, the peripheral countries combined (Austria, Finland, Greece, Ireland, Portugal, Spain, Sweden) merely account for 13.8% of all foreign exhibitors. This shows that the majority of international exchange (not only of goods but of information) occurs in the limited number of core countries. Peripheral economies and companies are excluded from the majority of interaction. Participation depends on the visit of ITs in foreign (core) countries and is therefore limited to larger firms.

V.1.3 Analysis of the Influential Factors for the Distribution of ITs

In order to identify the factors responsible for the spatial pattern of ITs, correlations between the amount of the hosted activities and a variety of socio-economic variables are calculated. This is performed at two levels. First, general data is correlated with the absolute amount of the hosted

activities, allowing an insight into the factors responsible for the absolute distribution of ITSs among the member countries. Second, an analysis is performed regarding the relative distribution of ITSs. The relative distribution, which differs markedly from the absolute distribution, permits a more objective analysis of the influential factors of ITS-location. As a result, it will be carried out in more detail.

As shown in Table 5.6, the absolute distribution of exhibitors is directly correlated to the size of the national economies. The bigger a national economy is in terms of GDP the more ITSs it hosts. Although ITSs in the industrial sector are the most prominent ones, the output of this sector (as % of GDP) has no significant influence on the amount of hosted ITSs. Instead, there is a tendency towards service oriented economies. The agriculture share of GDP clearly has a negative effect on the amount of hosted ITSs. These correlations suggest, that it is the sophistication of the economies that has a significant impact on ITS-location. While countries with a highly sophisticated service base are especially attractive to host ITSs, countries with strong primary bases seem less suitable for these refined activities.

This hypothesis does not mean that the industrial sector is unimportant for ITSs. This would be absurd as 65.5% of exhibitors derive from industrial shows. Rather it seems that an economy needs to reach a certain advanced standing - mirrored by its service orientation - to develop a significant amount of ITS-activity. While a high industrial output as % of GDP suggests an industrial society, low shares of agriculture and high shares of services characterize a post-industrial economy. This not only means a higher output in the service sector but also a higher input of these services into the industrial sector. As the interdependence of these two sectors increases, so does the sophistication of national industries. As a result, their need for specialized interaction as offered by ITSs soars. This

trend is strengthened by the significant transformation of business cultures that is inherent in the shift from industrial to post-industrial societies. Interaction with suppliers, customers, and even with direct competitors achieves a central importance. Since ITSs meet this new demand in a perfect way, the strong correlations with the indicators of a post-industrial economy are not surprising.

Table 5.6: *Pearson Correlation Coefficient (r) between the total Number of Exhibitors and different Socio-Economic Variables of the Countries of the EU (n=15)*

Factor	Total Exhibitors*
GDP in \$**	0.86
Population**	0.79
Services output as % of GDP**	0.34
Agricultural output as % of GDP**	-0.58
Industry output as % of GDP**	-0.01

* logarithmically transformed¹²
 Significance at 0.52 (0.05%) - in bold
 Source: ** Eurostat (1995)
 calculated by the author

To further analyze the influential factors of ITS-location, a correlation analysis of the *relative* distribution of exhibitors is conducted (Table 5.7). A strong relationship of ITS-intensity with the GDP per cap. is identified, while the total size of GDP seems unimportant. This suggests that it is the relative wealth of an economy, instead of its sheer size (as it is indicated in the correlation analysis with the total values of ITS-activity), that is responsible for a high density of ITSs. Countries with high regional disparities, such as Italy or the UK, must fall behind in the relative distribution of ITSs. More compact and evenly distributed states, such as Belgium or Luxembourg, perform better. This increases the need for the regional analysis of ITS-distribution as such an approach better reflects the

¹² The skewed distribution of some of the variables necessitates a log-transformation of these to achieve a normal distribution. This method is used in all correlation and regression analysis.

relative position of economic entities.

Table 5.7: *Pearson Correlation Coefficient (r) between the Number of Exhibitors per capita¹³ and different Relative Socio-Economic Factors of the Countries of the EU (n=15)¹⁴*

Factor	Total*	Primary Sector*	Secondary Sector		Tertiary Sector	
			low*	high*	low*	high*
GDP per cap.**	0.59	-0.30	0.59	0.71	0.54	0.44
Total GDP in \$**	-0.03	-0.67	-0.05	0.31	-0.35	-0.21
Employment in agriculture (%)*	-0.55	0.42	-0.50	-0.65	0.29	0.37
Employment in industry (%)*	0.09	-0.52	0.18	0.26	0.12	-0.17
Employment in services (%)	0.47	-0.02	0.38	0.59	0.20	0.43
Agricultural output as % of GDP**	-0.48	0.58	-0.49	-0.63	-0.31	-0.34
Industry output as % of GDP*	-0.09	-0.52	-0.03	0.36	-0.13	-0.49
Services output as % of GDP**	0.42	0.09	0.36	0.28	0.35	0.69
Export as % of GDP*	0.21	0.17	0.16	0.37	0.72	0.37
Import as % of GDP*	0.33	0.15	0.30	0.35	0.81	0.27
Unemployment rate (in %)*	-0.46	0.33	-0.46	-0.07	-0.36	0.03
R&D expenditure as % of GDP*	0.35	-0.41	0.30	0.66	-0.14	0.07
University students per 100.000 ^a	0.38	0.12	0.39	0.47	0.26	0.21
Average age of leaving school ^a	0.29	-0.01	0.30	0.26	0.27	0.28
% of pop. in urban areas*	0.40	0.09	0.33	0.33	0.26	0.42
Population in urban areas over 500.000*	-0.47	0.29	-0.40	-0.62	-0.09	-0.37
Road density (km/km ²) ^a	0.38	0.03	0.38	0.21	0.84	0.28
Rail density ^a	-0.11	0.04	-0.15	0.43	-0.49	-0.47
Air traffic in passenger km per cap. ^a	-0.04	-0.11	-0.10	0.21	-0.27	0.01

* logarithmically transformed

Significance at 0.52 (0.05%) - in bold

Source: Eurostat (1995)

^a Euromonitor (1996)

calculations by the author

The assumed influence of a country's sophistication for ITS-distribution is also supported in the analysis. While a low sophistication - mirrored by a high share of agriculture - displays a negative influence, a more advanced economic structure, with high shares in services, has a positive impact.

¹³ As indicated in Table 5.1.

¹⁴ The relative small number of cases (n) in the individual economic sectors as well as the difficulties of the used sectoral classification (refer to footnote 10) have to be taken into account at the sector specific correlation values.

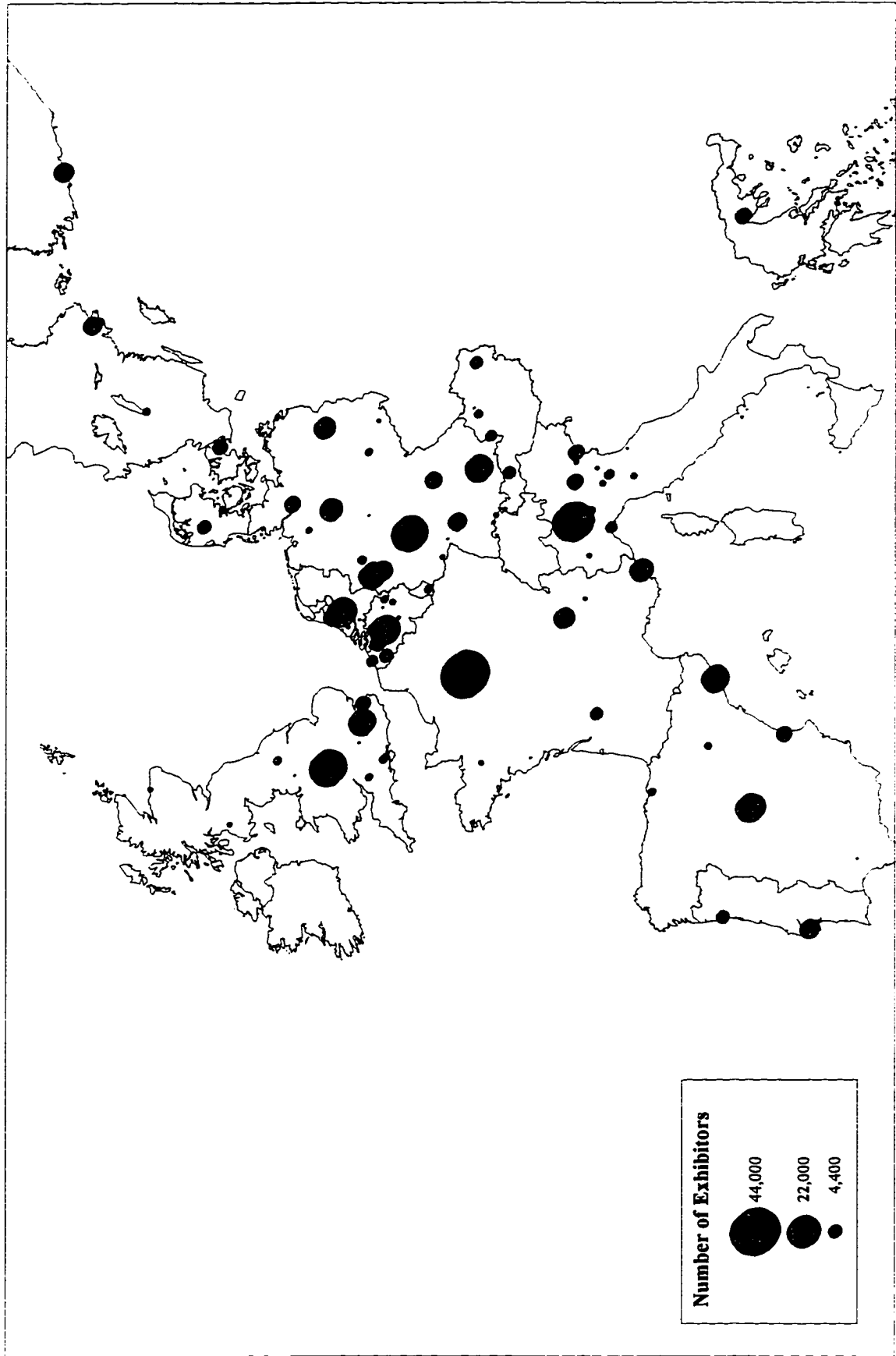
This is especially true for ITSs in highly sophisticated industries or services. The outlined hypothesis is strengthened by a positive tendency between the R&D expenditure and the extent of hosted ITSs. A similar recognizable trend is observed with the share of university students of the population. The data further reveal a tendency towards positive interrelation of a country's urbanization level and its ITS-density, although the data at the 0.05 significance level are not significant. This tendency is in coherence with the above outlined hypothesis of the critical influence of a country's sophistication. At the same time, high shares of population in urban areas over 500,000 seem to have a negative influence. This is not surprising as a high concentration of population in such urban areas is correlated with lower stages of economic development. Whereas agriculture in these countries still employs significant shares of the workforce, the drive towards industrialization draws large shares of the population into the leading industrial capitals such as is the case in Portugal, Greece and Italy.

