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**COMMUNITY DEVELOPMENT VENTURE CAPITAL:  
CONCEPT AND STATUS QUO IN GERMANY**

**Version: February 2008**

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**WORKING PAPER SERIES**



**Center for Entrepreneurial and  
Financial Studies**



**COMMUNITY DEVELOPMENT VENTURE CAPITAL:  
CONCEPT AND STATUS QUO IN GERMANY**

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# **COMMUNITY DEVELOPMENT VENTURE CAPITAL: CONCEPT AND STATUS QUO IN GERMANY**

## **Abstract**

As most other countries, Germany also faces dramatic regional differences in terms of socio-economic development. One important driver of such development is the existence of a healthy entrepreneurial activity and the creation of new companies. We argue that venture capital (VC) and especially community development venture capital (CDVC) can be a powerful instrument to stimulate entrepreneurship and to support the growth of ambitious companies. Hence, the present paper deals with the general questions, whether there are regional gaps in the supply of VC in Germany? Whether these regional gaps do geographically correspond to the most deprived areas in Germany, and which kind of VC companies are currently in place in order to close potential regional gaps? Geographically, we find that the north-eastern part of Germany is far more deprived than the rest of the country, but is relatively well supplied with VC. Nevertheless, the primary potential target area for CDVC activities in the country is the federal state of Brandenburg in this area. Our assessment of German players in the VC market reveals that some public VC companies do investments similar to CDVC. However, these companies do not offer real hands-on support for entrepreneurs, and real CDVC engagement in the country is yet to come.

**JEL classification:** G24; O16

**Keywords:** regional development, community development venture capital, regional equity gap

## ***1. Introduction***

Economies around the globe experience asymmetric levels of economic and social development within their boundaries. Similarly, some areas in Germany are seriously less developed than others. Apparently, it is a central goal of economic policy to help underdeveloped areas to overcome their problems. Since there are many possible reasons for these disparities, politicians and researchers face the difficult task to find efficient and sustainable levers to foster economic development in affected regions (Armstrong and Taylor, 2000).

According to one line of reasoning, the supply of appropriate capital can help to nurture regional entrepreneurial activity (Harding, 2000). Consequently, the provision of venture capital to entrepreneurial individuals or enterprises could have a positive impact on the level of development through an increased number of successful start-ups and innovations (Murray, 1998). If venture capital is not only invested to yield financial returns, but also purposely to realize social benefits, e.g. economic development of a defined region, it is called community development venture capital (Achleitner, 2008). In a German context, there is hardly any literature addressing this special aspect of venture capital. Thus, the present paper aims at introducing this concept as a tool for policy-makers on the one hand and a potential business model for venture capital managers on the other. Further, it is an exploratory attempt to sketch the status quo concerning community development venture capital in Germany.

We start by outlining the current situation of economic and social development in Germany based on a comprehensive ranking recently conducted for the entire country on the level of its 439 districts in chapter 2. Then, it is argued in chapter 3 that regional levels of economic development and deprivation might correlate with the regional availability of appropriate venture capital. This leads us to chapter 4 and the concept of community development venture capital that unifies the pursuit of financial and social goals simultaneously, thereby representing an interesting point of departure for attempts to foster economic development. Subsequently, in chapter 5 the German venture capital market is briefly characterized and community development venture capital-relevant particularities as well as market players are extracted. It is then argued in chapter 6 that this concept can best unfold its impact in regions that are not well supplied with venture capital. Therefore, potential regional venture capital deficiencies in Germany are identified by location quotients of regional venture capital

activity and demand. These are calculated on the level of federal states, the most granular unit of analysis for which data is currently available. Findings on possible regional equity gaps and deprived regions are then presented in chapter 7 that passes into a conclusion and a brief discussion of implications as well as possible future research in chapters 8 and 9 respectively.

## ***2. Regional Disparities in Germany***

Even well developed economies like Germany exhibit significant disparities in regional development. Recently, an empirical investigation of the regions' ability to cope with future economic challenges called "Zukunftsatlas 2007" has revealed strong regional disparities concerning the level of prosperity and economic power in Germany (Prognos AG, 2007). In the following paragraphs the nation's current socio-economic situation is outlined on the level of its federal states. This analysis will also serve as fundament for the identification of possible target areas for CDVC in Germany later on.

