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**Technologies and Proximities:
Frankfurt's New Role in the
European Financial Centre System**

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Technologies and Proximities: Frankfurt's New Role in the European Financial Centre System

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Abstract

The main argument in this paper is that new information and communication technologies (ICT) in the financial industry will increase specialisation and competition within the European financial centre system and thereby lead to a 're-bundling' of functions of the various financial centres. Frankfurt plays an interesting role in this development as it is one of the main development centres for 'financial technology'. With these technologies, remote access to the Frankfurt stock exchange and inter-bank payment system is now feasible from most European cities. This leads to a reduced need for physical presence, which opens up new possibilities for the financial sector's spatial organisation. However, as financial production is information- and knowledge-intensive, spatial and other types of proximity between financial actors and clients are still essential in many stages. We examine the value chains of three different products (advisory, lending, trading) with regard to different proximities, in order to identify possible patterns of their spatial (re)organisation. From these findings, inferences are drawn for a 'new' role for Frankfurt in the European financial centre system.

Keywords: Financial centres, financial services, information technology, location theory, proximity, value chain

JEL-Classification: G15, O18, R12, R39

‘Every cheapening of the means of communication, every new facility for the free interchange of ideas between distant places alters the action of the forces which tend to localise industries.’

Alfred Marshall

1 Introduction

Global economic integration has increased the flows of goods, information and capital which are being guided to and from different regions around the world. These globe-spanning activities follow certain patterns which can be interpreted as networks where cities act as nodes. Except for a handful of ‘truly’ global cities¹, the rest are ‘merely’ competing within subsystems of the world economy, delimited by space, sector, culture etc. The scope of this paper is the subsystem of the European financial centre system with a particular focus on Frankfurt, the ‘premier German global city’ (Friedmann 1995, p. 35) and one of the main development centres for ‘financial technology’. The main argument in our paper is that new information and communication technologies (ICT) in the financial industry enable the splitting up of existing value chains, thereby increasing specialisation and competition within the European financial centre system, which can lead to a ‘re-bundling’ of functions of the various financial centres. The assumption behind this is that financial centres will remain important, due to the need for proximity in financial production, one of the main determinants of its spatial organisation and the analytical focus of this paper. Because financial services are too diverse for simplistic generalisations, we examine financial production on the basis of different value chains. From this micro perspective we try to gather evidence for the macro perspective, i.e. changes in the European financial centre system and Frankfurt’s position in it. Although the hierarchy of financial centres appears to be relatively stable over long periods of time, ‘(t)he sense of permanence of financial centres is one that often deceives’ (Budd 1995, p. 354).

The remainder of this paper is organised as follows: After a brief introduction into the nature of financial centres, we present two of the most prominent ‘financial technologies’ and examine the connection between new ICT and the need for different types of proximity. These concepts are then applied to the value chains of three different financial products. From this analysis implications for the spatial organisation of the financial sector are drawn and in

¹ In this context, usually the ‘global cities’ New York, London and Tokyo are mentioned (Sassen 1991, Knox 1995, Grasland/Jensen-Butler 1997).

conclusion, applied to Frankfurt with regard to its position in the European financial centre system.²

2 Technologies and proximities

2.1 Financial centres and financial technology

Studying financial centres raises the question of what a financial centre actually is. A review of the existing literature³ is of little help, as there is little common ground on a definition. Following Reed (1981) and Rose (1994) we regard a financial centre as a) a location of important actors (mostly banks and stock exchanges, but also funds and other financial services) and linked and supporting services for the financial sector, b) which serves as a point of origin and destination of financial flows, and c) acts as the control centre for the direction of these flows.

Table 1 gives an impression of the European financial centre system. The cities are ranked according to the number of Top 500-banks present. Interestingly, there is a clear ranking which also allows for the clustering of centres in groups. The table displays the top financial centres of 19 European countries. For Switzerland, we include two financial centres, Zurich and Geneva, since their number of banks is almost the same, which can be accounted for by the language border. As the table shows, the European financial centres form a decentralised system, particularly in comparison to the United States which have a similar capital market size, but fewer financial centres.⁴

² Our analysis draws upon findings of 108 interviews, conducted in the banking sector in Frankfurt, London and Paris. These interviews are part of three different on-going research projects at the University of Frankfurt/M. funded by the German Israeli Foundation (Jerusalem), the Centre for Financial Studies (Frankfurt/M.) and the DFG, Deutsche Forschungsgemeinschaft (Bonn).

³ Among the first authors to discuss the development of financial centres were Kindleberger (1974) and Reed (1981). For an overview over the literature on financial centres (and the geography of finance) see Martin (1999) chapter 1.

⁴ This difference becomes obvious when the numbers of stock and futures exchanges are used as an indicator for the number of financial centres. Whereas there are 32 stock exchanges and 23 futures exchanges in Europe, there are only 8 stock and 7 futures exchanges in the USA (Frankel 1996).

Group	City	Number of Top 500 Banks
Group 1	London	201
Group 2	Frankfurt	107
	Paris	90
Group 3	Milan	77
	Madrid	75
	Luxembourg	67
	Brussels	63
	Zurich	53
Group 4	Amsterdam	40
	Geneva	40
	Vienna	32
	Warsaw	31
Group 5	Lisbon	26
	Prague	25
	Athens	24
	Stockholm	22
	Copenhagen	20
	Dublin	19
	Oslo	14
	Helsinki	11

Table 1: National financial centres

Source: *The Bankers' Almanac (1998)*, *Institutional Investor (1998)*, own calculations.

The top position in the European financial centre hierarchy has changed only three times in the last 500 years. These changes have always occurred in connection to major political or technological events. As a result of these changes, the cost of doing business in a given location increased so much that financial actors eventually moved away (Harrschar-Ehrnborg 1999). With Europe undergoing major political and technological changes at the moment, the question is how these will affect the financial centre system. It is important to emphasise that the possibility to use the whole array of technologies is only opened up by the ongoing process of deregulation (Martin 1994, Budd 1995) and European integration. Still, the focus of this paper lies on the effects of technological change.

