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# Call for a Spatial Classification of Banking Systems through the Lens of SME Finance - Decentralized versus Centralized Banking in Germany as an Example

Stefan Gärtner and Franz Flögel

**Abstract:** We are calling for comparisons of banking and banking systems from a spatial perspective. Therefore, this paper develops a classification identifying decentralized and centralized banking according to two characteristics: geographical market orientation (regional vs. supraregional) – to determine whether banks facilitate regional savings-investment cycles – and place of decision-making (proximity vs. distance) – to identify whether the flow of soft information is supported in SME lending. The degree of banks' centralization is also approximated by the spatial concentration of bank employees and shows remarkable explanatory power in Germany, as decentralized banks increase lending at the expense of centralized banks.

**Key words:** comparing banking systems, SME finance in Germany, savings and cooperative banks, decentralized vs. centralized banking

**JEL classifications:** G21, P51, R51, O16

## 1. Introduction

A developed financial system is essential to enable effective capital allocation (Levine, 2005), and should thus foster both national economic growth and regional development. The structure of financial systems is traditionally classified by distinguishing between bank- and market-based systems (Allen and Gale, 2001; Demirgüç-Kunt and Levine, 2001; Hall and Soskice, 2001). Germany and Japan are commonly classified as bank-based systems, where banks perform the majority of financial intermediation and execute cooperate governance. The USA and the UK are commonly classified as market-based financial systems, where capital markets are deployed for capital allocation and cooperate governance (Allen and Gale, 2001; Hackethal et al., 2006). Yet, despite the fundamental difference between these systems, the superiority of one has not yet been proved (Beck et al., 2001; Levine, 2005; Beck 2012). Furthermore, the global financial and economic crisis of 2007-08, which affected bank- and market-based financial systems alike, is seen by some scholars as evidence for the homogenization of national financial systems, whereas others call for new classifications (Section 2). Therefore, the aim of this paper is to develop a spatial classification of banking and banking systems through the lens of small and medium sized enterprises' financing (SME finance) and to apply this classification to the German banking system.

Since the turn of the millennium there has been growing political and academic interest in SME finance as these companies seem to be of key importance for economic dynamism and innovation (Klagge and Martin, 2005). Contradicting the claim of the increasing homogenization of national financial systems, studies on SME finance observe regional differences in access to fi-

nance. The spatial and hierarchical organization of banks and regional market structure, rather than national market structure, are identified as basic rationales for the observed differences (Petersen and Rajan, 1995; Pollard, 2003; Berger et al., 2005; Agarwal and Hauswald, 2007; Alessandrini et al., 2009a). Small and regionally independent banks may be better at processing proprietary soft information than international banks. Therefore, they are better at financing the informationally opaque SMEs (Stein, 2002; Berger et al., 2005; Udell, 2008; Behr et al., 2013). This is especially beneficial in peripheral regions where most companies are SMEs and big banks could have difficulties operating profitable branches. Regional banks (e.g. small savings and cooperative banks) may thus be an important pillar for balancing regional economic disparities (Chick and Dow 1988; Gärtner 2009). Put differently, a centralized banking system could be a disadvantage for SME finance in remote regions distant from major financial centres.

Klagge and Martin (2005) classify financial systems according to the spatial concentration of financial market institutes into rather decentralized and centralized systems. They show that German stock exchanges and venture-capital firms have more decentralized location patterns than those in the UK, where most of these institutes are located in London. We want to take up this classification, but shift the focus to banking and SME loan finance. We think this is important for two reasons. Firstly, despite expectations that financial systems may homogenize towards market-based finance, bank-based finance remains highly important in Germany. According to our calculations<sup>1</sup>, loans accounted for about 80% of external funds to (non-financial) companies. Furthermore, since the financial crisis significant shifts in the corporate loans portfolio from big to small banking can be observed (Section 6). Secondly, in light of the global financial crisis the relevance of banking and lending becomes apparent, not only because access to credits for SMEs has become a major concern in numerous countries, but also because banks' lending decisions were responsible for the financial crisis (Róna-Tas and Hiß, 2008; MacKenzie, 2010; Martin, 2011). Also important is that new theoretical and empirical evidence on SME finance (see brief discussion above and Section 5) has uncovered a link between soft information processing and the spatial and hierarchical organization of banks, providing new interesting insights for financial system studies.

We therefore propose a spatial classification of banking systems using two characteristics: *geographical market orientation* and *location of decision-making*. We believe that this is a promising step in investigating the link between finance and development on a cross-country basis, contribute to better understanding of SME finance, and could provide insights for the comprehension and prevention of global financial crises. In the following, we briefly discuss cross-country financial systems studies and underline the need for a spatial perspective (Section 2), followed by an overview of the German banking market (Section 3). We then show the relevance of geographical market orientation (Section 4) and the location of decision-making (Section 5) for SME finance and how they could be empirically captured. Section 6 merges the two characteristics and applies

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<sup>1</sup> We add equity market to bonds market and compare this with corporate loans (each nominal and for non-financial institutes). Source: German Central Bank (2014).

the new classification to the German corporate credit market. In Section 7 we draw conclusions and sketch a multidisciplinary and mixed-method research agenda for comparing decentralized and centralized banking systems.

## **2. From Bank- vs. Market-Based to Decentralized vs. Centralized Banking Systems**

Although international comparative studies of financial systems have often proved a connection between a deep financial sector and dynamic economic development (see for an overview Beck, 2012), recent studies indicate that too much finance hinders economic growth and can lead to financial crises with accompanying social implications (Capelle-Blancard and Labonne, 2011; Arcand et al., 2012). Thus, the growth effects of the financial sector cannot be measured solely using the variable "size". Instead, the structure of financial systems requires consideration.

The structure of financial systems is traditionally approached by distinguishing between bank-based versus market-based systems. In the former, external corporate finance is mainly facilitated by bank loans; in the latter, shares, bonds and venture capital have become more important. Despite fundamental differences in bank and market financial intermediation, the superiority of one system over the other has not been proved by data analyses (Beck et al., 2001; Levine, 2005; Beck, 2012). While research into varieties of capitalism explains similarities in performance with institutional complementarities (Hall and Soskice, 2001), in light of global financial integration other authors see a homogenization of national financial systems towards market-based finance. Thus financialization research observes the growing influence of capital markets, their intermediaries and procedures in current economies (Aglietta and Breton, 2001; Pike and Pollard 2010; French et al 2011). In particular, the financial and economic crisis of 2007-08, which affected bank- and market-based systems similarly, is seen by some as evidence that hardly any variance between countries' financial systems exists (Beyer, 2009).