V.2 The Regional Distribution of ITSs in the EU

V.2.1 The Spatial Distribution of ITSs

The regional distribution of ITSs is marked by a high degree of concentration in the central development axis (Map 5.2). This dominant axis, which starts in the southern UK, continues in the Benelux countries, parts of western Germany and ends in northern Italy, depicts exceptionally clearly the so-called 'Blue Banana' of the EU. Outside of this powerful axis ITS-activity decreases rapidly, not only towards the periphery of the Union but also towards the periphery of the individual countries. Thus, the regional disparities in the member states become well visible and delineate a much clearer picture of the economic structure of the EU. This is especially obvious among the core countries UK, France and Italy. While in Italy all the ITS-activity is concentrated in the economically powerful north, the lagging south is marked by a complete absence of ITSs. The lack of ITSs in Rome and Naples is especially remarkable. A similar situation is observable in the economically equally polarized UK. The overwhelming majority of ITSs are located in the economically powerful south. Northern UK hosts only a minimal number of ITSs, concentrated mostly in Glasgow and Edinburgh. Although London and its surrounding regions show a massive concentration of ITSs, it is Birmingham that ranks first among the UK cities. This probably derives from two major influences. On the one hand Birmingham is one of the major centres of the highly industrial Midlands. On the other hand the city profits from the regional policies of deconcentration from London. In contrast to the UK and Italy, ITSs are even more concentrated in France. Yet, considering the extremely centralistic history of France the overwhelming dominance of Paris is not surprising. A core-periphery structure is even visible in Germany, with the south-western industrially powerful Lander dominating over northern Germany and the former GDR.

**Map 5.2: The Spatial Distribution of Exhibitors in the Cities of the EU
(October 1996 - March 1997)**



Source: Trade ShowCentral (1996)

Spatial concentration is even more dominant in the peripheral countries of the EU. Exhibitors in the northern countries Ireland, Sweden, and Finland are mainly concentrated in their respective capitals. In the southern periphery, Portugal, Spain, and Greece also show high concentrations in their capitals. However, second tier cities, such as Porto, Barcelona and Thessaloniki manifest competing regional poles.

The high national concentration of ITS-activity is shown in Table 5.8, that depicts the number of cities accounting for certain shares of the national totals. With the exception of Germany, Austria, and Spain all other countries have at least 50% of their exhibitors concentrated in just one urban area. The highest concentrations are in the peripheral countries Greece, Finland, and Sweden, where Thessaloniki (87.4%), Helsinki (81.4%), and Stockholm (77.6%) nearly amass the total of the countries' exhibitors. On the contrary, Germany shows the most even distribution. 90% of the exhibitors are spread over 11 cities. This shows a strong tendency in the majority of countries to have one overarching centre for ITS-activity.

Table 5.8: *Urban Concentration of Exhibitors in the Analyzed Countries (number of cities that amount to 50% / 75% / 90% of the national total)*

Countries	Share of Exhibitors			
	50%	75%	90%	100%
Germany	4	7	11	21
UK	1	2	7	23
Italy	1	3	6	13
Belgium	1	2	6	12
Austria	2	3	5	8
France	1	2	4	11
Spain	2	4	4	7
Denmark	2	2	3	8
Netherlands	1	2	3	7
Sweden	1	1	2	5
Greece	1	1	2	3
Finland	1	1	2	3
Ireland	1	2	2	2
Portugal	1	2	2	2
Luxembourg	1	1	1	1

Source: calculated by the author

ITSs are distributed among 126 urban areas in the EU. The most dominant urban centre is Paris with 100 shows and 43,677 exhibitors in the examined timeperiod (Table 5.9). It accounts for nearly 9% of the total activity in the EU. Other major centres are Milan, Birmingham and Frankfurt. While these four cities concentrate more than a quarter of the total activity, the eleven major centres account for over half. At the same time 72 cities host only three or less of the analyzed events and are following of minimal significance.

Table 5.9: *The Main European Urban Centres of ITS-Activity*

Rank	City	Country	Exhibitors		
			#	%	cumulative %
1	Paris	France	43,677	8.8	8.8
2	Milan	Italy	31,767	6.4	15.2
3	Birmingham	UK	27,872	5.6	20.9
4	Frankfurt	Germany	26,349	5.3	26.2
5	Utrecht	Netherlands	19,634	4.0	30.2
6	Brussels	Belgium	19,596	4.0	34.1
7	Madrid	Spain	18,191	3.7	37.8
8	Barcelona	Spain	16,184	3.3	41.1
9	Munich	Germany	16,144	3.3	44.3
10	Dusseldorf	Germany	15,609	3.2	47.5
11	London	UK	15,257	3.1	50.6
12	Cannes	France	11,974	2.4	53.0
13	Hannover	Germany	11,630	2.4	55.3
14	Berlin	Germany	11,300	2.3	57.6
15	Koelln	Germany	10,337	2.1	59.7
16	Lyon	France	9,838	2.0	61.7

Source: calculated by the author

V.2.2 Analysis of the Influencing Factors for the Regional Distribution of ITSs

To explain the regional distribution of ITSs two levels of analysis are used. First, the analysis is carried out on the urban level, correlating the size and accessibility of the hosting *cities* with the amount of their ITS-activity. The second part of the analysis is performed on the *regional* level (NUTS I) in order to investigate the influence of a wider variety of socio-economic data. In addition the regional approach takes into consideration the economic structure of the cities' surrounding regions.

The hypothesis that ITS-activity increases with the size of the hosting cities can only be partly confirmed. This is already visible in Table 5.9. While London is the largest city in the EU in terms of population (pop.: 6,993,000), it only ranks 11th in the amount of ITS-activity. It is surpassed among

others by considerably smaller cities such as Utrecht (pop.: 234,000), Dusseldorf (pop.: 576,000), or Cannes (pop.: 72,000). Although a correlation analysis among the hosting cities reveals a tendency of rising ITS-activity in **larger** cities, this tendency is not strong ($r=0.39$). Furthermore it has to be taken into account, that a number of large cities such as Rome, Naples, or Marseilles do not host ITSs and are therefore not included in the dataset. This further weakens the mentioned correlation between urban size and ITSs.

Although the general relationship between urban size and hosted ITSs is low, it increases when observed relative to the individual national urban systems. Especially in the centralistic and peripheral countries the capitals (mostly the largest cities) and the second and sometimes third largest cities seem to be dominant in hosting ITSs. This is visible in Portugal, Spain, France, UK, Sweden and Finland. In more decentralized countries such as Germany or Belgium, however, the size of the cities seems to have only a minimal influence on the amount of hosted ITSs. In Germany the leading city of Frankfurt in ITSs ranks only 5th in the national urban system, Dusseldorf which is the 3rd in ITSs ranks only 8th.

Table 5.10: *Pearson Correlation Coefficient (r) between the Number of Exhibitors and selected urban characteristics (n=127)*