The most important effect of ICTs with regard to financial centres is that they reduce the necessity of a presence on-site. This implies that they weaken the forces that have hitherto brought financial actors together in central places of the world economy. The need for money transfers between banks and the proximity to the stock exchange have always counted among the strongest determinants for the emergence of central places for financial transactions (Rose 1994). In the following section we present two technologies that accordingly, greatly effect the 'raison d'être' of financial centres and consequently the European financial centre system: money transfer systems and stock exchange systems.⁵

⁵ From a bank organisational perspective, other technologies, like home-banking and the spread of automated

Money transfer systems

Money transfers between banks, e.g. the handling of payments between banks on behalf of their customers, are in many ways crucial to the banking business. As Germany has a high volume of international trade this argument is especially strong with regard to Frankfurt. Not surprisingly therefore, a recent study among foreign banks in Frankfurt showed that participation in the German settlement system was one of the major reasons for establishing offices in this city (Grote 1998).

With the introduction of the Euro, new European money transfer systems have been developed, which are now competing for Euro-payments. The biggest ones are TARGET of the European Central Bank, EAF-2 of the German Bundesbank, and Euro1 which was developed years ago for the processing of ECU-payments by the European Banking Association (an organisation of several European banks) and has now been converted into an Euro payment system. Of these three, the first two are based in Frankfurt whereas Euro1 is stationed in London. So far, only EAF-2 – also providing the most sophisticated routines – supplies its customers with European-wide remote access possibilities since the beginning of 1999.

Trading systems

The ‘virtualisation’ of stock exchanges, the change from ‘open outcry’-floor trading to computer-based, quote-driven market systems has made a lot of headlines. As in the case of money transfer systems, some of the new trading systems allow for a remote access option and it is therefore possible to participate via a computer terminal from anywhere in the world. This is leading to an unprecedented competition between stock exchanges.

As in the case of money transfer systems, Frankfurt is again at the forefront of technological developments. The Frankfurt-based German Stock Exchange ‘Deutsche Börse’ has developed a spot-market trading platform for shares (Xetra) and together with the Swiss Stock Exchange a common trading platform for derivatives (EUREX). Both systems provide remote access facilities and are successful in acquiring new participants in other (mostly European) countries. By the end of 1998, more than 60% of traders in the EUREX System were located outside Germany (Deutsche Börse AG 1999). The geographic scope of participants in EUREX is illustrated in Figure 1.

teller machines, might seem of more importance to the restructuring of the financial sector. Yet, with regard to financial centres retail banking is only of limited importance since most of the business conducted there is wholesale business (Walter 1998).

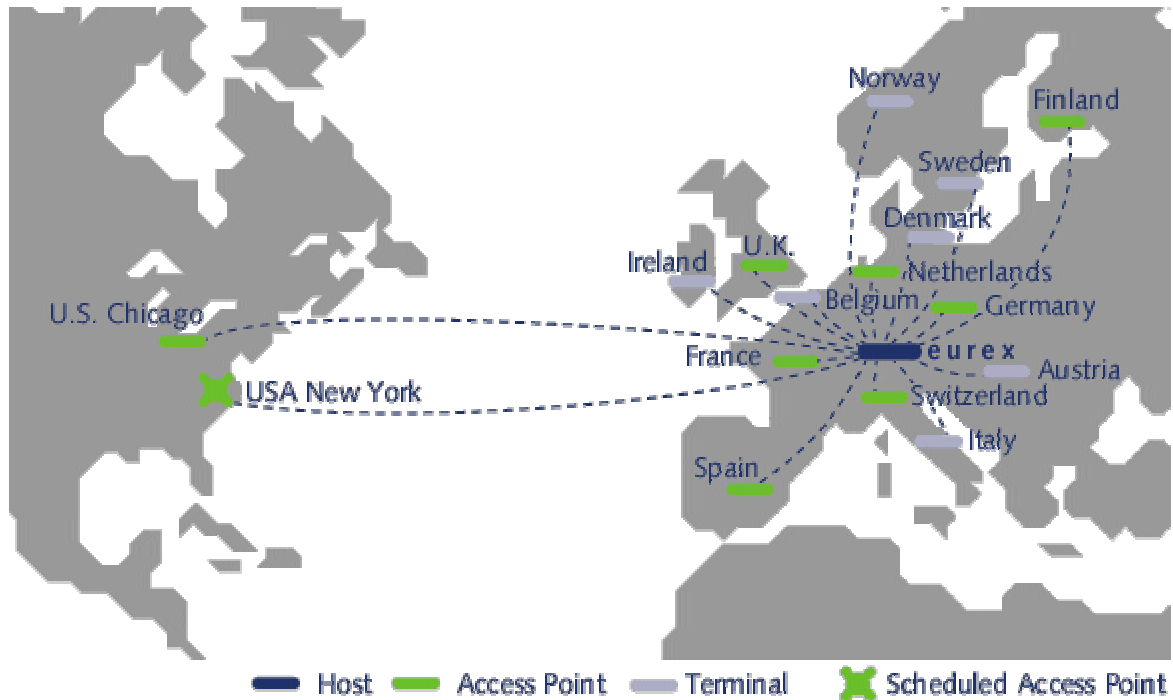


Figure 1: Remote access possibilities of EUREX

Source: EUREX 1999, p. 12.

Both developments in financial technology drive directly at the ‘raison d’être’ of financial centres. However, many of the changes in financial production have come about in connection with more common communication technologies, for example E-mail and the Internet. The digitalisation and the so-called distancing of communication media have immediate consequences for the need for proximity to other financial actors, and therefore work against agglomeration tendencies. After a brief overview of agglomeration factors for financial centres, we investigate further the interplay between technologies and proximities.

2.2 Financial centres – a complex phenomenon

Financial centres, like other agglomerations, are the outcome of both centripetal and centrifugal forces. In the case of financial production, the centripetal forces are linked to labour market externalities, easy access to intermediate services, technological spillovers, informational spillovers and socio-institutional and cultural factors (Porteous 1999). Centrifugal forces, on the other hand, are related to congestion, high rents and other costs, the lack of local knowledge specific to other places and – provided that not all banks are located in the same financial centre – internal economies of scale and scope. Internal economies mean that individual banks gain from concentrating their activities in one place, usually their respective headquarters.