In this respect, Hardie and Howarth (2013) claim that classification into bank- versus market-based financial systems has become insufficient because, among other reasons, banks' funding increasingly depends on capital markets. Following this argument, the assumption that banks act independently of capital markets is no longer valid. The authors propose a new classification of banking into *traditional banking*, where banks basically collect deposits from customers and allocate this as loans, and *market-based banking*, where banks' lending decisions are interlinked with and dependent on the capital markets. Applying this classification to major banks in the UK, France and Germany, Hardie and Howarth (2013) reveal that the dependence of German banks on the capital market is surprisingly high. A key challenge of this approach is the classification of banking activity, as determining the degree of market-based banking requires analyzing the balance sheet of every individual bank. Therefore, Hardie and Howarth (2013) were only able to study nine of over 2000 banks in Germany in their extremely interesting work. Focusing on a limited number of big banks involves the systematic neglect of small banks, which are (at least in Germany) in total very important (Section 3) – a fundamental problem of many comparative financial system studies (for the general debate see Burgstaller, 2012).

We try to satisfy both demands with our spatial classification of banking systems. On the one hand we meet the requirement of Hardie et al. (2013) to differentiate within banking, and on the other hand we follow Klagge and Martin (2005) by considering the centrality of financial intermediation. For us there are two important related characteristics of a classification into decentralized versus centralized banking systems. Firstly, we propose the *geographical market orientation* of banks' business activities as a distinctive characteristic. Do banks operate on a regional level, e.g. collecting money from regional savers and handing it to regional borrowers, or do they rely on business at the supraregional scale, whether by borrowing and investing on national/global capital markets or by operating supraregional branch systems (Section 4)? Secondly, we suggest the *place of decision-making* as a substantial characteristic for a spatial classification of banking, as highlighted in the geography of SME finance literature (Section 5). Do banks decide in proximity to their customers (whether to grant a loan) or are decisions made at a distance, for example in remote headquarters?

### 3. German Banking Market

One key characteristic of the German banking system is the major role the regional public and cooperative banks play. While these banks are organized in savings or cooperative bank associations, each of the approximately 1,500 banks is regionally independent. As public institutes, savings banks are bound legally to their provider, normally municipalities. The regional principle [*Regionalprinzip*] is intended to ensure that they fulfil their public task. This principle states that savings banks are supposed only to lend to institutions, companies and private individuals in their own region and may only open branches in that region. The aim is to ensure that money saved in the region is used primarily to boost the local economy and help the local population. This regional delimitation also applies in a similar form to German cooperative banks. Savings banks are found in any region - with very few exceptions. Cooperative banks focus on rural regions in western Germany, but are also spatially widespread. The more internationally oriented credit banks are mainly present in urban conurbations and, to a certain degree (in West Germany more often than in East) in rural areas (Gärtner 2009; Engerer, Schrooten 2004).

To approximate the geographical distribution of the banking groups, we developed an index for geographical concentration of employees<sup>2</sup> (Figure 1). An index value of one would indicate that all employees of a particular banking group are located in one region. As the geographical distribution of workers increases, the index value tends towards zero. The low index values for savings (first bar) and cooperative banks (second bar) demonstrate that they are less spatially con-

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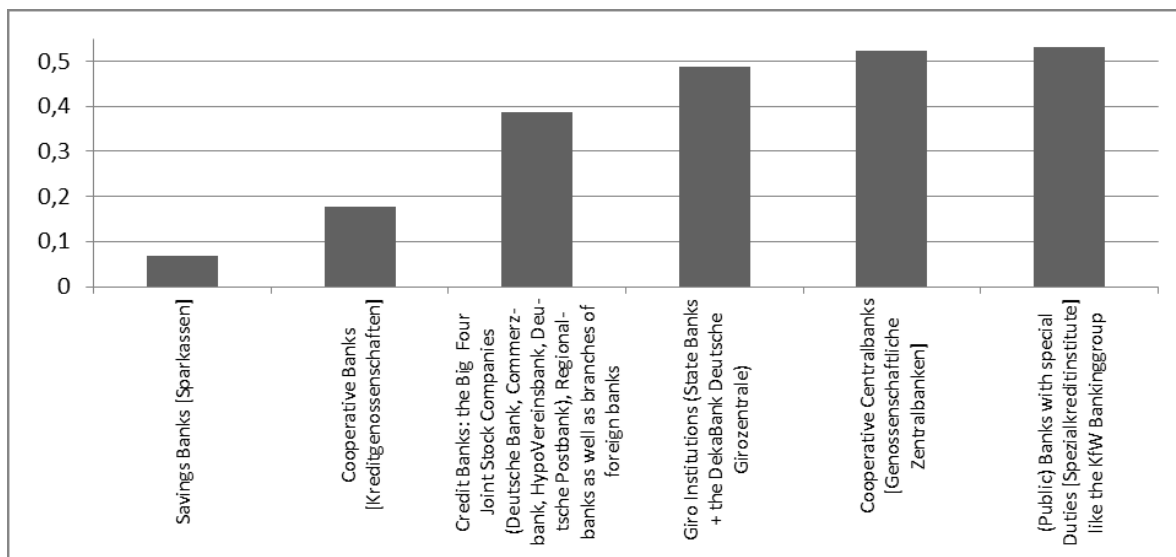
<sup>2</sup> This index needs employment data for the banking sectors (j) and is calculated on the basis of cities and counties (NUTS-3 level) as a common spatial level (i). With this approach we can build the variable "banking system spatial concentration index" (SCI).

$$SCI_j = \sum_i \left| \frac{b_{ij}}{B_i} - \frac{b_j}{B} \right| * 0,5$$

b<sub>j</sub> = employees of sector j  
 B = all the sectors' employees  
 i = region

centrated. Employees of cooperative banks are slightly more concentrated, which may reflect their lower presence in East Germany. The third bar in Figure 1 illustrates that employees of credit banks are clearly more concentrated in certain areas. The group of credit banks comprises the four big banks (Deutsche Bank AG, Commerzbank AG, Bayerische Hypo- und Vereinsbank AG and, since 2004, Deutsche Postbank AG), as well as numerous other privately owned banks of which a few operate in restricted regional areas but most operate throughout Germany<sup>3</sup>. Some, for example, specialize in leasing or private wealth management. As Figure 1 shows, the geographical concentration of employees increases with the level of specialization of the banking groups, so that the central institutes of the savings and cooperative banks and the public banks with special duties, e.g. KfW Bankinggroup, show the highest employee concentration.