To start with, Germany comprises 16 federal states ("Länder"), which are, again, built up by a total of 439 districts ("Kreise") and independent cities ("kreisfreie Städte").<sup>1</sup> The study of regional development we will refer to, the "Zukunftsatlas 2007", ranked all these 439 German districts according to 29 macro- and socio-economic indicators in the dimension of demography, prosperity and social aspects, labor market, as well as competition and innovation (Prognos AG, 2007). We have used the Zukunftsatlas as an indicator because of several reasons: to our knowledge, there is no universally accepted indicator for socio-economic deprivation in Germany. Particularly problematic is the fact that such a construct is usually made up by several dimensions. Putting an emphasis on one of these dimensions results in a different picture of regional development. Hence, we intentionally chose the Zukunftsatlas as a general indicator.

The present study analyzes CDVC on the level of federal states. Since the size of the states, and for this reason also the number of districts in each state, significantly differs, our general assessment of regional deprivation is based on a relative indicator – each state's share of

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<sup>1</sup> According to the Nomenclature of Territorial Units for Statistics (NUTS) issued by the European Union, federal states are NUTS 1 level regions, while districts and independent cities belong to the NUTS 3 category.

districts in the nation's bottom quartile in the *Zukunftsatlas 2007* ranking.<sup>2</sup> For evaluating regional development, districts' rankings in this study were taken as proxies for relative regional development instead of index points, which have no explanatory power per se. Implicitly, this underlines the relative nature of regional development or deprivation in a national context. However, this proceeding leads to another question: which relative position in such a national ranking signals a state of underdevelopment? We solved this problem by assuming that the last quartile of regions in this regional ranking can be regarded as relatively backward.<sup>3</sup>

More precisely, in order to determine each federal state's level of socio-economic deprivation, we have first calculated the percentage of districts in each state falling into the nation's quartile of most deprived districts according to the ranking of the *Zukunftsatlas 2007* (see table in figure 1). For example, 83.3% of Mecklenburg-Western Pomerania's districts belong to the 25% most deprived districts in Germany. Secondly, in order to obtain a better sense of the socio-economic level of deprivation, we have averaged a state's districts rankings in the *Zukunftsatlas 2007* (see table in figure 1). The higher the arithmetic mean, the more deprived is a state. Correspondingly, the indication in parenthesis specifies the state's relative national ranking on this basis. According to this indication, the most deprived state of the 16 German Länder is Mecklenburg-Western Pomerania in the north-east with an average ranking of its districts among the nation's total 439 of 373.

Being interested in the country's socio-economically most deprived states; we further marked the nation's most deprived states in figure 1. As a first step, it makes sense to divide between the western and the north-eastern part of the country.<sup>4</sup> The federal states belonging to the latter region are marked in the table on the left side as well as the map on the right side of figure 1.

--- Insert figure 1 here ---

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<sup>2</sup> Such a relative measure of regional deprivation is also used in a study of the British Office of the Deputy Prime Minister (2004) for assessing England.

<sup>3</sup> Alternative thresholds have been tried but do not deliver any significantly different picture.

<sup>4</sup> Exceptions are the federal states of Saarland and Berlin.

Figure 1 points out that the nation's currently socio-economically most deprived and backward part is its north-east. It is this region comprising Mecklenburg-Western Pomerania, Saxony-Anhalt, Thuringia, Saxony, and Brandenburg that is far more deprived than the rest of the country. All these states have an average ranking of their districts in the bottom quartile ( $\geq 331$ ) and /or at least two third ( $\geq 66.7\%$ ) of their districts belong to the least developed 25% in the country. In fact, this result is barely surprising considering this area is exactly congruent with the territory of the former socialist German Democratic Republic, whose existence came to an end in 1990 with the German reunification. In the present work we will refer to these states as the "new Länder".<sup>5</sup> These states still lag behind the economic development and level of prosperity compared to those of the former Federal Republic of Germany (FRG). The federal states within this western area are here named "old Länder". In this latter region, only the two states of Bremen and Saarland are facing problems in terms of low average positions. Least deprived in terms of low percentage of districts in the bottom quartile of the Zukunftsranking and relatively low average ranking are Hamburg, Baden-Württemberg, and Bavaria.