For a study of the effects of ICT between agglomeration and dispersion of financial actors, there are at least three levels of analysis that have to be distinguished:

- firm level (relocation of departments between headquarter and other locations),
- financial centre level (relocation between financial centre and periphery)
- and financial centre system level (relocation between different centres).

For the purpose of this paper, we concentrate on the first and third level, disregarding the second, thus taking into account solely the respective leading financial centre in a country (as shown in Table 1). Since the products we look at are almost exclusively produced in the major financial centres, this abstraction can be done without harm for our analysis.

As the importance of financial centres depends on the location choices of individual actors, an analysis of the financial centre system has to take into account changes at firm and even department level. Moreover, the same technologies that enable centralisation of functions at firm level can work in favour of a decentralisation from the viewpoint of the financial centre system. Because of this complexity, our analysis uses the concept of value chains of individual products. With new technologies, the splitting up of value chains and the relocation of single production stages is facilitated. We argue that it is particularly the need for different types of proximity that mainly determines the spatial partitioning of financial production. On the basis of this analysis, it is possible to draw conclusions about the future organisation of the European financial centre system.

2.3 Proximities in financial production

The financial sector is generally considered the most globalised of all economic sectors, 'since the very fungibility and convertibility of money enable it to transcend space more readily than any commodity' (Martin 1999, p. 6). Money can be easily digitalised and is therefore highly mobile via information- and communication technology. If financial actors become increasingly 'footloose' through the implementation of ICT, the question is: where will they go, will they centralise in one major financial centre or decentralise to national financial centres? In this section, we firstly examine the importance of proximity in financial production and then demonstrate why new telecommunication technologies will not have as big an impact as has been predicted (see Martin 1994). To support this proposition, we do not only use the concept of spatial, but also those of organisational, cultural and vocational proximity.

Spatial proximity is the basis for most externalities and is therefore at the core of the emergence of financial centres. In comparison to other industries, proximity is especially important for the financial industry because most financial production is based on knowledge or infor-

mation exchange. As Thrift (1994, p. 334) points out, the culture of international financial centres can be summarised by ‘the need for information, for the expertise that allows that information to be interpreted and for the social contacts that generate trust, information, interpretive schemes – and business’. The need for the procurement of information and knowledge is generally seen as one of the main driving forces behind the centralisation of financial actors.

In this context it is crucial to differentiate between information and both codified and tacit knowledge. While information and codified knowledge can be transferred over spatial distances, tacit knowledge is always connected to subject and context, and cannot be taken from these connections without difficulties (Nonaka and Takeuchi 1995, Willke 1998). A transfer of such tacit knowledge via telecommunications can therefore be complicated and inefficient. Because of the context-intensity, tacit knowledge exchange is made easier and sometimes only possible in close proximity (including not only spatial but also other types of proximity). Boden and Molotch (1994, p. 274) point out that ‘(t)he more information produced by the new technologies, the higher the premium on copresence needed to design, interpret and implement the knowledge gained.’ Not only does spatial proximity incite personal contacts (Daniels 1985), it also fosters knowledge transmission and collective learning, often in combination with cultural and organisational proximity (Malmberg and Maskell 1999, Keeble and Wilkinson 1999).

Proximities, disembedding and trust

For the understanding of spatial restructuring of the financial sector in connection with new ICT, the complex interdependencies between proximity, disembedding and trust are highly relevant. According to Giddens (1990), the reason why ICT leads to a change of space-time-connection, a reorganisation of social relations across great space-time-distances, is that these technologies function as disembedding mechanisms. Disembedding mechanisms ‘remove social relations from the immediacies of context’ (Giddens 1990, p. 28). However, both, the removal from context, as well as the connected time-space distanciation, will only come to pass if the ‘expert systems’ i.e. the ICT, are able to supply guarantees that the expectations of the users will be fulfilled even over space-time-distances.

Again, these guarantees will only be accepted if trust exists. In essence: proximity is necessary for the building of trust, while trust is necessary for the functioning of disembedding mechanisms like ICT (Giddens 1990). Accordingly, the implementation of ICT does not lead to a total spatial decentralisation, because face-to-face-contact has to be updated on a regular basis. While the connection between proximity, trust and disembedding is important for understanding the reason why decentralisation is not taking its course without limits, the interplay between decentralisation and centralisation tendencies still remains unclear without the reasons that stand behind the centralising forces, i.e. the need for proximities.

The need for proximities

Not only spatial proximity, but also various other forms of proximity (i.e. social, cultural, organisational, technological, relational, institutional, temporal...) play an important role in business interaction (Saxenian 1994, Malmberg and Maskell 1997, Blanc and Sierra 1999). In this paper, we argue that four kinds of proximities are important for understanding the geographical organisation of value chains in the financial sector: spatial, organisational, cultural and vocational proximity.

Spatial proximity refers to the geographical distance between actors. Depending on the context, this can mean walking distance or the distance to any point that can be reached within a certain time span (Thierstein 1996). *Organisational proximity* exists between actors working in the same company regardless of their geographical location. These people share the same corporate identity, the same corporate philosophy, organisational rules and codes (Blanc and Sierra 1999). They ‘know the ropes’ and have knowledge about the access to resources within the company. Our interviews have shown that at least two more proximities, cultural and vocational, are of considerable importance in financial production. *Cultural proximity* works on the same basis as organisational proximity, only on a different level, that is mostly national. It includes speaking the same language, sharing similar values, norms and conventions and ways of doing business (Saxenian 1994). *Vocational proximity* exists between actors working in the same type of job. It is especially strong in vocations that have a high code of ethics, like handicrafts or law. These people share similar interests and technical understanding and use the same vocational language.