**Figure 1: Geographical concentration index of employees working in selected sub-sectors of the financial service industry in 2008**



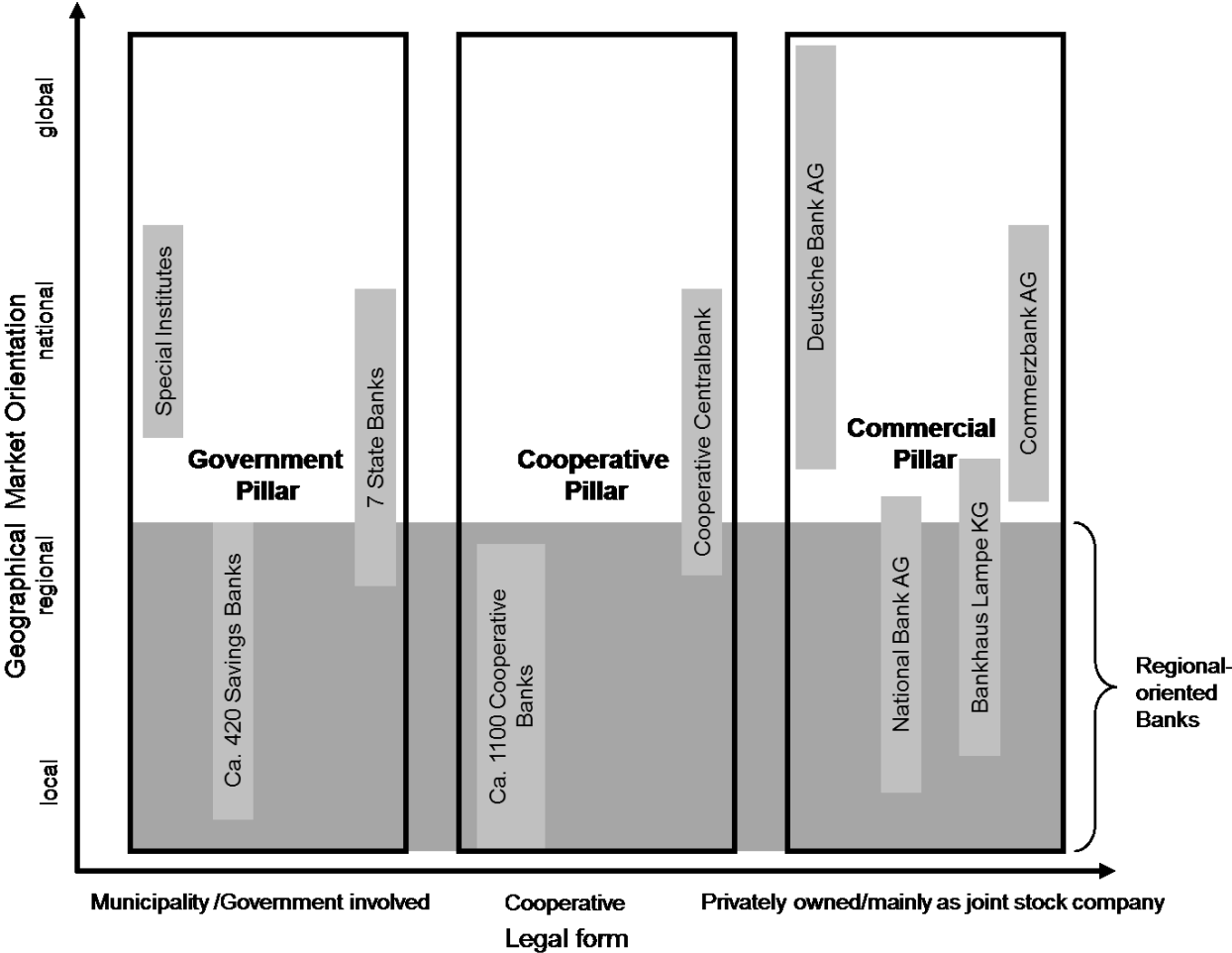
Source: German Federal Labour Office/ own calculations and diagram

Figure 2 displays the German banking system in the commonly used three-pillar classification according to ownership structure. The government pillar comprises the more than 400 savings banks (first bar in Figure 1), the state banks [*Landesbanken*] and (public) special-purpose institutes. The second pillar comprises more than 1,100 cooperative banks (second bar in Figure 1), plus the cooperative central institutes. Banks represented by the third pillar are privately owned, like limited [GmbH] or joint stock companies [AG], such as the four big banks. This division into three pillars makes sense (horizontal axis in Figure 2) because in the past legal restrictions meant that restructuring and buyouts only occurred within these three pillars. For a spatial classification of banking, however, differentiation across these pillars would be useful. In Figure 2 this is applied on the vertical axis, whereby the vertical expansion is estimated heuristically but in line with the employees' concentration index (Figure 1). Regional banks have been summarized as one group (grey field in Figure 2) consisting mostly of savings and cooperative banks, but also

<sup>3</sup> Due to labour data limitations it was impossible to disaggregate credit banks.

including some private commercial banks, e.g. National Bank AG. *Landesbanken* have a promoting function in the states and support savings banks in serving global customers, but are also active at a national and international level and therefore do not completely belong to the regional banking group. The group of banks acting at all levels in Germany primarily includes the four big banks, although only Deutsche Bank is clearly a global player.

Figure 2: Three-pillar banking structure from a geographical perspective



Source: own figure

**4. Geographical Market Orientation: Regional versus Supraregional Market Orientation**

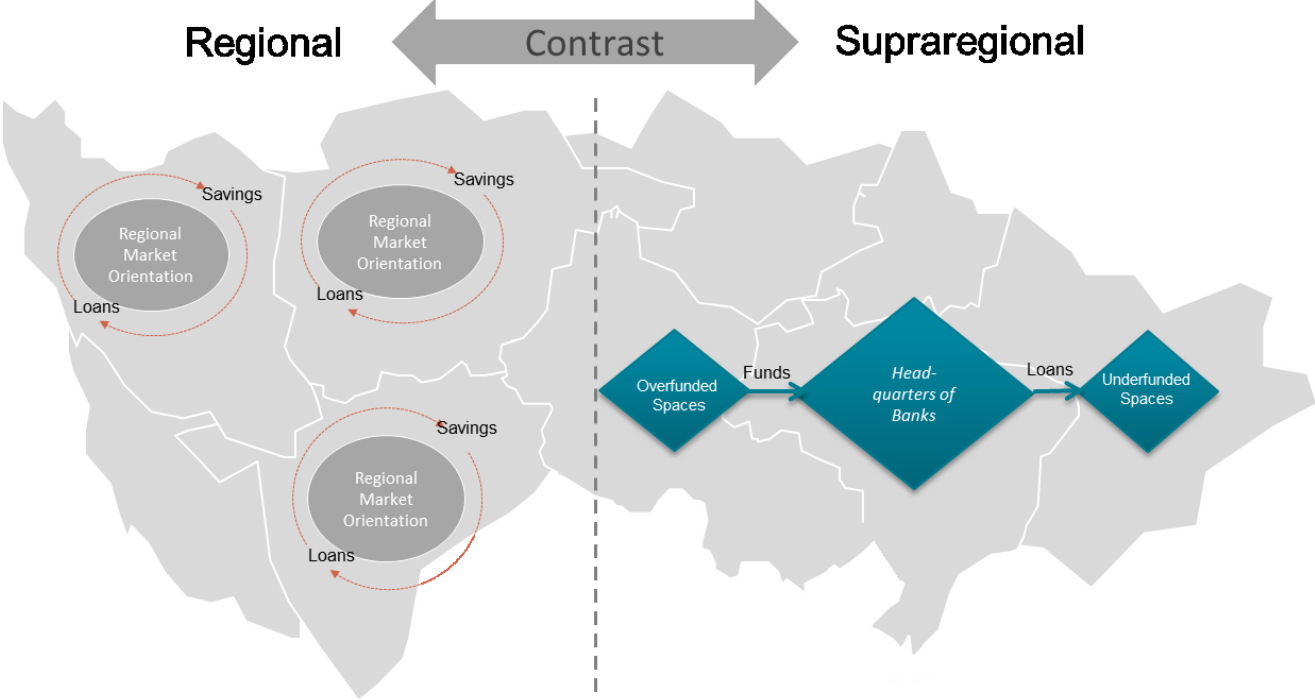
Following the observations in Section 3 we approach geographical market orientation in our classification by distinguishing between regional and supraregional market orientation, as illustrated in Figure 3. Our understanding is that the asset side (distribution of loans) and the liability side (origin of capital, e.g. savings deposits) of regional banks' balance sheets are predominantly regional, which is why regional savings-investment cycles are maintained (Figure 3). The term "regional" refers to a market area in which geographical proximity is still relevant (e.g. one-hour car drive). The term "predominantly" indicates that banks with regional market orientations serve the regional loan demand first; investments outside the region are conducted according to their capacities and only if deposits exceed the regional demand for loans. German savings banks may