	# of exhibitors
Population of city	0.39
Number of connecting highways	0.56
Mio air-passengers at local airport*	0.58

Significance at 0.19 (0.05%) - in bold

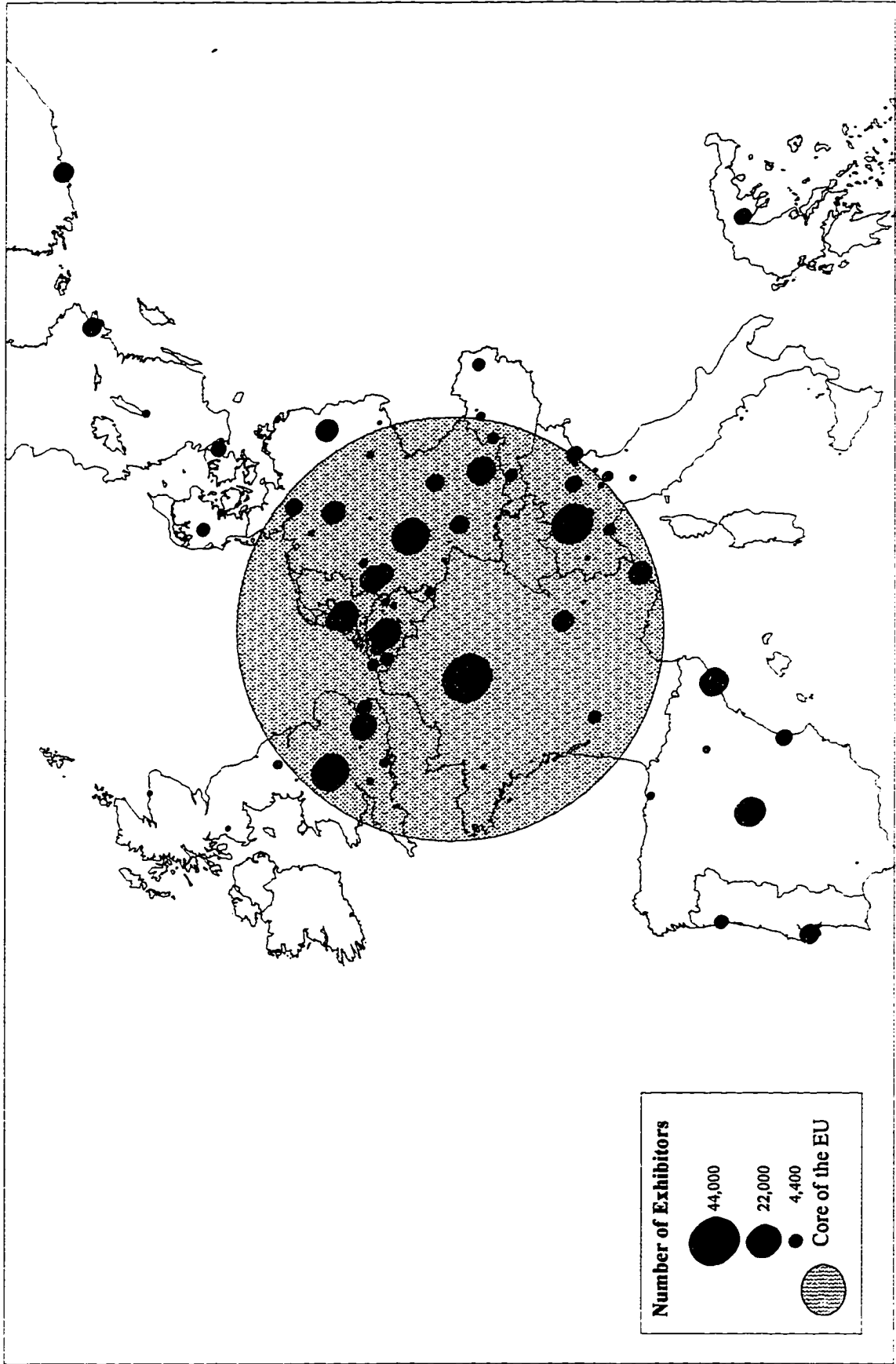
Sources: *Commission of the European Communities (1991)
calculations by the author

Accessibility, rather than size of a city seems to be of greater importance for the attraction of ITSs. Unfortunately, no accessibility indicator is known to the author of the cities of the EU. Therefore, accessibility is measured by the number of highways connecting to a city as well as the existence and size of their respective airports. As table 5.10 shows, there is a clear correlation between the level of accessibility and the amount of hosted ITSs. While all cities hosting more than one event are connected by at least one highway, the number of exhibitors increases with the number of connecting highways. Thus, cities at the junction of major transportation arteries with highly frequented airports seem to be the most attractive location for ITSs.

To analyze the influence of various socio-economic characteristics on the ITS-potential of regions, the scale of investigation is moved to the NUTS I level. As mentioned in chapter III, this classification divides the EU into 77 relatively homogenous regions. This level of analysis seems to be the most adequate for the researched question, since it does not only take the characteristics of the hosting urban areas into account but also considers the structure of their backregions.

Since the socio-economic structure of the core of the EU differs strongly from its periphery it is considered essential to carry out the analysis separately for these two areas. Therefore a circle is drawn isolating the centre of Union and separating the periphery (Map 5.3). This approach does not only allow to treat the highly different peripheral countries separately but also to distinguish regions in individual countries. Thus, the economically powerful northern part of Italy as well southern UK can be allocated to the leading European core while the backward regions of these countries (southern Italy and Northern UK) can be treated among the periphery of the EU.

Map 5.3: The Classification of the Core and the Periphery of the EU for the Multiple Regression Analysis



Source: Trade ShowCentral (1996)

The distribution of ITSs seems to be indeed influenced by different factors in the core and in the periphery (Table 5.11). The location of ITSs in the periphery seems to be mainly oriented towards the major urban centres of the respective national city-systems. This is primarily reflected by the relatively high correlation with the dummy variable¹⁵ (0.53). Further support is provided by the high correlation with the level of immigration (0.55) since high levels of immigration in the periphery usually reflect the shift of population from rural areas into the main urban centres.

Table 5.11: *Pearson Correlation Coefficient (r) between the Number of Exhibitors per capita and selected Socio-Economic Factors of the NUTS I Regions (n=77)*

Factor	Core* [⊖] (n=47)	Periphery* [⊕] (n=30)
GDP per cap.* [⊖]	0.52	0.24
Employment in agriculture (%)* [⊖]	-0.56	0.31
Employment in industry (%)* [⊖]	-0.10	0.02
Employment in services (%) [⊖]	0.24	-0.36
Agricultural output as % of GDP* [⊖]	-0.51	0.30
Industry output as % of GDP [⊖]	0.26	0.13
Services output as % of GDP* [⊖]	0.29	0.01
Business Services output as % of GDP* [⊖]	0.55	0.04
Unemployment rate (in %) [⊖]	-0.08	0.4
Migration [⊖]	0.44	0.55
Population Growth 1980-90 [⊖]	-0.06	0.31
Dummy variable (1=capital or 2nd largest city; 0=other city)	0.44	0.53
Centrality in the EU [⊖]	0.01	0.05

[⊖] Significance at 0.28 (0.05%) - in bold

[⊕] Significance at 0.35 (0.05%) - in bold

* logarithmically transformed

Sources: [⊖] Eurostat (1996)

[⊕] Cole and Cole (1993)

calculations by the author

On the contrary to the periphery ITS-activity is more decentralized than the core. Although the leading national cities also concentrate a considerable amount of ITSs, the correlation is not so

¹⁵ 1 = capital or 2nd largest city; 0 = other city

strong (0.44). Instead it seems that the sophistication of the regional economies is more decisive. This is primarily indicated by the high correlation with the share of business services as % of GDP (0.55) as well as the strong negative influence from employment and output in agriculture (-0.56, -0.51). This suggests, that it is the business oriented cities and regions with high shares of high scale tertiary activities that are the most attractive to ITSs. Since high sophistication in the leading regions is associated with high levels of GDP per capita, the strong relationship with this variable (0.52) further supports the above hypothesis.

Interestingly, the correlation analysis suggests that the centrality of a region relative to the EU has no influence on the amount of hosted ITSs, neither in the periphery nor in the core. This reflects the still overwhelmingly national orientation of ITSs. It is rather the position of cities relative to their national urban hierarchy that matters than their location relative to the rest of the EU. It is also interesting to note that parallel to the analysis at the national level, employment and share of industry of GDP has no significant influence.

In order to closer investigate the above outlined relationships, a multiple regression analysis is carried out on the distribution of ITSs in the core as well as in the periphery. Such an approach is better suited to identify the major influential variables since it takes all the relations between the variables into account. The problem of multicollinearity between the explanatory variables was in part dealt with through the application of a step-wise regression. This particular approach takes into consideration both the added explanatory power of each new independent variable as well as the degree of redundancy it holds with the existing model. The final models do include correlated explanatory variables but these are relatively insignificant in terms of the models' level of explanation.

The multiple regression analysis among the peripheral regions confirms the shown

relationships of the correlation analysis (Table 5.12). Instead of the nature of a regional economy, the dummy variable (ie. the position of the city contained in the NUTS I region in the national urban system) is identified as the major influence on the amount of hosted ITSs. Thus ITS-activity is mostly confined to the leading national urban centres. Other lower tier cities host only neglectable amount of ITSs. Since the model reaches an adjusted R^2 of 0.76 this relationship is very strong.

Table 5.12: *Regression Analysis of the Distribution of ITS-Exhibitors at the NUTS I Level in the Periphery of the EU*

Independent variable	t-values (significance)	β
Dummy variable (1= region contains the capital or 2nd largest city; 0 = region contains other city)	4.115 (0.0147)	0.650
Employment in agriculture (in %)* ^o	-0.716 (0.5258)	-0.167
Employment in industry (in %)* ^o	-0.065 (0.9524)	-0.016
Employment in services (in %) ^o	-0.400 (0.7158)	0.099
Agriculture as % of GDP* ^o	0.071 (0.9477)	-0.023
Industry as % of GDP ^o	1.625 (0.2027)	0.380
Services as % of GDP* ^o	1.287 (0.2883)	0.410
Business services as % of GDP* ^o	1.786 (0.1721)	0.321
GDP per capita	1.634 (0.2007)	0.317
Centrality in the EU ^o	-0.935 (0.4187)	0.211
Migration ^o	0.020 (0.9150)	0.006
adj. R ²	0.7611	

* logarithmically transformed

Sources: ^o Eurostat (1996)

^o Cole and Cole (1993)

calculations by the author

Regarding the core of the EU the multiple regression model also confirms the outlined relationships in the correlation analysis. The strongest influence is accordingly also identified by the share of employment in agriculture and following in the share of business services of GDP (Table

5.13). This verifies the assumed importance of the economic sophistication of a region. Furthermore, the dummy variable seems to be influential, although it does not reach a significant level. Interestingly, the regression analysis identifies a certain influence of the centrality of a region in the EU on the amount of hosted ITSs. Therefore, it can be hypothesized that the proximity of a city to the core of the Union might be influential in the closer interrelated central regions. It can be expected that the weight of this variable will increase in the near future parallel to closer integration.

Table 5.13: *Regression Analysis of the Distribution of ITS-Exhibitors at the NUTS I Level in the Core of the EU*^o

Independent variable	t-values (significance)	β
Business services as % of GDP* ^o	2.409 (0.0234)	0.363
Employment in agriculture (in %)* ^o	-3.167 (0.0039)	-0.478
Employment in industry (in %)* ^o	0.645 (0.5248)	0.104
Employment in services (in %) ^o	-0.643 (0.5262)	-0.130
Agriculture as % of GDP* ^o	0.234 (0.8169)	0.050
Industry as % of GDP ^o	-0.574 (0.5710)	0.125
Services as % of GDP* ^o	-0.688 (0.4981)	-0.120
Centrality in the EU ^o	-1.444 (0.1612)	-0.238
Dummy variable (1= region contains the capital or 2nd largest city; 0 = region contains other city)	1.951 (0.0623)	0.270
Migration ^o	0.1000 (0.9210)	0.016
adj. R ²	0.4573	

* logarithmically transformed

^o The variable GDP per capita was omitted from the model since it highly correlates with the share of business services of GDP ($r=0.90$). The latter variable was chosen since its is perceived as a better description of the nature of an economy.