The non-spatial proximities are important for financial production because they make the building of trust easier, and provide context, thus simplifying knowledge exchange. The reason for this is that they are all based on sharing conventions, a common ‘framework of action [...] with other actors engaged in that activity’ (Storper 1997, p. 45). They can therefore substitute spatial proximity to a certain extent (Blanc and Sierra 1999). In the case of organisational and vocational proximity, IT can be used to bridge great spatial distances, because they provide trust that enables the disembedding mechanism. By way of contrast, the need for spatial and cultural proximity still entails spatial boundaries. Cultural proximity impedes the extension beyond national- and language borders and therefore keeps production within a certain territory.

In the following chapter we will use this concept of proximities in connection with technologies to discuss financial production by means of three different value chains. We argue that this analytical tool can be used to explain the development of the spatial organisation of the financial production which in turn leads to the location of functions in different financial centres.

3 The production of financial services – a value chain approach

3.1 Key literature

The approach of using the production process to draw inferences for the spatial organisation of the financial industry is in the tradition of the writings of Ter Hart and Piersma (1990), Lee and Schmidt-Marwede (1993), Thrift (1994), Clark and O'Connor (1997) and Walter (1998).

Following Walter (1988), Lee and Schmidt-Marwede (1993) stress that different financial services require different competitive resources, or 'conditions of production'. The extent to which the production of specific financial services is 'open to [...] the choice of global location' (ibid, p. 513) determines the outcome of financial centre competition. On a different track, Ter Hart and Piersma (1990) concentrate on the determinants for physical, or spatial proximity in the financial sector: intensity of face-to-face-contacts, importance of rapidity or intensity of contact, scale of the transaction and acquaintance with the other party. They also give a list of banking transactions ranked by their sensitivity to spatial proximity. The more complex and the closer to the customer the transactions are, the more spatial proximity is needed.

A similar approach with a more exhaustive terminology was chosen by Clark and O'Connor (1997). They divide financial products into three categories, i.e. transparent, translucent and opaque, mainly by looking at the kind and specificity of information that is required to trade these products. Opaque products will be traded in sub-national centres, because of the local knowledge that is needed, translucent products mostly in national centres and transparent products in the global financial centres.

Walter (1998) goes one step further. He states that technology permits the 'unbundling' of financial activities, thereby increasing the centrifugal forces in financial centres. Different financial products are allocated within a range according to the need for personal contacts with customers, other players or service firms. Walter states that technology reduces the threshold beyond which the internal economies of scale outweigh the benefits of being close to the financial centre where the business originates.

By trying to combine and enhance these strands of literature on financial centres, we analyse the value-chains of different financial products, stressing the kinds of proximity needed for their production at each stage. We suggest that it is necessary to grapple with individual products as 'different financial services have different conditions of existence' (Lee and Schmidt-Marwede 1993, p. 502).

3.2 Value chains of different financial products

In this section we discuss consultancy for the acquisition of a firm, loan syndication, and stock trading. These three products cover, of course, only part of the range of financial transactions, but they are examples for the three kinds of business typically performed by banks: advisory, lending and trading. All three activities are typically located in financial centres. In their illustration as stylised value-chains⁶ we will show (1) which stages of the production can be spatially reorganised with ICTs and (2) what kind of proximity is required for production and therefore influence the new location of this activity.⁷

Acquisition of a firm

In merger and acquisition (M&A)-transactions, personal contact is crucial in many stages of the value chain, and until now it has not been possible to substitute it with any kind of ICT. The typical stages of the acquisition of a firm are shown in Figure 2.

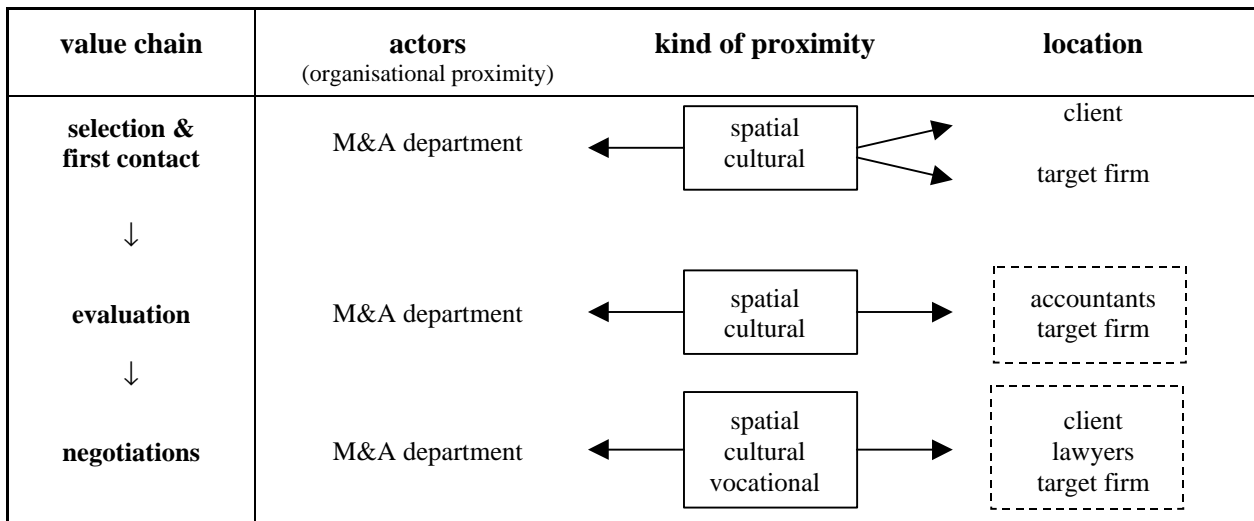


Figure 2: Acquisition of a firm

In the first stage, cultural proximity and direct contact are not only essential between bank and client, but also between bank and target firm, especially in the initial approach, which is one of the most delicate points in the deal. So, firms involved in M&A-transactions are advised and approached almost exclusively by domestic branches of investment banks.

The following stage is evaluation. It is done directly at the target firm's headquarter, with the help of specialised accountancy firms. Again, cultural proximity is indispensable because an excellent understanding of national regulations is a prerequisite for this stage. The swift reali-

⁶ In order to be able to compare three different products we have included only the main parts of the production process in the value chains.