be seen as very typical regional banks because 80% of their loan portfolio is lent within the region where they are located (Kötter and Wedow, 2009). The close spatial relationship between savings deposits and loans of the savings and cooperative banks can be demonstrated using a simple correlation calculation. Thus, the correlation coefficient (Pearson) between deposits and loans for the savings banks is 0.96 and for the cooperative banks is 0.92 for the average of 2009-2011 (DSGV; BVR, own calculations). Consequently, savings and cooperative banks appear to be regional banks in the sense of regional savings-investment cycles.

In contrast, banks are defined as having a supraregional market orientation if either the liabilities and/or the assets side of banks' balance sheets are not regional (Figure 3). While supraregional banks also invest in regional companies, the capital does not necessarily come from the region where the investment object is located. Even if banks with supraregional market orientations delegate a high degree of autonomy to their branches (Section 5), the origin of investment capital is not located in the same place as the investment, thus branches depend on headquarter capital allocation.

**Figure 3: Geographical market orientation: regional versus supraregional**



Source: translated from Gärtner and Flögel (2013)

This differentiation between regional and supraregional market orientation may matter owing to its effects on the flows of capital in space and hereby on regional access to capital for SME. From a polarization theory and post-Keynesian perspective, an uneven distribution of capital in space is possible because of cumulative causations. Structurally weak peripheral regions are particularly affected by a poor regional credit supply, and in turn this lack of credit prevents companies from developing. Such a cumulative process makes these regions increasingly less attractive to banks (Chick and Dow, 1988; Dybe, 2003; Klagge and Martin, 2005). Regional banks might reduce the free flow of capital across space and thus facilitate better access to finance in peripheral regions,

supporting balanced regional economic development (see for more details Gärtner 2009). Some further advantages of a regional banking system can be identified. As the restriction to a regional market limits growth opportunities, the small size of banks can reduce their risk-taking appetite (too-big-to-fail does not work in small banks). Furthermore, the banking associations promote mutual support and supervise the regional banks through joint venture funds and revisions (too-many-to-fail). This may lead to a banking system in which government bailouts are less likely and risk control is exercised by mutual peer control. Small regionally oriented institutions might also provide few career opportunities for their employees, so that pursuing high risks for occupational profiling is of limited use<sup>4</sup>.

On the other hand, the advantages of a supraregional banking market with big, internationally operating banks can be derived in models. First of all, restricting the free flow of capital leads, according to neoclassical arguments, to an unproductive allocation of capital. Internationally oriented banking markets enable the equalization of liquidity on a supraregional level, which is important because regional savings and investment rates vary from one region to another. Secondly, supraregional banking markets can diversify risks (Mishkin, 2006). This must be seen against the backdrop that the loan portfolios of regional banks reflect the regional economy and are therefore normally not particularly diverse. Thirdly, internationally oriented banking markets increase competition and thereby prevent oligopolistic profits. Fourthly, supraregional banking markets prevent cycles in which regionally oriented banks in economically weaker regions generate lower returns (e.g. Chick and Dow, 1988; Myrdal, 1957) and are at long-term risk (downward spiral).

A review of empirical studies with regard to the pros and cons of regional versus supraregional banking is beyond the scope of this paper. However, two relevant empirical findings are briefly considered. Several econometric studies have shown that regional banks can also be successful in weak German regions and clearly generate sufficient returns to operate profitably (Gärtner, 2009 Christians, 2010; Conrad, 2008). These findings disprove the commonly held view that regional banks always face the problem of downward spirals and underline their capacity to ease access to finance for SME in peripheral regions. Some other studies claim that diversity of bank types enhances the stability of financial systems (Ayadi et al. 2009, 2010; Haldane and May 2011). Certain shocks affect certain types of banks although other bank types remain unaffected and continue to perform their function. Therefore, it can be argued that having different types of banks could strengthen the stability of financial systems. In this light, the question of whether regional or supraregional banking systems are superior softens to the question of how much regional and supraregional banking is preferable.

The German banking market is suitable for contrasting regional and supraregional banking, nonetheless systematic cross-country analyses are missing. In fact, from a comparative perspective relatively little is known about the spatial organization of different national banking systems. We have argued that the spatial concentration index of banking groups' employees represents the

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<sup>4</sup> Interview Schmidt and Noth (09.02.2012)

geographical market orientation of Germany's banking groups fairly well. These indicators are based on new data sources (employment data) and have not been incorporated in systematic comparisons of financial systems before. Even if this index alone cannot be the blueprint for a cross-country comparison, our research perhaps helps define a research agenda.

## **5. Place of Decision-Making: Deciding within Proximity versus at a Distance**

By collecting private and public information about potential borrowers and using this information to drive lending decisions, and by monitoring the borrowers, banks as intermediaries overcome information asymmetries between borrower and lender and facilitate capital allocation (Levine, 1997; Beck et al., 2009).

### **Soft Information, Spatial Proximity and SME Finance**

On the basis of the observation that large banks tend to face problems in SME lending, Stein (2002) formulates a model with decentralization versus hierarchy as two modes of decision-making. He defines two types of information upon which (investment) decisions can be made: soft and hard information. Soft information “cannot be directly verified by anyone other than the agent who produces it” (Stein, 2002: 1982) and it thus cannot be easily transmitted within a hierarchical organization. If, for example, a customer advisor concludes that a CEO is honest, this argument can only be evaluated ex-post by the authorized supervisor. By contrast, hard information, like the balance sheet of a company, can easily be transmitted within hierarchical organizations.