The potential reasons for these differences are manifold and reach from demographic issues, various historical backgrounds to differences in the industrial structure (Armstrong and Taylor, 2000). It is often argued that entrepreneurial activity can play a significant role in causing economic growth and job creation (e.g. Fritsch and Müller, 2006). Entrepreneurs are responsible for changes in economic structures and, thus, are very important engines of economic growth (Baron, 1998; Hayek, 1945; Timmons, 1990). Such changes through innovation and start-ups induce a variety of consequences, which are controversially discussed, but are usually said to be positive for public welfare (Fritsch, 2007; Koch, 2001). First and foremost they cause market selection processes in an economic system that are said to have a (mainly indirect) positive impact on employment (Acs and Armington, 2004; Fritsch, 2007; Fritsch and Weyh, 2004). Hence, the competitiveness of economic systems and enterprises is heavily dependent on the ability to produce innovations and nourish start-ups (Cantner et al., 2003; Drewello and Wurzel, 2002).

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<sup>5</sup> Please note that Berlin is terminologically treated as one of the new Länder due to its geographical location in the east of the country. However, West Berlin has been part of the Federal Republic of Germany.



### ***3. Venture Capital as Driver of Regional Development***

In order to create a venture or introduce an innovation, young as well as small and medium enterprises face many challenges. One of the most important issues is to get access to appropriate forms of financing (Harding, 2000). The supply of appropriate capital for realizing new ideas is often a bottleneck for companies (Engel, 2003). Potentials and inherent risks of innovations and new ideas can hardly be evaluated and rated. Therefore, in many cases financiers are only willing to invest on extremely restrictive conditions or simply refuse to inject capital into such projects (Dahlstrand and Cetindamar, 2000). In addition, the minimum investment volume required by investors is increasing, which results in financing problems for smaller projects. The reasons are relatively fixed costs of investment such as conducting a due diligence and structuring a deal. This leads to higher expected returns for larger investments (Harding, 2000), and results in an undersupply of money for small entrepreneurial ventures.

Given that – as stated before – these economic agents and enterprises are drivers of growth and employment, this situation does not represent an overall optimum and could be interpreted, from a public perspective, as a partial market failure (Möckel, 2005). Consequently, providing start-ups and innovative companies with access to adequate financial resources is a central element of economic policy (Da Rin et al., 2005; European Commission, 2003; OECD, 2001). It is argued that an efficient and flexible supply of money for innovation and start-ups can be an important tool for the development of sectors and regions (Murray, 1998). The underlying assumption is that by providing needed capital to small business owners, new enterprises can be created, more jobs generated, and a stronger economic base for local residents can be built (Jegen, 1998).

Due to the given imponderability for financiers investing in innovation and start-ups, equity is the most important, and sometimes the only available, source of finance. Equity or near equity capital, such as convertible loans or warrants, that is provided to young, small or growing businesses is called venture capital (VC) (Benjamin et al., 2004). Accordingly, VC companies make long-term investments in private enterprises in return for an equity stake (Harding, 2000). In the present work the term of VC refers to money invested in enterprises in early or

expansion stage. Following the definition of the German Private Equity and Venture Capital Association (BVK) early stage consists of seed and start-up financing (BVK, 2007c).<sup>6</sup>

Following the argumentation given above, large amounts of public money were poured into VC and similar forms, indicating the conviction that VC can promote economic growth and create jobs (Jeng and Wells, 2000). Among these efforts, some public institutions have explicitly tried to respond to the above mentioned undersupply of risk capital in order to overcome regional disparities (Murray, 1998). Certain regions seem to have severe problems to attract sufficient VC. VC companies as well as their investments are highly concentrated in some regions (Fritsch and Schilder, 2006a, 2006b; Martin et al., 2005).