⁷ For analytical purposes we assume that the need for organisational proximity between the steps of the value chain remains constant. This is not always the case, but will not influence our conclusions concerning the mobility of certain departments or functions.

sation of the deal, and especially the negotiations, depend on the degree of vocational and cultural proximity between the different M&A-specialists and on the possibilities for frequent meetings. Therefore, location in the national financial centre is attractive mostly because of spatial proximity to specialised accountants and lawyers.

There is not much room for technology in this financial service, except in the first steps of information gathering and the frequent use of e-mail during the transaction. The 'getting to know each other' in close personal interactions cannot be replaced by telecommunications. Acquisition is still a 'person business' where 'thick communication' is essential for conducting the transaction (Lo 1999).

Loan syndication

Syndicated loans are provided when the capital needed by a client exceeds the amount a single bank can, or wants to, supply. Thus, the amount, and risk, of the loan is shared between a certain number of banks. The success of the syndication relies on first-hand information about 'the market', i.e. other banks' strategies in order to find out which banks to invite to participate etc. Furthermore, the process involves extensive negotiation between both lead bank(s) and client, and lead bank(s) and participating banks. The latter are often very intensive, as all participating banks have to sign the same contract.

The loan syndication process can be divided roughly into three stages, as shown in Figure 3:

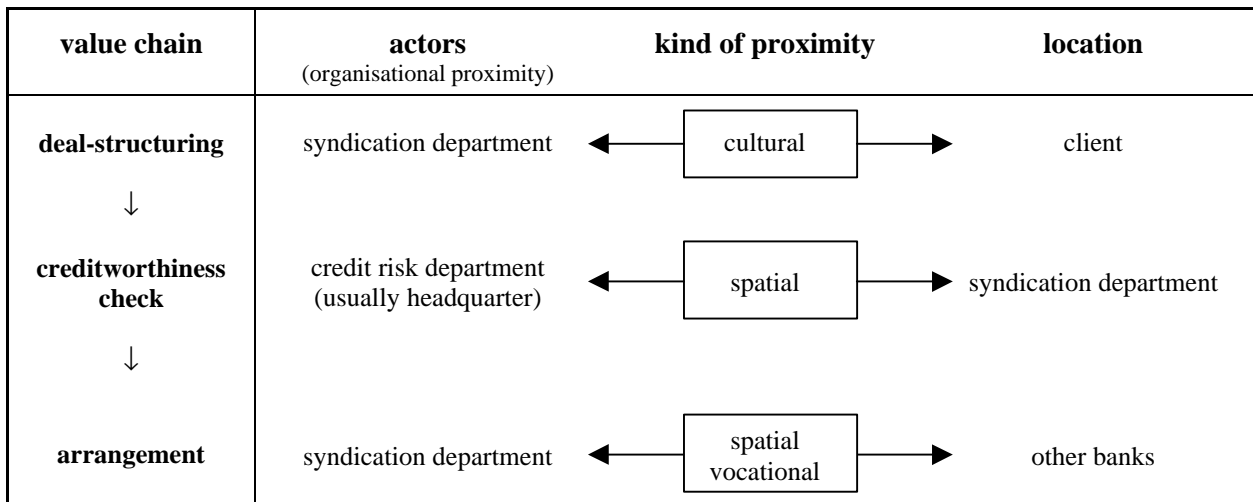


Figure 3: Lead management of a syndicated loan arrangement

In the first stage, the leading bank structures the deal according to the client's needs. Secondly, the creditworthiness of the client is being checked by the in-house credit department. In the third stage, the actual syndication takes place. This process includes the gathering and processing of information about possible participants and the arrangement of the syndicate (including negotiations about the final loan). As the syndication process requires a lot of con-

tact to other banks, most banks have located the whole syndication department in a financial centre with a large market for syndicated loans, even though, as can be seen from the value chain, not all stages require close proximity to other banks. In the first and second stage, spatial and cultural proximity to the client and the headquarter (to discuss credit lines) are almost equally important.

Only recently, new Internet-based firms are emerging, that are changing the way in which the third stage is organised. These firms provide virtual data rooms with high security standards, where participating banks can download information about the deal and which substantially reduce administrative costs of both co-ordinating and supervising data flows. This has already led some banks to split up the third stage into two, leaving a small number of employees in the main financial centre in order to keep close contact to other banks and to keep track of market developments. The larger part of the syndication department is then relocated to the headquarter in order to simplify the internal co-ordination processes.

Stock trading

In former times, physical presence was required at each stock exchange in order to participate in the market. The different stages of conventional stock trading at foreign stock exchanges – on behalf of a client – are shown in Figure 4:

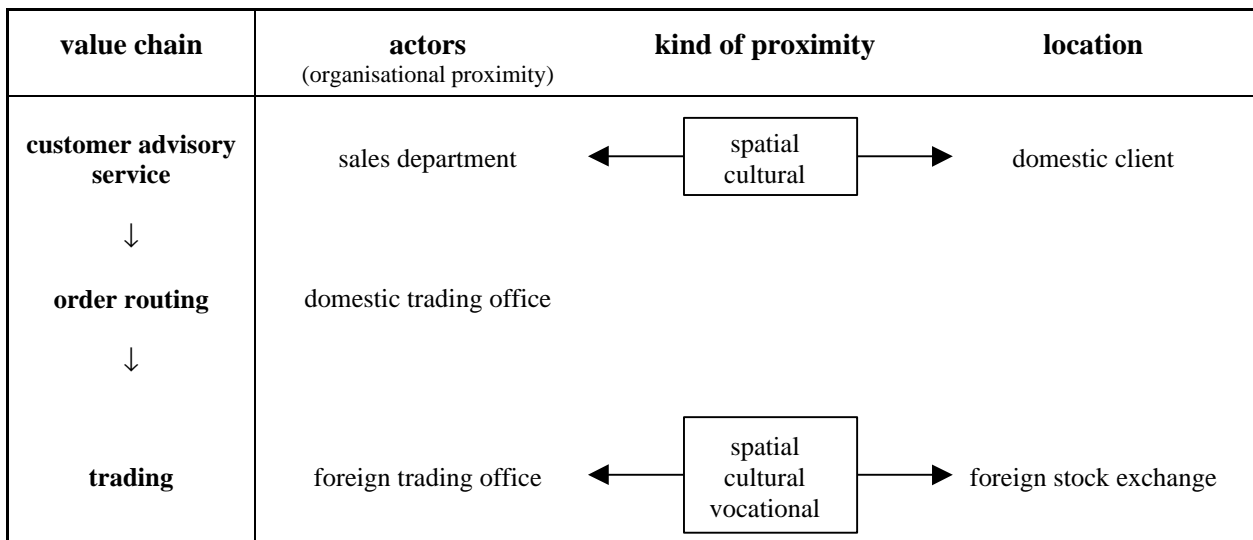


Figure 4: Conventional stock trading at a foreign European stock exchange

In the first stage, cultural and spatial proximity to the client (institutions or wealthy individuals) are required in order to build up trust. During the advisory process, regular face-to-face contacts are therefore essential for the deal.

In the second stage, the order is then routed to the respective foreign trading office. This office has to be vocationally, culturally and spatially close to the foreign stock exchange, where

the trading takes place. Vocational proximity is necessary as, by law, only locally trained dealers are allowed to participate in stock exchange dealings, and cultural proximity is needed to understand the complex and partly unwritten rules of dealing in specific stock exchanges. Spatial proximity is needed because ‘conventional’ stock trading implies that there is no remote access.

The virtualisation of stock exchanges is probably one of the most profound changes for financial centres. With the implementation of remote access facilities, European stock exchanges can be reached via computer from any country. This eliminates the necessity for physical presence. At present, this technology is not very wide-spread, but it is generally expected to become ubiquitous in only a few years. Figure 5 shows stock trading with remote access. Compared to conventional trading, the actual trading now requires only vocational proximity – at the domestic trading office. The foreign trading department is no longer necessary.

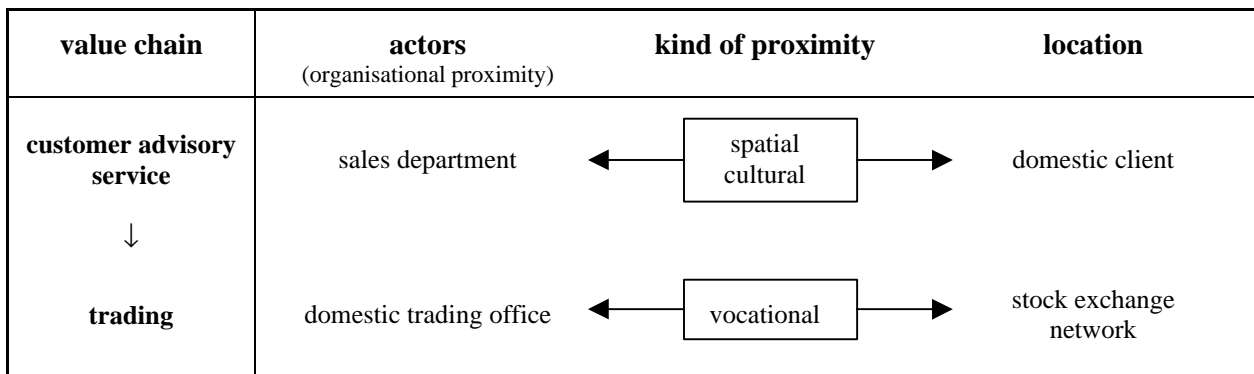


Figure 5: Stock trading with remote access to an European stock exchange network

This reflects what is actually happening in Frankfurt, where sophisticated stock exchange technology has been developed and implemented: Non-German banks have started trading from London and relocated their local traders. Still, the need for spatial and cultural proximity to the client continues to exist. Advisory for institutions or wealthy individuals still requires face-to-face-contact.

Nevertheless, if clients are willing to inform themselves and even buy and sell stock on the Internet, only cultural proximity remains at the bank-customer interface, as is shown in Figure 6.

value chain	actors (organisational proximity)	kind of proximity	location
customer advisory service ↓	internet-homepage	← [cultural] →	domestic client
trading	trading office	← [vocational] →	stock exchange network

Figure 6: Stock trading with remote access to an European stock exchange network, client is using the Internet

Every single step of the production chain has become 'virtual'. As Figure 6 shows, there is no need for the trading office to be located close to any other department, the homepage can be provided elsewhere and even the clients have lost their importance as a 'fixing point'.

3.3 From value chains to financial centres

From the micro level of value chains we now take a big step to the macro level, the European financial centre system. The next question is, what are the inferences for financial centres? The reason why we introduced the concept of different proximities in connection with technologies is that we try to assess whether certain types of activity have a tendency to centralise in specific financial centres. We are aware that this is a very narrow view of the determinants for spatial organisation, but nevertheless assume that the need for proximities is one of the major factors for location of financial actors.

The aim of this chapter is to show in which stages of the value chain the implementation of technologies allows a delocalisation, and where the following relocalisation, either in a different national financial centre or centralised in just one financial centre in Europe, is probable to take place according to the necessity of different types of proximity.

Acquisition of a firm

The analysis of the value chain in acquisitions has shown that the arrival of new telecommunications is not leading to a split up of different stages or activities. This means that there will be no relocation of single activities, the entire production process will stay in one place. At the moment, the bulk of acquisition activities are concentrated in the respective national financial centres and this is unlikely to change. As we have shown above, cultural proximity to customers and target firms is so important that presence within the same national/cultural territory is essential for doing business.

Spatial proximity to the client and target firm can be of such an importance that not all firms locate their M&A-function in the premier national M&A-centre. Nevertheless, most of the

firms choose the national financial centre, because of the high contact frequency to related services (spatial proximity to lawyers, accountants). Another point in favour of financial centres is their (usually) high standard of transportation infrastructure which is needed for travelling to client and target firms. Therefore, we conclude that the location of the M&A-function is unlikely to change in the next few years, and therefore will be no single highly specialised European M&A-centre, but one within each national/cultural territory.