Empirically, many studies show that smaller banks have closer relations to SME customers, which tends to reduce the financial constraints of these customers (Cole et al., 2004; Berger et al., 2005; Uchida et al., 2008; Behr et al., 2013). Furthermore, the relevance of soft information in SME credit underwriting has been proven (Liberti, 2003; Agarwal and Hauswald, 2007; Behr et al., 2013). While these studies focus more on the difference between relatively small and big banks, Alessandrini et al. (2009a, 2010) explicitly approach distance to the authorized supervisors as an explaining variable for SMEs' access to finance. They compute the distance of bank branches to their decision-making headquarters and are able to show that companies in regions with lower distances are less financially constrained. Alessandrini et al. (2009a) conclude that not only the size and hierarchy of banks are relevant to soft information processing, but also distance to the decision-making unit. Other studies approach distance and proximity in SME lending and show that less proximity increases information asymmetry (DeYoung et al., 2008; Mason, 2010; Canales and Nanda, 2012). These findings, however, somewhat contradict Stein's (2002) singular and simple model, as the transmitting capacity of information is not only an attribute of the information itself, but also depends on proximity between sending and receiving units.

The transmitting of even relatively unambiguous information requires a common set of interpretational rules between sender and receiver. Banks tackle this challenge by establishing rules of procedure (e.g. guidelines for entering corporate balances in the computer). With a high degree of proximity it becomes easier to transmit relatively soft information (Klagge and Martin, 2005;

Mason 2010). In finance, different types of proximity can be identified (see Lo, 2003). Geographical proximity, understood as low metric distance, can facilitate information transmission because face-to-face communication becomes easier, trustful relations may emerge more quickly and hidden actions become more difficult to hide. In our understanding, spatial proximity combines the metric consideration (geographical proximity) with the development of close social-economic relations, which emerge at places where people live and work together and may develop a common culture (Gärtner, 2011).

Spatial proximity is probably especially important when other types of proximity are low, as is likely between SMEs and banks, where the SMEs' CEOs may lack business knowledge and the banks may have problems understanding the technological aspects of SME business. However, co-location does not always ease information transfer. For instance, mutual understanding between a SME and Deutsche Bank is not necessarily enhanced by co-location in Frankfurt's Westend as Deutsche Bank may do only international business and management at its headquarters and the SME may engage only in local business.

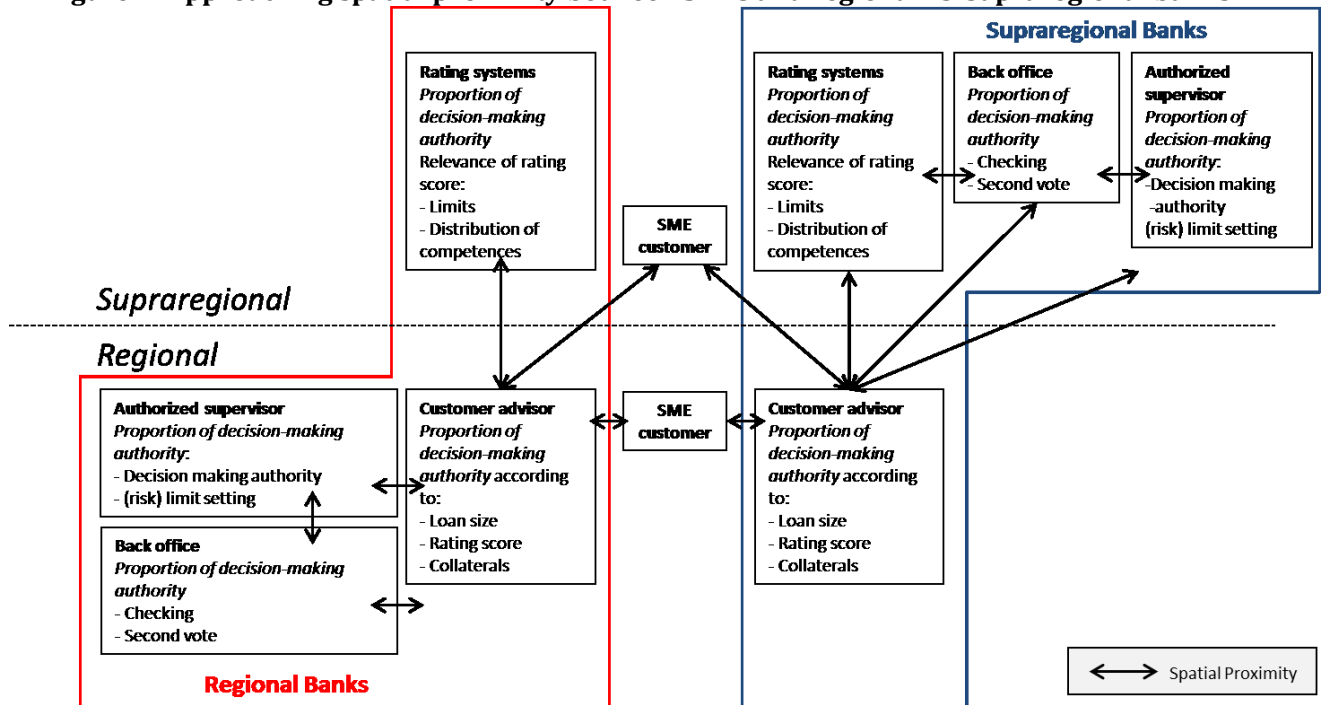
In the literature, two fields of proximity are investigated with regard to SME lending (Alessandrini et al., 2009b): firstly, between customer advisor and supervision authorities within the same bank (Liberti, 2003; Alessandrini et al. 2009a, 2010; Liberti and Mian, 2009), and, secondly, between a company and its bank (Petersen and Rajan, 2002; Berger et al., 2005; Agarwal and Hauswald, 2007). The latter field of investigation is often approached using the concept of relationship banking versus transaction-oriented banking (Boot, 2000; Uzzi and Lancaster, 2003; Udell, 2008; Handke, 2011). Banks and SMEs try to build strong relations in the relationship banking mode and so generate relatively soft information. In contrast, in the transaction-oriented banking mode banks relate to customers only on the basis of relatively hard information and offer standardized products cost efficiently. Banks face the challenge of handling relatively soft information in the relationship banking mode, which can, as discussed above, be solved with high decision-making autonomy at the customer advisor level and/or by high proximity between the banks' units involved in the loan-granting process. In this sense proximity between SMEs and banks depends on both proximity between SME customer and customer advisor, and proximity between the various decision-making units of a bank.

### **Loan-Granting Process and Credit-Rating**

Figure 4 displays schematically the units involved in loan-granting processes. The back office was added to the abovementioned units; here credit checks are administered and second votes for larger/riskier loans are executed, as is mandatory under banking regulations (see MaRisk, 2012: BTO 1.1). Furthermore, the rating systems have been integrated, as discussed below. As Figure 4 shows, the degree of proximity between banks and SMEs depends also on proximity between the decision-making units of banks, weighted by the proportion of decision-making autonomy these units execute. E.g. if a customer advisor has full decision-making autonomy, the proximity between her and her customers determines the place of decision-making; if her author-

ized supervisor decides, proximity between customer advisor and customer plus proximity between customer advisor and authorized supervisor determines proximity (Flögel forthcoming).