Sources: ^o Eurostat (1996)

^o Cole and Cole (1993)
calculations by the author

Since the adjusted R² of this model only reaches 0.45, it reflects the higher complexity of ITS-distribution in the core regions. One reason for the low rate might be due to the limitation of accessible data. Influential variables might not be available and therefore could not be included in the model. It is assumed, however, that a variety of non-quantifiable variables have high influence on the

analyzed distribution and so limit the predictive capability of statistical methods. One of these qualitative influences is expected to be of a political nature. The political will and power of certain regional politicians might have a significant influence on the development of a region's ITS-capacity. Furthermore, the political decision to divert economic activity from one region (London) and to boost another (Birmingham) is expected to lead to statistically not measurable patterns. In addition to political influence, individual entrepreneurial potential of a region might be decisive in a strong development of ITSs. Good personal connections and a wider vision of one entrepreneur can easily begin the development of serious ITS-capacities in an otherwise less suited city. Both of these variables are not quantifiable and their spatial distribution is dependent on a certain degree of chance.

VI. The Spatial Range of Firms to the GLASTEC Trade Show in Duesseldorf

The demonstrated uneven distribution of ITSs in the EU (and also globally) raises questions regarding the range from which exhibitors attend ITSs. This is decisive since a limited range would confirm that companies located in countries with low ITS-supply have indeed less access to the analyzed events. A wide range on the other hand would weaken the problem of low supply in peripheral countries since domestic firms can in that case easily take advantage of the foreign 'infrastructure' of ITSs. Therefore, the following empirical analysis aims at examining the origin of firms at ITSs. This is performed on the example of the show GLASTEC (abbreviation for "glass technology"). As already mentioned in the methodology section (refer to Chapter IV.2), this show is not necessarily representative of ITSs in general. For a representative analysis a multitude of different ITSs would have to be taken into consideration. Instead, this analysis aims at gaining a first insight into the spatial structure of trade show participation.

First, a brief introduction to GLASTEC, its thematic orientation and development is given. Second, the global range of the participating firms is discussed for the time period between 1980 and 1996. Following, the exhibiting firms are examined more closely. Thereby, the influence of the distance from the ITS on the number and size of participating firms is focussed upon.

As described in the methodology section (refer to Chapter IV.2) the major source of the analyzed data are the catalogues from GLASTEC (1980, 1988, and 1996) as well as documentations from the Messe Duesseldorf. The catalogues contain lists of exhibiting companies, a brief description of their businesses, and their cities of origin. This allows the calculation of the respective distances of the exhibitors headquarters and so the analysis of the distance elasticity of participation. Additional

firm data was extracted from company registers of the EU member states.

VI.1 GLASTEC

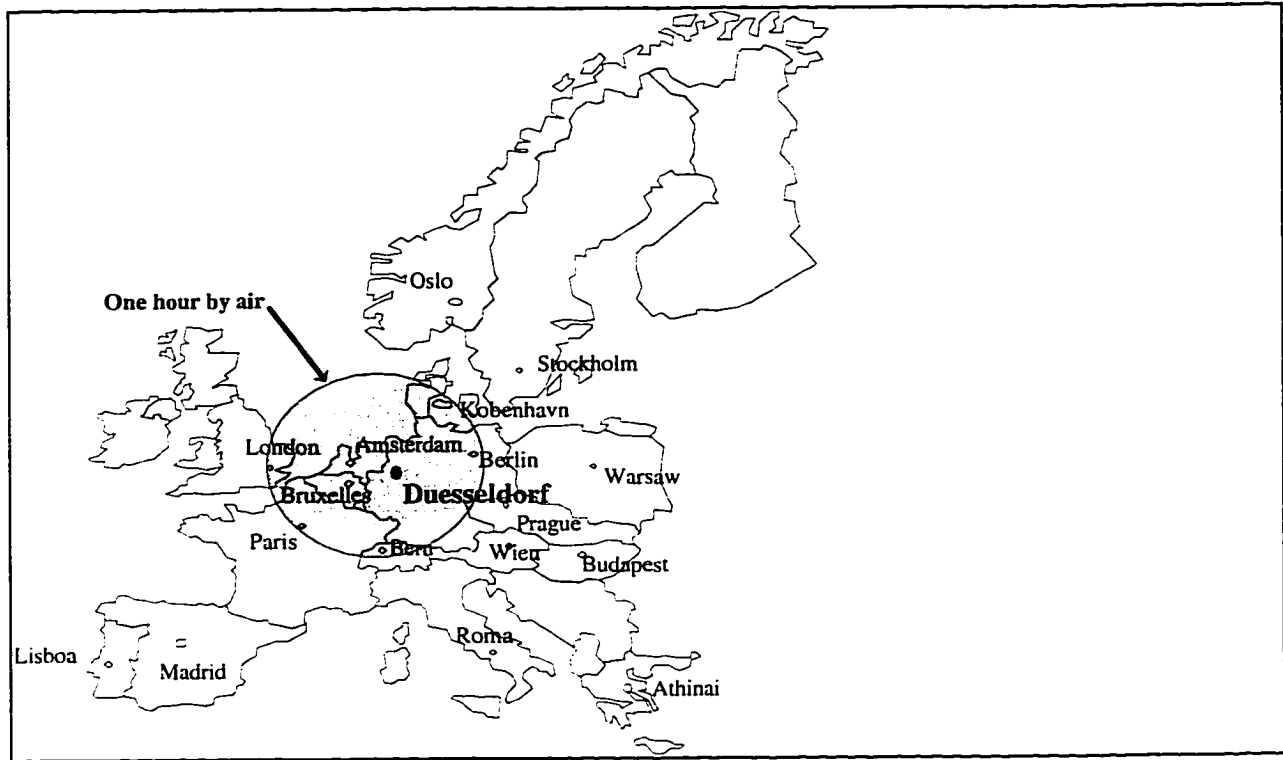
GLASTEC takes place in Duesseldorf in the Rhine-Ruhr Region in North Rhine Westphalia, Germany. It is located in the centre of the EU, one hour away by plane from London, Paris, Copenhagen, Berlin, Munich, and Bern (Map 6.1). The establishment of the Duesseldorfer Messegesellschaft in 1947 allows this convention centre to look back on a tradition of 50 years. Since the completion of the new convention centre in 1971, the centre offers 200,000 sqm¹⁶ of exhibition space in addition to substantial congress and conference facilities (Messe Duesseldorf, 1996a, p. 7). Duesseldorf is one of the major ITS centres of Germany.

The Duesseldorfer Messe hosted 32 ITSs in 1995 and even 45 in 1994¹⁷ (Messe Duesseldorfer, 1996b, p. 9). Twenty three of the hosted ITSs are considered to be internationally 'leading' shows in their sectors ('Leitmessen'). In 1995 28,526 exhibitors participated, of which 10,643 were foreigners. This accounts for an internationalization rate of 37.3% (Messe Duesseldorf, 1995b, p. 5) which is considerably above the average for all ITSs in Germany (estimated at 26.1% in Chapter V.1.2).

¹⁶ Approximately 600,000sqft.

¹⁷ The lower number of ITSs in the previous year does not mean a decreasing importance of the location of Duesseldorf. It rather reflects the periodical nature of ITSs.

Map 6.1: *The Location of Duesseldorf in Europe*



GLASTEC is an international trade fair for machinery, equipment, applications, and products involved with glass. It is the only ITS that hosts all glass-related branches at the same time and is therefore considered the internationally leading ITS in the glass sector (NOWEA, 1997). GLASTEC was founded in 1970 and operated biannually 14 times since then. As Table 6.1 shows, GLASTEC grew considerably over this time period. Whereas it started with only 87 exhibitors in 1970, this number increased nearly tenfold to 818 in 1996.

Table 6.1: *The Number of Exhibitors at GLASTEC between 1970 and 1996 according to Origin*

Year	Exhibitors	# of countries	% from Germany	% foreign	% change
1970	87	1	100,0	0,0	-
1972	94	5	86,2	13,8	-
1974	108	11	67,6	32,4	134,3
1976	235	14	73,6	23,8	-26,5
1978	269	14	66,2	33,8	42,0
1980	273	16	63,7	36,3	7,2
1982	317	18	57,4	42,6	17,4
1984	371	22	54,2	45,8	7,6
1986	409	23	56,2	43,8	-4,5
1988	455	26	50,3	49,7	13,5
1990	606	26	48,3	51,7	4,0
1992	667	30	48,3	51,7	0,1
1994	703	34	43,0	57,0	10,3
1996	818	34	40,8	59,2	3,8

Source: Messe Duesseldorf (1996c)
calculations by the author

Parallel to the growth in its operation, GLASTEC increasingly became an international event clearly reflecting the globalization of the economy. In its first year of operation in 1970 100% of the exhibitors were domestic (German) firms. Since 1972, however, foreign participation increased considerably. Foreign exhibitors reached the 50% mark in 1988 and even became the majority in the following years (Table 6.1). The rate of increase is about 2-3% per year. When this will level off is uncertain. Since one would expect considerable German participation even in the distant future a certain levelling off of the present growth rate in foreign participation is probable.