Loan syndication

In the case of syndicated loans, new ICT is starting to change the spatial organisation of financial actors. The activities of information gathering, contacting with other banks and the processing of the transaction need no longer stay in one place. These activities have so far been concentrated in the biggest financial centres. The reason for this was the need for spatial proximity to other banks, because of the frequency of copresent interaction for contact maintenance, information exchange and co-ordination. Therefore, the syndication business had a tendency to locate within the financial centre with the highest number of banks, which is London.

With the event of new telecommunications, the need for spatial proximity to other banks for co-ordination purposes has abated. Thus, the syndication department can now be split up into information gatherers (which includes maintenance of contact with other banks), who still have to be where the biggest agglomeration of banks is, and in transaction processors (who structure the loan), who gain a certain level of 'footlooseness'. Again, the question is, where are they most likely to go? For the structuring activity, spatial proximity to the headquarter is the next priority. It is therefore likely, that there will be a centralisation on a firm level and at the same time a decentralisation on a financial centre level. That means that, for syndicated loans, the leading European financial centre is likely to keep the information activity but loose some of the processing activity to the respective national financial centres, where headquarters are usually located.

Stock trading

In the case of stock trading, the location of the traders is affected to a great extent by the development of new technologies, i.e. trading-systems with remote access. The need for spatial and cultural proximity has so far led to locations close to the respective stock exchanges, which in most cases is equal with presence in the various national financial centres. In the future, this will not be necessary, because each bank can concentrate their traders in one place. There are two possible directions for relocation: (1) centralisation within Europe in just one financial centre or, as in the case of processing syndicated loans, (2) concentration on the firm level close to the respective headquarters. This depends on whether there is more necessity to be culturally, vocationally and spatially close to traders from other firms or to be

organisationally and spatially close to the headquarters. Or, to look at it from a different perspective, it depends on whether the gains from external economies of scale are greater or smaller than those from internal economies of scope and scale.

Contrary to that, the advisory activity will have to stay close to the customer, i.e. dispersed in the different national territories, to maintain cultural proximity. On the level of financial centres, this implies that while there is no locational change for advisory, trading might centralise within Europe in just one financial centre. Because of London's prominent position in Europe and the trading knowledge already accumulated there, London would then be the probable location for this function.

As we have shown, the implementation of new information and communication technologies has very different effects on the spatial organisation of the activities in each value chain. From a financial centre perspective, the relocation tendencies can be summarised as following: (a) products that will not relocate, as for example acquisitions; (b) activities, like processing syndicated loans, that might decentralise from a leading financial centre to their respective headquarters and (c) activities that can centralise in just one leading financial centre in Europe, e.g. stock trading. We will now leave this rather abstract level and apply these findings on a concrete example, Frankfurt's role in the European financial centre system.

4 Frankfurt's new role in the European financial centre system

Frankfurt is the most important German and one of the most important European financial centres. As the host city for the European Central Bank (ECB), it is also the centre of European monetary policy. The decision to locate the ECB in Frankfurt raised huge expectations about Frankfurt's future, forecasting an increasing inflow of foreign bankers and experts (cf. *Frankfurter Allgemeine Zeitung* 1998). So far, these expectations have not been fulfilled and likewise Frankfurt has not reached the aspired position as a gateway to Eastern Europe (Schamp and Grote forthcoming). In terms of financial centre resources, compared to London, Frankfurt has less innovative and liquid financial markets, less qualified labour and less flexible regulation (Dietl, Pauli and Royer 1999). Yet, recently, Frankfurt's efforts have gone far to ameliorate its regulatory and technological framework and the city is a leader in the development of financial technology, notably trading and settlement systems.

Hence, the opinion about Frankfurt's future is changing: A study from 1990 expected that London and (to some respect) Paris would dominate Frankfurt (Häuser et al. 1990). However, a recent survey by the news channel CNBC states that 39% of European bankers interviewed see Frankfurt as the primary financial centre in Europe in 2005, even ahead of London (Metzler 1999). So while formerly Frankfurt was competing with Paris for second place in the

European financial centre hierarchy, now the competition seems to be between London and Frankfurt, with Paris being left behind.

Such general assessments may hint at future developments, but fail to give an idea of the ongoing relocations of different functions between the financial centres. Therefore, we base the following predications about the new role of Frankfurt in the European financial centre system on our findings from the value chain approach.

As shown above, M&A-business is likely to stay in the respective national markets. European integration has put high competitive pressure on firms operating in the EU and is one of the reasons for the increasing number of M&A deals. This is particularly true for the German economy with its high percentage of medium-sized firms ('Mittelstand'). This clientele requires advisors who are not only spatially but also culturally close. Thus, the volume of M&A deals executed in Frankfurt is rising steadily and the headcount of M&A experts is increasing. Frankfurt's specialisation as a centre for advisory services related to the German market is also reflected in the strategy of foreign banks in Frankfurt. While there is a general trend for foreign banks to reduce their headcount in trading and back-office, they are increasing it in advisory and sales (Grote 1998).

Although, Frankfurt mainly serves as a gateway to the German market, the importance of this function should not be underestimated, since the German economy represents a large part of the EU economy. So, contrary to the past, Frankfurt now plays a considerable part in advisory-related investment banking products. This is an important change for Frankfurt, which used to rely mainly on commercial banking.

Notwithstanding its strength in commercial banking, Frankfurt has never been a centre for international syndicated loans. The European and global centre for syndication is London, which has the largest agglomeration of specialists and expertise. As shown above, it is now possible to relocate the processing activities in the syndication process closer to the respective headquarters. Since almost all headquarters of the major German banks are located in Frankfurt, such a relocation process would enhance its position in the field of international commercial banking.