**Figure 4: Approaching spatial proximity between SMEs and regional vs. supraregional banks**



Source: Flögel, forthcoming

Supraregional banks can build spatial proximity to their SME customers through an extensive branch network and/or mobility of customer advisors (meetings at the SME site). While it is theoretically possible for supraregional banks to decentralize their back office and supervision units, internal control problems and lack of economies of scale render it very unlikely in practice. It thus appears obvious that place of decision-making in SME lending is relevant and is most likely to differ between regional and supraregional banks. However, as credit-rating systems are commonly implemented in SME lending, it is not clear that regional banks, despite their legal regional independence, always decide with high spatial proximity to their regional customers. The rating system must therefore also be considered in order to determine the place of (credit) decision-making.

In Germany, banks rely on internal rating systems for risk classification in SME lending (Asmusen, 2005). These systems are developed on the basis of hard information, like balance sheet statements and past default rates. Furthermore, less hard information (e.g. management qualifications) is input into rating systems by customer advisors (Altman et al., 2010). Using this information, or more precisely a historical database of this information covering all SME customers, it is possible to compute the probability of default (rating score) and fix this in standardized rating tools. As the development of this kind of empirical rating system is costly and needs large databases, it is unsurprising that in Germany all regional saving banks and all regional cooperative banks have developed and maintain rating systems together (S-Rating and Risikosysteme

GmbH, 2011). It is consequently tricky to determine proximity in decision-making for regional banks, as the rating system must be considered as a decision-making unit among the other units, one not necessarily within close proximity to customers (Figure 4).

Placing the credit decision between customer advisor and centralized rating systems depends on at least two factors. Firstly, and probably most importantly, how much does the rating score determine the credit decision? We can approach this as the proportion of decision-making authority dedicated to the rating. Secondly, what is the relatively soft information in the credit-rating system and how important is it? We may approach this as proximity between customer advisor and rating system, thus addressing the question of how easily relatively soft information can be input into the system and how much this information counts in the rating process. It is thus possible to approach the rating systems much as other (human) decision-making units are approached, and compose the proximity for different banks in the credit-decision process (Figure 4).

### **Empirical Results**

Empirically speaking, it is rather difficult to assess the degree of spatial proximity between SME customers and banks, as the decision-making process of every bank must be observed in detail. In different research projects we undertook this for three regional (savings banks) and one supraregional bank (big bank). So far we have conducted interviews with 3-5 different decision-makers in each bank. In addition, participant observation was conducted in one regional bank for two months (as a full-time internship). The research indicates that both bank types try to connect to their customers by using the relationship banking mode, whereby big banks may compensate for their more distant branch network with higher mobility of customer advisors. Both bank types link formal decision-making authority at customer advisor and supervisor level to the rating score. Thereby, supraregional banks delegate higher decision-making authority to customer advisor level, yet execute a stronger cut-off for SMEs with very poor rating scores and undesired sectors. The customer advisors of the savings banks examined have to involve their supervisors and CEOs relatively often for larger and/or riskier loans due to a lack of decision-making autonomy. However, as spatial proximity between the hierarchical levels is high and supervisors/CEOs know the customer advisors and some customers personally, soft information is considered reliable in the decision-making process. In fact, in one of the savings banks investigated the rating score was mainly relevant for pricing. The credit decision itself was based on extensive examination of customers on the basis of all hard and soft information available. It can be concluded that spatial proximity between the decision-making units of the supraregional banks analyzed is lower compared to the regional banks. SMEs with relatively poor rating scores therefore presumably access loans more easily from regional banks. However, if the rating score is sound SMEs may enjoy quicker credit decisions at supraregional banks (Flögel, forthcoming).

Our qualitative study is limited in scope as few banks have been investigated due to the extensive nature of the method. It can thus only be applied selectively on a cross-country basis. As a quantitative proxy for spatial proximity the spatial concentration index can be utilized (Section 3), as it can be assumed that banking groups whose employees are evenly distributed decide with

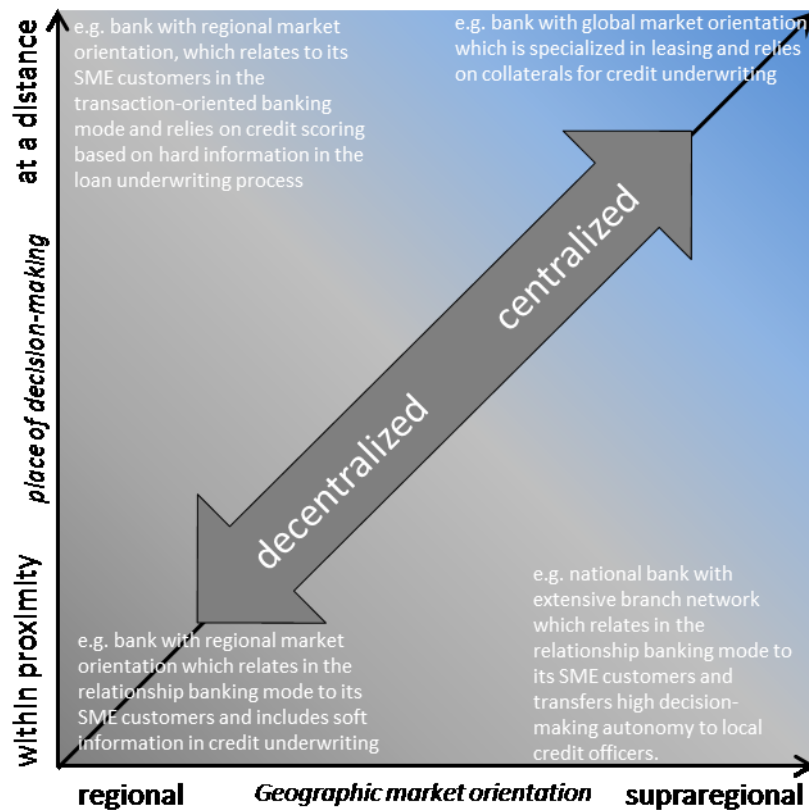
higher spatial proximity to their customers. In general, we see the need for qualitative and quantitative research in order to understand the relevance of place (of decision-making) in SME lending. Qualitative methods are needed to understand the objects of spatial proximity and identify areas where differences between bank types exist. Quantitative methods are needed for generalization and impact assessment on SME finance.

## **6. Decentralized versus Centralized Banking Systems**

In order to identify whether banking systems are rather decentralized or centralized, both characteristics (Section 4 and 5) are needed. We define decentralized banks as those that have a regional market orientation and decide within spatial proximity to their regional customers. In contrast, centralized banks operate (often with a few locations) in supraregional market areas and decide with low spatial proximity to their customers. The sum of all banks of a territory then determines whether it is a rather decentralized or centralized banking system. More decentralized (national) banking systems are therefore characterized by a high number of decentralized banks. Germany can be considered as representative of such a banking system. More centralized (national) banking systems are characterized by the high number and importance of centralized banks. The UK with its many internationally oriented banks could be seen as a typical centralized banking system.