VI.2 The Changing Spatial Market of GLASTEC between 1980 and 1996

The spatial range of GLASTEC increased considerably over the observed time period (Table 6.2). In 1980 the vast majority (91.2%) of exhibitors came from Germany, four other core countries of the EU, and the US. By 1996 the range of firms had expanded to nearly all EU countries, significant parts of Eastern Europe, Asia, and parts of Latin America. The share of foreign firms increased from 35% to 59%. At the same time the number of participating countries grew from 18 to 34. Although this seems to reflect a massive increase of the spatial range of the ITS, this is only partially the case. Instead the analysis reveals a high concentration of exhibitors in a small number of countries that are responsible for the major share of the internationalization of GLASTEC. The largest five foreign countries in terms of firms participating plus Germany account for 79.8% of all exhibitors in 1996. On the other hand 20 countries are only represented by four firms or less each and nine countries have only one firm representing them. Although the concentration of the top 5 countries slightly decreased over the observed time period (1980=85.3%), the degree of concentration is still high. Consequently, the majority of the increase of the share of foreign exhibitors results from a higher representation of a few countries. 71.4% of the increase in the number of foreign exhibitors only reflects the stronger participation of the five already most represented countries. As a result, the high share of international exhibitors is not simply due to a widening of the global range of exhibitors. Instead the significant increase in foreign firms is the result of the increasing number of firms coming from the already strongly represented countries. These countries are in order of number of firms present Italy, UK, USA, and France. Italy's leading position is probably due to its long standing tradition in glass manufacturing.

Besides these five countries, the global widening of source countries has to be acknowledged, however. Since 1980 firms from 20 new countries joined GLASTEC. Even though this growth is impressive, the absolute number of exhibitors from these countries is relatively small (6.7% of the total), their significance is therefore limited. It is typical that the vast majority is represented by only 3 firms or less. It seems that in the first 'wave' of participation mostly the major export oriented domestic market leaders take part. In the following years smaller companies follow according to the experience of the market leaders (Wolf, 1997). It is interesting to note that of the 20 newly participating countries eight are from former socialist states (Czech Republic, Russia, Poland, etc.). Thus, the participation of nearly one half of the newly represented countries is probably due to the geo-political transformation of this decade rather than simply the general globalization of the economy.

Table 6.2: *Country of Origin of the Exhibitors of GLASTECH for the Years 1980, 1988, and 1996*
(1980 n=279, 1988 n=419, 1996 n=818)

Country	Year					
	1980	in %	1988	in %	1996	in %
Germany	184	65,9	194	46,3	335	41,0
Italy	27	9,7	60	14,3	137	16,7
UK	17	6,1	28	6,7	65	7,9
France	11	3,9	20	4,8	52	6,4
Belgium	8	2,9	15	3,6	30	3,7
Netherlands	3	1,1	17	4,1	25	3,1
Finland	1	0,4	6	1,4	9	1,1
Austria	2	0,7	4	1,0	8	1,0
Spain	1	0,4	6	1,4	8	1,0
Denmark	3	1,1	3	0,7	4	0,5
Sweden	2	0,7	1	0,2	4	0,5
Greece	-	-	-	-	3	0,4
Portugal	-	-	1	0,2	3	0,4
USA	11	3,9	34	8,1	64	7,8
Switzerland	7	2,5	12	2,9	18	2,2
Czech Republic	-	-	2	0,5	11	1,3
China	-	-	-	-	7	0,9
Russia	-	0,0	-	-	5	0,6
Japan	2	0,7	4	1,0	4	0,5
Norway	-	-	1	0,2	4	0,5
Poland	-	-	-	-	3	0,4
Thailand	-	-	-	-	3	0,4
Turkey	-	-	1	0,2	3	0,4
India	-	-	-	-	2	0,2
Hungary	-	-	4	1,0	2	0,2
Argentina	-	-	-	-	1	0,1
Australia	-	-	1	0,2	1	0,1
Brasil	-	-	-	-	1	0,1
Bulgary	-	-	-	-	1	0,1
Indonesia	-	-	-	-	1	0,1
Canada	-	-	1	0,2	1	0,1
Corea	-	-	-	-	1	0,1
Lithuania	-	-	-	-	1	0,1
North Corea	-	-	-	-	1	0,1
Peru	-	-	1	0,2	-	-
Jugoslavia	-	-	1	0,2	-	-
Mexico	-	-	1	0,2	-	-
Thailand	-	-	1	0,2	-	-
TOTAL	279	100,0	419	100	818	100
Number of countries	14	XXX	25	XXX	34	XXX
EU of 15	259	XXX	355	XXX	683	XXX
Extern of EU	20	XXX	64	XXX	135	XXX

Source: Duesseldorfer Messegesellschaft (1980, 1988, 1996)
calculations by the author

Overall it is important to note that even though the internationalization of GLASTEC increased, variation by countries was significant. Especially poorer and more distant countries participated less.

83.5% of all exhibitors came from the EU countries in 1996. Although their percentage had decreased slightly since 1980 (91.5%) the trade show is still strongly representative of Western Europe. The increase in the total number of exhibitors from the EU over this time period is impressive. Participants from Germany increased from 184 to 335. On the other hand the number of firms from EU members (other than Germany) increased nearly fivefold from 75 to 348 between 1980 and 1996. One could hypothesize therefore that this reflects the growing economic interconnection of the EU. However, a closer examination reveals that the majority of this growth occurred in a small part of the EU. The core and central countries Italy, UK, France, Belgium, and the Netherlands were responsible for 89% of the described growth. Peripheral countries contributed only minute shares. Despite their small share, a number of peripheral countries significantly increased their participation. The number of firms from Finland, Austria, and Spain increased from 1 and 2 respectively to 9 and 8. On the other hand, Greece and Portugal which were not present in 1980 at all participated in 1996 with 3 companies each. This indeed seems to hint at a closer integration of the EU member states. It has to be kept in mind, however, that integration occurs overwhelmingly among the core and central countries of the EU. Although peripheral countries also seem to extend their activities in the EU, their integration remains minimal in absolute terms.

A crucial question regarding the peripheral countries is whether increased participation is a direct result from the formal acquisition of full EU membership. The data unfortunately does not allow any assessment of whether formal accession automatically increases participation of a country,

however. In order to arrive at a definitive answer to this hypothesis, a considerably larger number of ITSs in different locations would have to be analyzed. Yet, it is interesting to see that while the accession of Greece in 1981 did not immediately alter the number of Greek firms at GLASTECH, the accession of Spain and Portugal in 1985 considerably increased their participation. The same is true for Austria and Finland (joined in 1995), although their attendance already had increased between 1980 and 1988.

Although the absolute increase of firms from within the EU is impressive, it is lower than the growth of firms from outside the EU. While EU-members achieved a fivefold growth, the number of companies participating that came from outside the EU increased nearly sixfold. While 47.7% of this growth came from the growing US participation, the remaining 52.3% came from 21 other countries. These numbers show, that even though European participation increased dramatically, the involvement of countries outside the EU grew at a faster rate.

An analysis of the spatial origin of exhibitors from the EU shows that the core and central countries are not only dominant in the absolute numbers of exhibitors but usually also in relative measures (Table 6.3). Germany, Italy, Belgium, the Netherlands and to a lesser extent the UK and France distinguish themselves with higher rates of exhibitors per capita and per GDP. While it is not surprising to find the economic leaders of the EU highly represented, the high rates of Belgium and the Netherlands are impressive. This probably results from their close economic interconnection with the other four founding countries of the EU due to nearly 40 years of continuing integration. The highly developed and service oriented economies of these countries that assumedly have a positive influence on ITS-activity (refer to Chapter V.1.3) might further explain their high participation. On the other hand, the geographically central position of Belgium and the Netherlands in the EU and

relative to Duesseldorf might also raise their relative participation. Peripheral countries like Portugal, Greece, Spain, and Sweden on the other hand are characterized by significantly lower rates confirming the typical core - periphery structure of the EU. A notable exception to this typical distribution is Finland.

Table 6.3: *The Number of Exhibitors per 1 Million Population as well as per 10 bln ECU GDP in the Countries of the EU (n=683)*

Country	number	exhibitor / 1 million population	exhibitor / 10 bln. ECU GDP
Germany	335	4,2	2,1
Belgium	30	3,0	1,7
Italy	137	2,4	1,6
Finland	9	1,8	1,3
Netherlands	25	1,6	0,9
UK	65	1,1	0,8
Austria	8	1,0	0,5
France	52	0,9	0,5
Denmark	4	0,8	0,3
Sweden	4	0,5	0,3
Portugal	3	0,3	0,4
Greece	3	0,3	0,4
Spain	8	0,2	0,2
Total	683	1,4	0,8

Source: Eurostat (1995)
 Duesseldorfer Messegesellschaft (1996)
 calculations by the author

Concluding, firms from peripheral countries were found to participate less at the analyzed ITS than companies from the core and central countries - both in relative and in absolute terms. Considering the spatially concentrated distribution of ITSs in the EU (refer to Chapter 5.1 and 5.2) companies in peripheral countries not only attend fewer ITSs outside their country but also have a lower provision of ITSs in their home countries. Their absolute attendance at ITSs must therefore be lower than of firms located in the core of the EU leading to significant competitive disadvantages of peripheral companies.