Contrary to the examples above all of which have positive implications for Frankfurt, the consequences of new ICT on trading are double-edged. During the last few years the development of Frankfurt has been closely linked to that of the Frankfurt stock exchange and its investment in new technologies. Judged by the turnover on the Frankfurt markets, this has been a clear success: Frankfurt's futures exchange EUREX is the largest futures market in the world, whilst the Stock Market ranks fourth. Both have gained a reputation for highly reliable and quick settlement of deals. Nevertheless, the implications of the stock market technology on Frankfurt's position are not solely positive: While Frankfurt is the European centre for the

development of stock market *technology*, this still might not make Frankfurt a trading centre; at least not in the sense that traders are actually located here. On the contrary, at first there was a clear trend of traders relocating to London, while using the Frankfurt trading infrastructure. This has changed in the last year, reflecting the conflicting effects of the internal and external economies of scale as well as the need for different proximities: Since traders need proximity to both other traders and locally available knowledge about the stocks they trade, the final location remains uncertain. London has a much larger agglomeration of traders, leading to larger benefits from externalities, which gives it a competitive edge over Frankfurt. However, several German banks have concentrated their trading activities for the German market in Frankfurt, and recently one of the largest American investment banks has followed their example.

A particularly apt example for the ambivalence of technological development is the ‘battle for the Bund-future’ between London’s LIFFE and Frankfurt’s EUREX. The Bund-future is the most traded derivative in the world. As it is based on German federal bonds, it could be expected that it were traded in its ‘home-country’ Germany. However, as German regulation did not allow trading of derivatives until 1990, the market emerged at LIFFE and the relevant expertise was concentrated in London. The efforts of the German Derivatives Exchange – after their formation in the early 90s – to transfer Bund-future trading volume to Frankfurt were of little success despite their comparatively low trading costs. Due to prevailing lock-in effects (mostly concerning market liquidity), a large extent of the trade still took place at London's LIFFE. Only after EUREX terminals with remote-access facility were installed in the City and German banks shifted all their trading volume to EUREX, London traders began using the Frankfurt-based system. EUREX’ market-share in Bund-future trading now amounts to 99,9%. Figure 7 shows that EUREX’ gain in the trading volume of the Bund-future coincides with an increase in the number of traders from abroad. Thus, the trading system is now the central marketplace for Bund-futures, but most of the traders are using the system from foreign financial centres, mainly London.

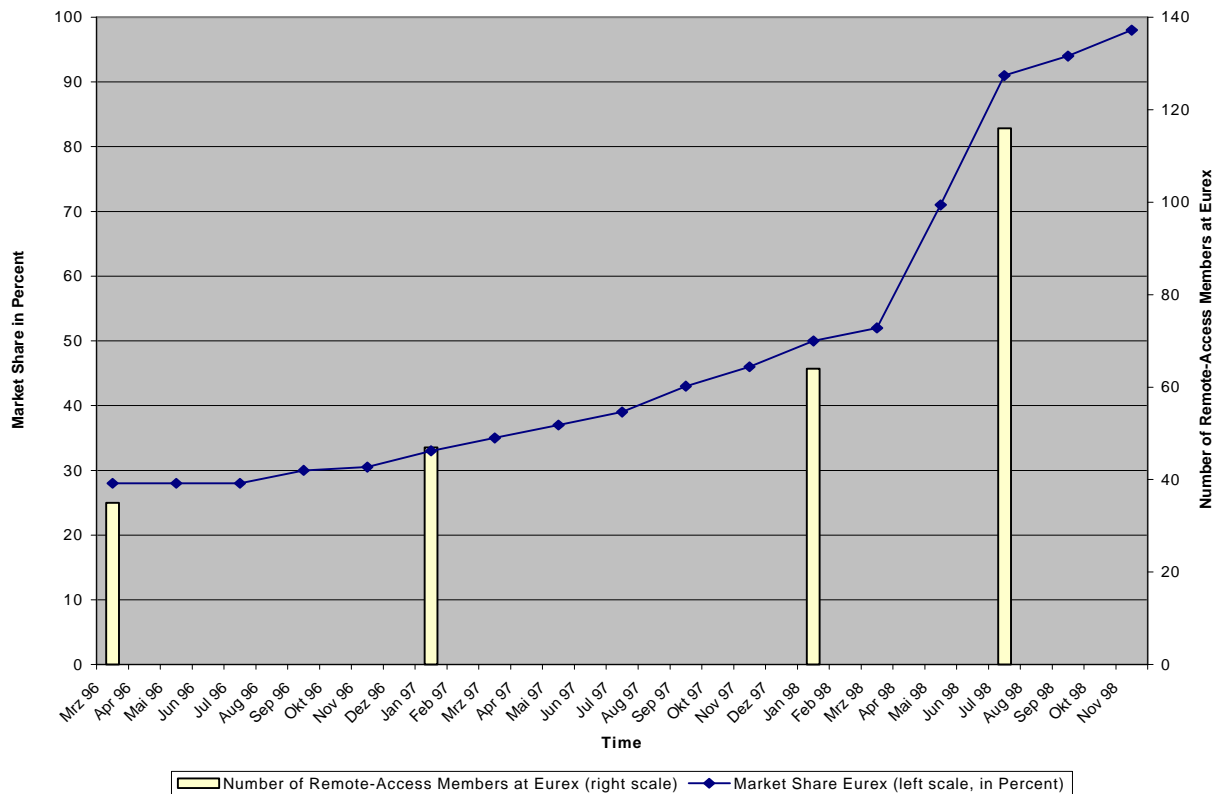


Figure 7: Market Share in Bund-Future Trading

Source: *Verband der Auslandsbanken in Deutschland 1999, p. 33* and *Finanzplatz e.V. 1999, p. 33*.

Thus, from the viewpoint of the city of Frankfurt, its leadership in remote access technology has some unwelcomed side effects, as many of the advantages of being a financial centre are related to the income that is generated in that centre. Hence Frankfurt might become a leader in technology, not in people. The gains from Frankfurt's position as a centre for settlement and trading technology thus depend on whether further business is attracted, which necessitates the physical presence of bankers, i.e. spatial proximity to the technology centre. European wide cash management services could be such a line of business.

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