In Figure 5 the relation of the two characteristics is illustrated, yielding four theoretical cases. At one extreme, banks operate within supraregional market areas and decide at a distance to SME customers (Figure 5, top-right). At the other extreme, banks operate in a regionally bounded market area and decide within spatial proximity to their SME customers (Figure 5, bottom-left). Both fully decentralized and fully centralized banking is presumably rare in practice, as for example banking regulations demand credit rating in SME lending. Hence, a classification of national banking systems should determine the degree of decentralization or centralization, wherefore it is illustrative to consider the two other theoretical cases. On the one hand, banks may operate regionally but relate to SME customers only in the transaction-oriented banking mode. This is, for example, the case if banks rely only on a credit-rating system which computes hard information for decision-making. On the other hand, banks can operate supraregionally but decide within spatial proximity to SME customers. A nationwide bank which allocates full decision-making autonomy to its customer advisors is one theoretical example, although unlikely in practice due to banking regulations.

**Figure 5: Decentralized versus centralized banking**



Source: translated from Gärtner and Flögel (2013)

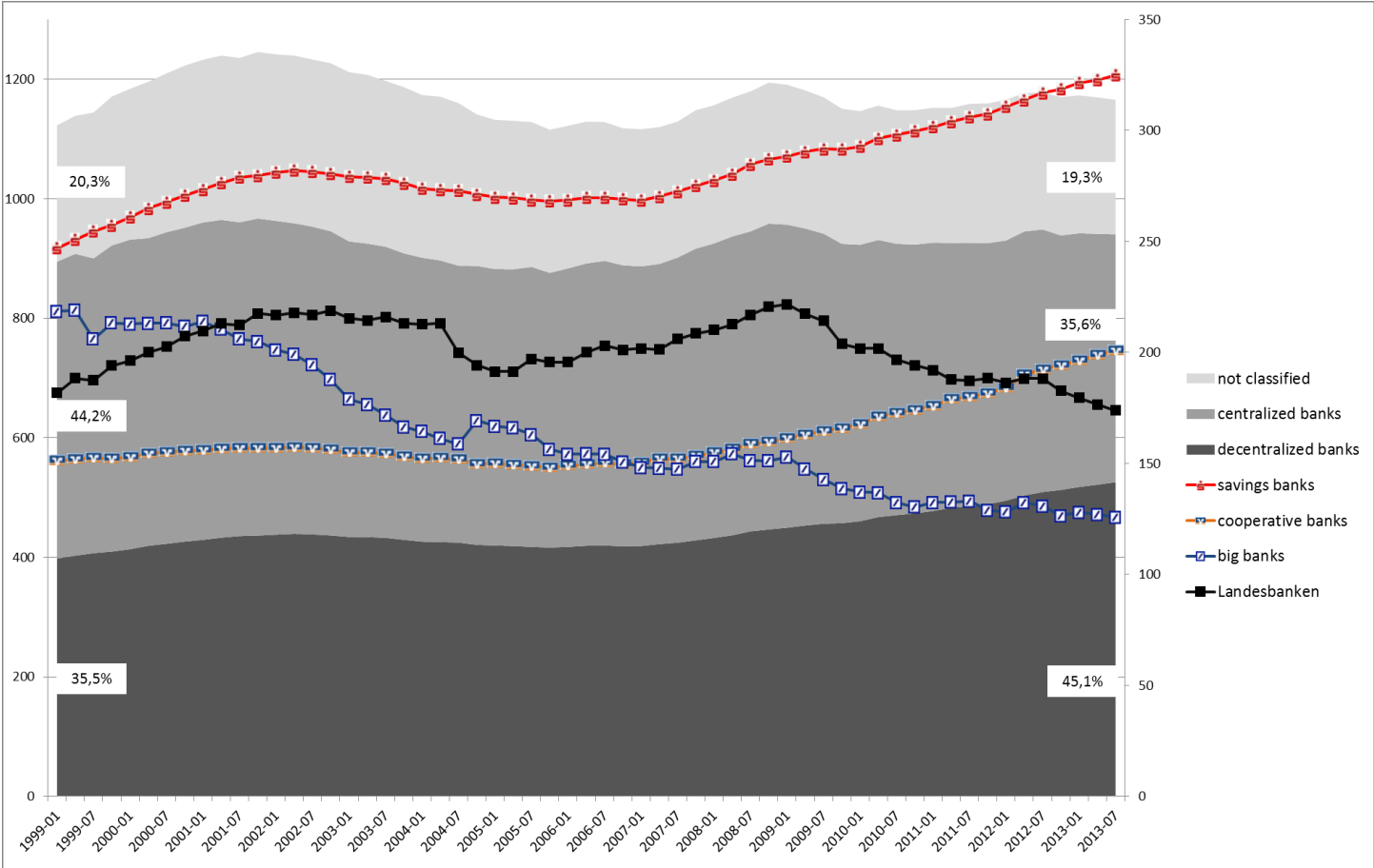
We applied the elaborated spatial classification to the German banking groups in order to compare the corporate lending behaviour of decentralized and centralized banks (Figure 6). Savings and cooperative banks are grouped as quite decentralized as the majority of their business is conducted regionally and they decide with high spatial proximity to their SME customers (Sections 4 and 5). Big banks, branches of foreign banks, *Landesbanken*, central institutes of cooperative banks and special-purpose banks can be classified as rather centralized as their market orientation is clearly supraregional and some decision-making units are centralized. Figure 6 shows that decentralized banks handed out 526 billion euro in credit to the German economy (firms and self-employed) in 07.2013 and claimed a market share of 45.1%. In the same month centralized banks handed out credits of 415 billion euro, which represents a market share of 35.6%<sup>5</sup>. In 1999, centralized banks claimed a market share of 44.2% and decentralized banks accounted for 35.5%, so a strong increase in the market share of decentralized banks can be observed. Total credit to firms and the self-employed increased by 43 billion euro between 1999 and 2013, whereby a strong decrease in credit can be observed from 2001 to about 2005, explained by the implementation of Basel II regulation, among other reasons (e.g. the dot.com crisis). In comparison the drop in lending during the financial crisis was relatively low. However, strong differences between the banking groups can be observed during the financial crisis. The crisis hardly affected the lending policy of decentralized banks, with savings and cooperative

<sup>5</sup> Two banking groups, which account for about 20% of loans, could not be classified because they include both bank types.



banks increasing their lending to the economy almost constantly. Simultaneously, centralized banks dropped lending significantly, both the privately owned big banks and the publically owned *Landesbanken*. With their counter-cyclical credit expansion, the decentralized banks may have prevented a credit crunch and reduced the impact of the global economic crisis in Germany.