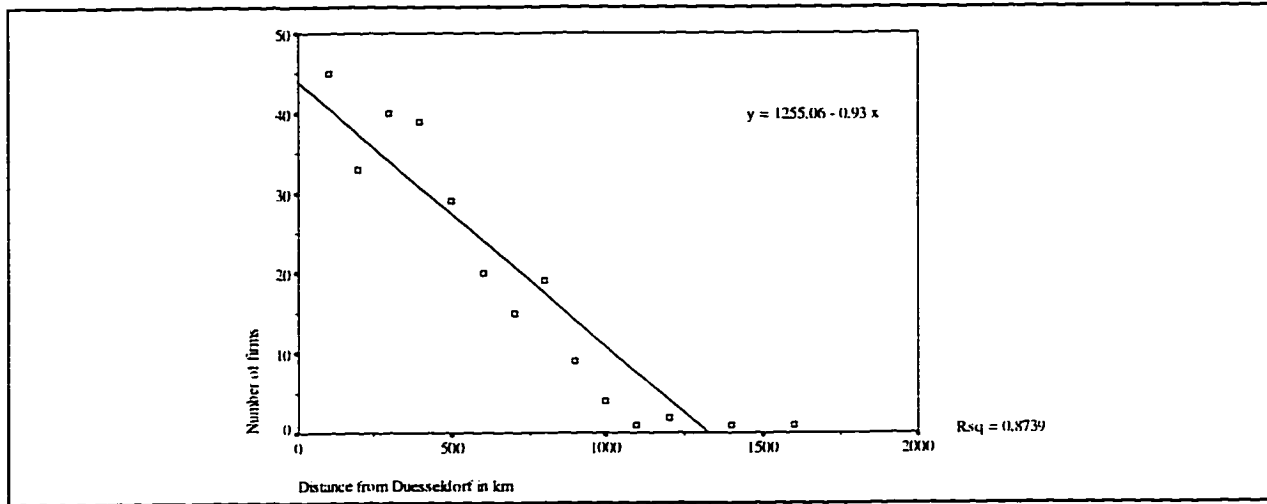
VI.3 The Effect of Distance on Exhibiting Firms

Unfortunately, the planned examination of a variety of characteristics of the exhibiting firms and the elasticity of these variables to distance is not possible due to the lack of analyzable data (refer to chapter IV.2). Therefore, the following discussion is limited to the relation between distance and number of exhibitors as well as the sectoral structure and size of the participating firms.

IV.3.1 The Spatial Origin of Firms

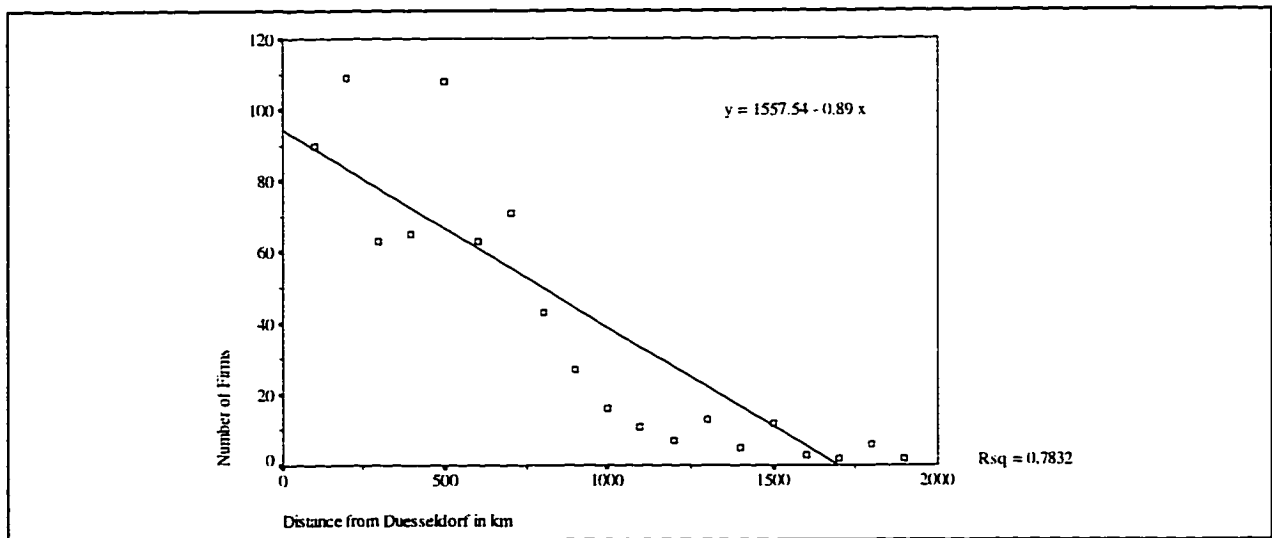
Participation at GLASTECH rapidly declined with increasing distance both on the global as well as on the medium spatial scale of the EU. This relation was linear in the EU. On the global scale, it was exponential with a great number of exhibitors from a distance of less than 2,000 km (Europe) and a far lesser number from substantially greater distances, i.e. from overseas or from the former communist world. Firm participation therefore clearly depends on the distance from the events as shown in the Figures 6.1, 6.2 for the EU and 6.3, 6.4 for the global range. Countries and regions located greater distances from the Duesseldorfer ITS are therefore underrepresented; a great number of the respective local companies is barred from participation. Considering that GLASTECH is the leading ITS in glass manufacturing this means that companies of this branch in distant countries (especially on a global scale) are considerably disadvantaged. Thus, they are effectively barred from the most important interaction possibility within their industrial sector. Firms from closer locations on the other hand can overproportionately profit from the discussed advantages of ITSs (refer to Chapter II.4-6) and extend their competitive advantage.

Figure 6.1: *The Relationship between the Distance from GLASTEC and the Number of Exhibiting Firms of the Participating EU-Countries in 1980 (n=254)*



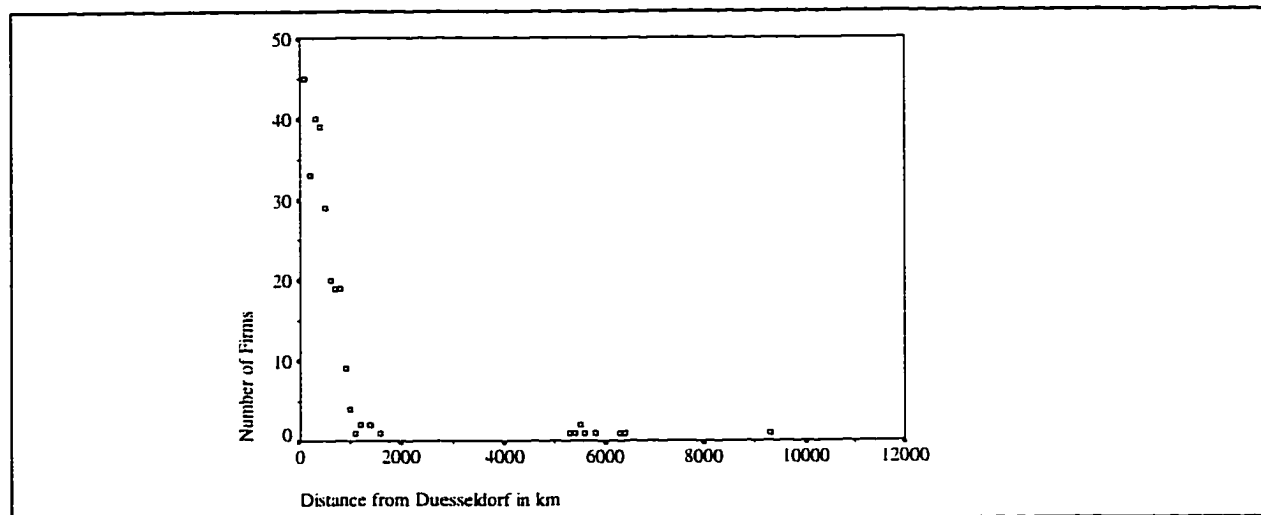
Source: Messe Duesseldorf (1996)
 Kompass (1994 a, b, 1995 a, b, c, d, 1996, 1997 a, b)
 Kraks (1996)
 Dun & Bradstreet (1993, 1997)
 calculations by the author

Figure 6.2: *The Relationship between the Distance from GLASTEC and the Number of Exhibiting Firms of the Participating EU-Countries in 1996 (n=668)*



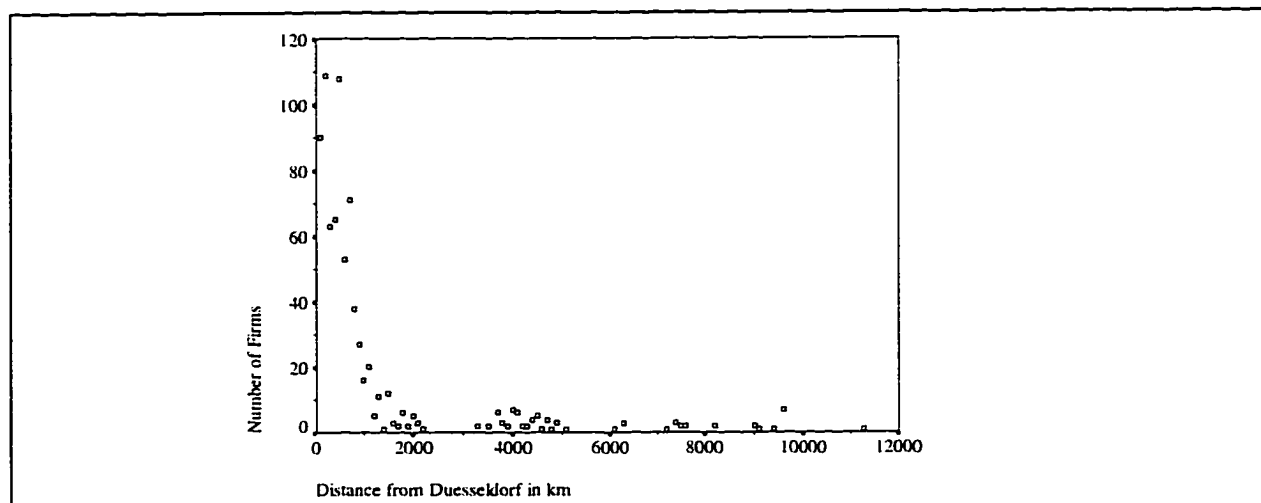
Source: Messe Duesseldorf (1996)
 Kompass (1994 a, b, 1995 a, b, c, d, 1996, 1997 a, b)
 Kraks (1996)
 Dun & Bradstreet (1993, 1997)
 calculations by the author

Figure 6.3: *The Relationship between the Distance from GLASTECH and the Number of all Exhibitors in 1980 (n=272)*



Source: Messe Duesseeldorf (1996)
 Kompass (1994 a. b, 1995 a. b, c. d, 1996, 1997 a. b)
 Kraks (1996)
 Dun & Bradstreet (1993, 1997)
 calculations by the author

Figure 6.4: *The Relationship between the Distance from GLASTECH and the Number of all Exhibitors in 1996 (n=818)*



Source: Messe Duesseeldorf (1996)
 Kompass (1994 a. b, 1995 a. b, c. d, 1996, 1997 a. b)
 Kraks (1996)
 Dun & Bradstreet (1993, 1997)
 calculations by the author

The limiting effect of distance decreased considerably over the observed time period, however. As the comparison between Figure 6.1 and 6.2, 6.3 and 6.4, as well as Table 6.4 shows, the radius of the spatial range of GLASTECH increased massively. Whereas in 1980 68.4% of the exhibitors came from a radius of under 500 km, the share of these firms decreased in 1996 to 54.3%. On the other hand, the share of exhibitors from over 1,000 km increased nearly fourfold from 5.5% in 1980 to 20% in 1996. Despite of this extension of the spatial origin of firms it is remarkable that even in 1996 more than half of all exhibitors came from the closer proximity of a 500 km radius of Duesseldorf.