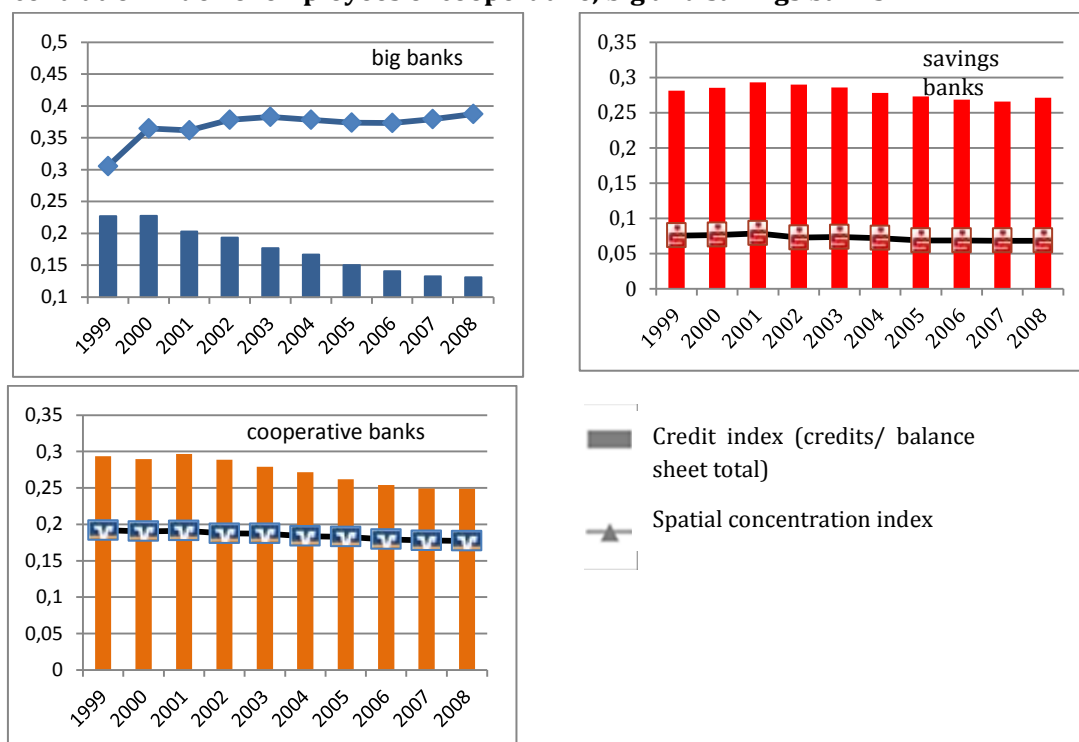
**Figure 6: Credits to firms and the self-employed in billion euro (omitting credit to MFI and insurances)**



Source: German Central Bank; own illustration

The fact that a varying degree of spatial proximity could be responsible for different types of business can be seen in Figure 7, which shows the development of employees' spatial concentration compared to credit granted to companies and the self-employed, in relation to total balance sheets of credit, savings and cooperative banks in Germany. A negative correlation between concentration and lending activities is obvious. The more concentrated bank group's employees, the less the group is involved in lending to companies. Furthermore, the big banks display an increasingly apparent gap (Figure 7, top-left): while the spatial concentration of the credit banks increased, their loan portfolio related to balance sheet decreased. Due to an increase in the balance sheet, the lending activities as ratio-value decreased for all banking groups, but comparatively less for the cooperative banks (Figure 7, bottom-left), and hardly at all for savings banks.

**Figure 7: Credits to firms and the self-employed related to balance sheet total and spatial concentration index of employees of cooperative, big and savings banks.**



Source: Federal Labour Office and German Central Bank; own calculation

## 7. Conclusion and Outlook

In light of the global financial crisis, discussion about too much finance and reasons for diversity in banking, it is important to systematically analyze the structure of financial systems on a cross-country basis. Here the established classification into bank- and market-based systems appears insufficient. New research underlines the importance of financial systems' spatial organization and identifies beneficial aspects of regional banks, especially for SME finance. Against this background a cross-country comparison of financial systems from a spatial perspective is worthwhile. We developed a classification to identify decentralized and centralized banks and banking systems, on the basis of Germany, using two characteristics: geographical market orientation (regional vs. supraregional) – to determine whether banks facilitate regional-savings investment cycles – and the place of decision-making (proximity vs. distance) – to identify whether the flow of soft information is supported in lending.

For Germany, we have empirically demonstrated that the savings and cooperative banks are rather decentralized. This is due to their regional delimitations, leading to a regional market orientation that can be captured by analyzing their balance sheets. An alternative variable which appeared to reflect these regional delimitations is the spatial concentration index of employees, computed using labour office data. Employees of savings and cooperative banks are far more evenly distributed across space than employees of credit banks. However, the geographical market orientation alone is not sufficient to determine the centralization of banks because credit decisions by German savings and cooperative banks are not only made regionally, despite their regional inde-

pendence, due to the application of centralized credit-rating systems. We therefore developed an approach which helps to assess spatial proximity between SME customers and banks by considering all relevant decision-making units within banks. Our preliminary qualitative empirical work indicates that savings banks show high proximity because of spatial proximity between their various decision-making units. Decision-making autonomy at customer advisor level was actually lower at the savings banks than at the big bank analyzed. However, the big bank executes stricter cut-offs depending on rating scores. The spatial distribution of employees might again be suitable to proxy the place of decision-making because a high index value may indicate banks' centralization of back offices and supervisor units.

On the corporate credit market the empirically developed classification shows remarkable explanatory power for German banking groups. Decentralized banking groups increase lending at the expense of centralized banking groups. However, the picture obtained by considering the legal form of the banking groups was not comparably clear. This finding indicates that the spatial classification of banking according to the two proposed characteristics may be of relevance.

To take forward the spatial classification on a cross-country basis research at different levels and multidisciplinary cooperation would be valuable. At the macro-level cross-country comparison should be applied by descriptive and econometric means. Thereby the spatial concentration index, as demonstrated for Germany, can be a promising variable to proxy the spatial organization of banking systems, among other variables. However, due to data availability and issues of comparability, in many countries applying this index is not straightforward and requires care. At the meso-level we therefore see a need for more in-depth study of the spatiality of banking systems, taking into consideration distinctive features of national banking and financial systems. At a micro-level several studies have enhanced our understanding of the spatiality of SME finance. These findings are one key argument supporting analysis of the spatiality of banking on a cross-country basis. Yet, the research field of small firm finance is far from settled, as contradicting empirical results indicate (e.g. Canales and Nanda, 2012). The interlinking of SME finance studies to cross-country comparison could contribute to both research traditions, as contradicting results on SME finance may be explained by distinctive features of national banking systems (context matters). Furthermore, as shown by the complexity of determining the place of decision-making in temporary banking due to credit rating and banking regulation, qualitative enquiries are also needed to understand banking in a changing world.

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