The relation between distance and number of exhibiting firms became less clear with an increased deviation from the regression line. While distance had an r^2 of 0.87 in 1980 in the EU this decreased to 0.78 in 1996. This shows the decreasing significance of distance through reduced transportation costs as well as increased air traffic that turned distance especially on the European scale to a relative measure. As a result, Duesseldorf became closer linked to more distant cities such as Milan, Madrid, or New York. Accessibility and interconnectedness rather than distance as such became decisive for participation. Falling political barriers and closer economic integration of the member states of the EU has been a further strong driving force in the diminishing importance of distance. The abolition of physical, technical and fiscal obstacles between member states has considerably facilitated cross-border business activity. The parallel psychological growing together of the Union with increased information flows and exchange between the members further facilitated this process. At the same time the geo-political changes and the opening of former communist countries increased the participation of eastern countries so raising the average market range of GLASTECH.

Table 6.4: *Distance of Exhibiting Firms from GLASTEC in 1980 and 1996 (n=258 and n=345)*

Distance in km	1980		1996	
	#	%	#	%
-100	45	16,5	90	11,2
101 - 200	33	12,1	109	13,6
201 - 300	40	14,7	63	7,9
301 - 400	39	14,3	65	8,1
401 - 500	29	10,7	108	13,5
501 - 600	20	7,4	53	6,6
601 - 700	19	7,0	71	8,9
701 - 800	19	7,0	38	4,7
801 - 900	9	3,3	27	3,4
901 - 1,000	4	1,5	16	2,0
1,001 - 1,500	5	1,8	49	6,1
1,501 - 3,000	1	0,4	22	2,7
3,001 - 6,000	6	2,2	36	4,5
6,001 - 12,000	3	1,1	54	6,7
Total	272	100,0	801	100,0
-300	118	43,4	262	32,7
-500	186	68,4	435	54,3
-1,000	257	94,5	640	79,9
-3,000	263	96,7	711	88,8
-6,000	269	98,9	747	93,3

Source: Messe Duesseldorf (1996)
 Kompass (1994 a, b, 1995 a, b, c, d, 1996, 1997 a, b)
 Kraks (1996)
 Dun & Bradstreet (1993, 1997)
 calculations by the author

VL3.2 Sectoral Structure of Exhibitors

The typical firm exhibiting at GLASTEC was a manufacturing company (72.5%) in 1996 (Table 6.5). The vast majority of these was specialized in the production of machinery, tools, and other equipment needed in the glass manufacturing industry. The share of service oriented firms was 27.5%, significant enough to influence the overall image of the event. In addition it is important to note, that the boundary between a manufacturing and a services oriented firm has become extremely blurry. Thus, it is expected that the majority of manufacturers also displayed their services offers that

assumedly further increased the share of service oriented exhibitors.

Table 6.5: *The Sectoral Composition of Exhibiting Firms at GLASTECh in 1996 (n=539)*¹⁸

Sector	Branches	Number	%
Manufacturing		391	72,5
Services	Engineering and research	39	7,2
	Software	16	3,0
	Research institutes	8	1,5
	Trade	28	5,2
	Art, design	12	2,2
	Magazines, Press	19	3,5
	Associations	26	4,8
Total and %	XXX	539	100,0

Source: Messe Duesseldorf (1996)
calculated by the author

The majority of service units were consultants in engineering, software development, trade, and glass design. Interestingly, 19 magazines and professional journals participated taking advantage of the temporal and spatial concentration of their major readers and subscribers. Besides the engineering firms eight research institutes presented themselves accentuating the blending of science and business and confirming the scientific exchange function of the ITS (refer to Chapter III). In addition, 26 professional associations and representatives of interest groups exhibited at GLASTECh of which 17 came from foreign countries. Besides the major European states, associations of glass manufacturers represented their clients from a number of farther countries such as Russia, China, or the USA. The presence of these associations allows firms from distant countries to learn about their global possibilities and markets. In addition, the majority of these associations represent domestic firms which enables them to be subsequently contacted by foreign companies looking for suppliers.

It is interesting to note that while the majority of firms were directly or indirectly related to

¹⁸ The catalogue of GLASTECh does not contain a description of the activities of all 818 exhibitors.

glass a considerable number of larger German not glass related companies also participated. It is apparently common that larger companies in the hosting country attend ITSs in their proximity that are only limitedly related to their market sectors. They take advantage of the limited effort to exhibit at a near ITS and so extend their market presence and networks (Wolf, 1997).

VI.3.3 Size of Exhibitors from the EU

The size of exhibiting firms originating from the EU was examined as described in Chapter IV. It was hypothesized that as distance increases the average size should also increase. The structure of exhibitors in terms of employee size as seen in Table 6.8 seems relatively homogenous. While smaller firms with under 50 employees are leading in numbers, middle size and larger firms have also considerable shares. It is surprising that firms with less than 100 employees represent more than 50% of the total. Considering that probably the majority of firms on which data is not accessible are also of small size (refer to IV), the absolute number of firms with under 100 employees must be quite large. This does not mean that small firms control the ITS. Since the majority of these firms is limited to small stands, larger and financially more powerful companies still dominate these events with their considerably larger exhibit areas.

Table 6.6: *Size of Exhibiting Firms at GLASTEC in 1996 (n=351)*

Firm size (in # of employees)	Number	%
-50	115	32,8
51 - 100	75	21,4
101 - 200	76	21,7
201 - 400	35	10,0
400 +	50	14,2
Total	351	100,0

Source: Kompass (1994 a, b, 1995 a, b, c, d, 1996, 1997 a, b)
 Kraks (1996)
 Dun & Bradstreet (1993, 1997)
 calculations by the author

This mix of firms of different size allows for the interaction between market dominating companies and a large number of SMEs. Thus, SMEs are able to present themselves to the major firms, establish contacts, and compete for contracts. At the same time large companies profit from the interaction possibilities with major competitors and from the rapid market scans for subcontractors and general market developments.

A comparison of firm size from different EU countries reveals interesting structures¹⁹. As apparent in Table 6.7, small firms with under 50 employees are most present in Germany, Belgium, and the Netherlands. Their respective shares are between 40 and 50% of the total. At the same time, more distant countries such as France, UK, and Italy have significantly lower shares of the smallest size category. Instead they are slightly stronger represented among middle size companies.

This data suggest a positive relationship between firm size and distance from ITSs. It seems possible to argue that the rising transportation as well as information costs with increasing distance puts smaller firms at a disadvantage relative to larger companies. The lower competitiveness of SMEs in countries with low supplies of ITSs (refer to Chapter V) would be the direct result. By contrast,

¹⁹ For this comparison, only Germany, Belgium, France, Italy, UK, and Netherlands are considered. The other countries of the EU are omitted due to their low number of firms that impedes comparable analysis.

SMEs in countries with high ITS-supply would enjoy significant competitive advantages due to their easy access to branch specific information flows, networks, and global players.

Table 6.7: *The Size of Exhibiting Firms According to Countries (n=332)*

	Germany (n=148)	Belgium (n=20)	France (n=28)	UK (n=38)	Italy (n=81)	Netherlands (n=17)
-50	40,4	45,0	14,3	23,5	26,6	47,1
51 - 100	17,1	15,0	28,6	17,6	29,1	17,6
101 - 200	15,8	10,0	14,3	52,9	26,6	23,5
201 - 400	11,6	10,0	21,4	0,0	7,6	0,0
400 +	15,1	20,0	21,4	5,9	10,1	11,8
Total	100,0	100,0	100,0	100,0	100,0	100,0

Source: Messe Duesseldorf (1996)
 Kompass (1994 a, b, 1995 a, b, c, d, 1996, 1997 a, b)
 Kraks (1996)
 Dun & Bradstreet (1993, 1997)
 calculations by the author

The hypothesized relation between firm size and distance from an ITS can only be limitedly confirmed in a regression analysis. Although a positive relation is apparent, it is rather weak. This weak relation can, however, be due to the problems with the data. As already shown in Chapter IV.2, Germany has the lowest share of identifiable firms (45.1%). Therefore, it can be expected, that - relative to the other countries - a large number of small German firms are not included in the analysis. Their inclusion would probably strengthen the discussed relation. In addition, the presence of the already mentioned larger, not directly glass related German firms might distort the analysis by raising the average firm size in the direct proximity of GLASTECH. The limitation of the study area to the EU is probably a further distorting effect on the discussed relation since the distances in the EU are moderate. The financial burden of participation is therefore assumedly bearable even for smaller firms. It is expected, however, that the growing costs of transportation at a global scale significantly lowers the participation possibilities of SMEs and thus strengthen the hypothesized relationship.

VII Summarizing Conclusions

The aim of this study was to theoretically assess the role of ITSs in the economy and to gain insight into the spatial dimension of these activities. Following, the major findings and conclusions and their accordance with the initial hypothesis will be discussed. In addition, suggestions for future research on ITSs will be briefly presented.

VII.1 Conclusions

As the theoretical discussion showed, ITSs perform a number of different economic functions. Although their selling function is doubtless one of the most important, research in recent years identified the significance of a number of non selling functions. Despite the acknowledgement of the latter, the tremendous growth of ITSs in the last 20 years is mainly attributed to the growing realization of the sales opportunities of these events. Contrary to this explanation, the above analysis tried to view the massive expansion of ITSs in the framework of the temporally parallel occurring industrial restructuring.

The theoretical discussion of the role of ITSs in industrial restructuring indeed showed the unique opportunities ITSs offer in the new, highly dynamic economic environment. ITSs were analyzed from the perspective of three central aspects of current restructuring: globalization, innovation as a major factor of competitiveness, and networking. In all of these aspects ITSs were found to offer unique opportunities to firms. In terms of globalization, foreign ITSs offer unique opportunities to lower the risks, costs, and time necessary for market entry. This significantly accelerates the globalization efforts of internationally oriented firms and helps them to establish

themselves as a global force. On the other hand, domestic ITSs give regionally bounded firms the seldom opportunity to meet (and be met by) foreign companies and thus internationalize their business horizons. As such, ITSs have to be seen as potential and powerful gateways to the global economy. This is especially true for SMEs that are less able to afford 'usual' mostly costly foreign market entry strategies.

ITSs were also found to significantly enhance firms' innovativeness. On the one hand, the spatial concentration of industry specific knowledge enables firms to remain at the leading edge of the rapid technological development. In addition, the presence in such a creative milieu functions as a powerful stimuli in product development. The close interaction possibilities with associated professionals and the resulting formal and informal information flows significantly enhance and accelerate firms' problem solving and development process. Firms' innovative capacity is also strengthened by the interaction possibilities with their customers, that provide companies with invaluable feedback as well as tacit knowledge regarding their products.

ITSs were also found to offer a favourable environment for the creation and enlargement of networks. The concentration of related firms allows the rapid establishment of a large number of contacts and so acts as a perfect mediator to overcome spatial barriers between geographically separated firms. On the other hand the presence at ITSs is essential in order not to submerge in the vast corporate horizon and so be detectable by firms themselves searching for contacts.

In conclusion, ITSs were found to offer a number of opportunities for firms to cope with and better adjust to the rapidly changing economic environment of industrial restructuring. Therefore, the hypothesis that the growth of ITSs is related to their unique position in the new global economy and thus these events have become important factors in firms' competitiveness can be theoretically

confirmed.

Although the theoretical discussion proved the competitive importance of ITSs, the spatial analysis of these events in the EU showed their limited accessibility to firms in a number of countries. ITSs are spatially highly concentrated in the core of the EU. Germany, the economic powerhouse of the Union, amassed nearly 25% of all exhibitors in the studied time period. The other core countries UK, France, and Italy also showed massive ITS-activity. Altogether, 63% of all exhibitors in the EU were concentrated in these four countries. Contrary to the central countries, ITS-activity rapidly decreases towards the periphery of the EU putting firms in these regions at a considerable competitive disadvantage.

The disadvantage of firms located in the periphery is not only based on their quantitatively lower supply of ITSs, however. At the same time, the diversity of their ITS-environment is significantly lower than in the core. While the ITS-environment in the core countries supplies a wide range of branches with these events, the thematic range of ITSs in the periphery is much more limited. Thus, a considerable share of firms in peripheral countries does not even have the possibility of attending a related show in their home country. At the same time, the larger number of ITSs in the core permits a higher number of branch-specific events than in the periphery. This ensures a higher frequency of interaction between companies in the core. A more rapid dissemination of information and higher levels of synergies are the logical consequences.

A qualitative divergence between the core and the periphery is also visible in the rate of foreign participation. While Germany, France, Italy, Netherlands, and Denmark have above average levels of foreign exhibitors, this ratio massively decreases towards the periphery. The analysis of the absolute distribution of foreign exhibitors emphasises the differences in an exceptionally clear manner.

Germany accounts for nearly one third of all foreigners, together with France these two countries concentrate around 50%. At the same time the peripheral countries Austria, Finland, Greece, Ireland, Portugal, Spain, and Sweden merely account for 13.8% of all foreign exhibitors. This reflects the practical exclusion of peripheral countries of the majority of cross-border interaction and branch-specific information flows. Considerable competitive disadvantages for companies in the periphery are the consequences.

In order to gain insight into the influential factors for the distribution of ITSs in Europe, a correlation analysis with a number of socio-economic variables was carried out. According to this analysis it is the sophistication of a national economy that decides the amount of hosted ITS-activity in a country. The negligible influence of the share of industry in an economy supported the impression that ITS-activity depends on the developmental stage of national economies. While industrial societies host less ITSs post-industrial economies with a large share of business services of their GDP seem to be better suited for the development of ITSs. This insight has important consequences for peripheral countries. Since some of them are still in the phase of industrialization a massive increase in ITS-capacity in the near future is not to be expected. This means, that companies in peripheral countries will most probably continue to experience significant disadvantages due to their continuing lack of access to ITSs.

The regional observation also revealed a concentrated spatial pattern of ITSs. These were mostly confined to the central development axis of the EU ('Blue Banana'). Outside this powerful axis ITS-activity declined rapidly, not only towards the periphery of the EU but also towards the periphery of the individual countries. Thus, beside the concentrated pattern at the level of the EU, ITS-activity was also massively concentrated at the national level. Except for Germany, Austria and Spain all other

countries had at least 50% of their exhibitors in just one urban area. This shows a strong tendency to have one overarching national center for these activities. This pattern increases towards the periphery of the EU.

In order to explain this polarized distribution, correlation as well as multiple regression analysis were performed with various socio-economic variables at the urban and regional levels. Contrary to the initial hypothesis, size of the hosting cities as such was found to have only a limited influence on the amount of ITS-activity. Instead, accessibility rather than size was more influential. Cities at the junction of major transportation arteries with highly frequented airports are the most attractive location for ITSs.

The closer analysis of the socio-economic characteristics of the hosting regions revealed different patterns in the core and the periphery of the EU. Thus, the position of the hosting city relative to the respective national urban-hierarchy seems to be highly influential in the periphery. ITS-activity is confined to the leading national urban centres. Due to the more decentralized structure in the core this relationship is much weaker in the central countries. Here, the sophistication of the regional economies instead of the relative position of a region was decisive. A strong position of business services in the regional economies had a highly positive influence on the amount of ITS-activity.

Interestingly, the influence of the centrality of a region relative to the EU was found to be minimal. This reflects the still overwhelmingly national orientation of ITSs. It is rather the position of cities relative to their national urban hierarchies that matters than their location in the EU.

The demonstrated uneven distribution of ITSs in the EU necessitated an analysis of the spatial range of ITSs. Insights into the range from which exhibitors attend is crucial, since competitive

disadvantages for companies located in the periphery can only be ruled out if distance does not effect participation. Unfortunately the opposite was determined. Participation at the analysed ITS declined rapidly with increasing distance, suggesting the underrepresentation of firms from countries and regions located in greater distances. The competitive disadvantage of companies with a low supply of ITSs is the direct consequence. The limiting effect of distance decreased considerably between 1980 and 1996, however, resulting from a significant increase in the radius of spatial inflow. In addition, the relation between distance and number of exhibiting firms became less clear, suggesting that accessibility and interconnectedness instead of distance as such became decisive. Falling political barriers, closer international economic integration, technological advancements in transportation and its decreasing costs are increasingly turning distance into a relative measure.

Parallel to the extension of the spatial radius of participants, the internationalization of the analyzed ITS increased massively between 1980 and 1996. Both the share of foreign exhibitors as well as the number of represented countries rose significantly. However, the analysis revealed, that these numbers only limitedly reflect a true widening internationalization of ITSs. Nearly 72% of the occurred growth resulted from the increased representation of the five already most represented states Germany, Italy, UK, USA, and France. Thus, the global widening of participating countries occurs at a far slower pace than the figures make believe. Instead, it is the strengthening of the positions of the already well represented countries that explains the majority of the growing internationalization. Peripheral countries continue to be only limitedly integrated. This is not only true for both on the global scale but also in the EU. While the number of exhibitors from the member countries increased fivefold over the examined timeperiod the vast majority of this growth (89%) resulted from the increased representation of the core and central countries Italy, UK, Belgium and the Netherlands.

Thus, although the growing economic interconnection of the EU can be confirmed, it occurs only within a limited number of countries located in the core. The integration of the peripheral members takes place at a much slower pace.

As a final conclusion it is hoped that this research might awake interest in the until now rather neglected field of ITSs. As the analysis showed, these events contribute significantly to the competitiveness of firms. Therefore their limited accessibility especially in peripheral countries places companies in these regions at a considerable competitive disadvantage. The severe impact of a low provision of ITSs has to be realized and acknowledged by politicians and academics in order to prevent a further widening of the competitiveness gap between the core and the periphery.

VII.2 Suggestions for Future Research

A logical extension of this research is to do a similar study at a later date. It will be interesting to see how further European integration and the growing globalization of the economy changes the spatial radius of exhibitors. The continuously falling transportation cost and consequently the 'shrinkage' of distance might furthermore change the composition of exhibitors and allow for a greater share of SMEs from farther countries. A study at a later stage might also reveal possible shifts in the European urban hierarchy as the centrality of cities relative to the EU becomes more important. Thus, a shift from peripheral cities towards more centrally located ones could be researched.

The methodology of this research could also be used to do a similar examination in a different geographical area. The USA as well as Asia would be extremely interesting potential study areas. The study of the spatial dimension in such different socio-economic settings might reveal further characteristics of the phenomena of ITSs.

A further step in ITS research might consist of case studies of chosen ITS-centres. Case studies would allow a closer examination of the decisive factors for ITS-location taking into consideration qualitative factors (political, entrepreneurial) that had to be excluded from this study.

A further fascinating extension of this research would be to carry out an empirical analysis of the hypothesized role of ITSs in information flows, the innovation process, and networking. Such a research would have to be carried out mainly in the form of personal qualitative interviews about the specific activities of participants at ITSs. Examining their behaviour would allow unique insight into information flows, the creation and extension of networks and the diffusion of innovation in general.

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