Different possible reasons can be found to explain this. However, the central argument that is brought up here is that spatial proximity between the VC company and the portfolio company is assumed to be highly important. Many VC companies have strong regional networks that generate a regional deal flow and ease the execution of due diligence. These processes are facilitated through face-to-face contacts as well as exchanging information and know-how within small distances. Moreover, after a deal has been closed hands-on support very often requires spatial proximity in order to enable a VC company to provide support and to monitor actions undertaken by the entrepreneur (Lerner, 1995; Sorenson and Stuart, 2001). Theoretically, perceived risks as well as transaction, agency and information costs increase the further the distance to the portfolio company (Martin et al., 2005). Hence, VC companies' behavior to reduce these costs and risks by investing in targets that are located closely is rational.

This hypothesized importance of spatial proximity has been supported by different international empirical studies, arguing that VC companies predominantly invest in nearby targets (Powell et al., 2002; Sorenson and Stuart, 2001; Cumming and Johan, 2006). However, in the case of Germany the question of regional VC gaps created by a concentration of the VC industry in only few clusters is not completely answered yet. For instance, Fritsch and Schilder (2006a, 2006b) investigated the relevance of spatial proximity between VC

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<sup>6</sup> Replacement, turnaround and bridge will be included in expansion stage later on since our data does not allow for a distinction between expansion and these investment stages on a regional basis. However, these stages only account for relatively small volumes and numbers in the German market.

companies and their portfolio companies. They found no support for regional gaps in the supply of VC in Germany.

However, in the present paper we adopt the position that the concentration of German VC companies in only few major cities together with a potential investors' regional bias could result in regional gaps in the supply of VC (see also Martin et al., 2005). According to Martin et al., 2005 more than 65% of German VC companies' head offices have been located in only six urban centers.<sup>7</sup> This situation is not likely to have changed considerably in recent years and could lead to difficulties in raising VC in some regions like Thuringia, the south of Saxony-Anhalt and Saxony as well as the north of Mecklenburg-Western Pomerania.

In addition, it can be assumed that the importance of spatial proximity between an investor and a portfolio company differs among deals. For instance, it could be argued that companies in an earlier phase of development are exposed to a higher risk of failure and need more management support by the VC company. This could lead to a higher importance of spatial proximity between investor and portfolio company (Sorenson and Stuart, 2001). Hence, there could be some regional VC gaps, which are especially severe for certain VC and portfolio companies.

This, in turn, might inhibit economic development in these areas and finally could be one explanation for socio-economic deprivation. A possible measure to mitigate such underdevelopment through the supply of appropriate money to entrepreneurs is community development venture capital (CDVC).

#### ***4. The Concept of Community Development Venture Capital***

The term “community development venture capital” (CDVC) refers to the use of VC to finance businesses in order to create financial returns for investors as well as social returns (Jegen, 1998). In other words, capital in the form of equity and near-equity investments as well as a wide range of management support is provided to certain companies with the explicit intention to reach some of various possible social goals. Although these social goals are elementary for the concept of CDVC, venture capital companies (VCs) need to yield a

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<sup>7</sup> Munich (37 VCs), Frankfurt (35 VCs), Hamburg (20 VCs), Berlin-Potsdam (20 VCs), Düsseldorf (17 VCs) and Hannover (11 VCs).

profit to investors in order to stay in business. Consequently, also CDVC companies seek to invest in businesses that have great ideas, outstanding management teams, and a strong growth potential. Being traditional VC from that perspective also implies that CDVC companies offer their portfolio companies active strategic and operational support. Because of their hybrid nature, looking for profit and social opportunities, CDVC companies are said to pursue a “double bottom line” approach (Rubin, 2001; Tesdell and Rubin, 1998).

The targeted social returns can be manifold. Many community development venture capital companies (CDVCs) intend to create high value jobs, entrepreneurial capability and wealth to benefit low-income socio-economic groups and the economies of distressed communities. Others support environmentally friendly products, sustainable management practices, or minority owned businesses (Jegen, 1998). Apparently, apart from the double bottom line the concept of CDVC is quite broad and such companies differ among various dimensions. Some of these dimensions are social goals, degree of profit orientation, incorporation as profit or non-profit organization, degree of government involvement or focused investment stages, deal sizes and industries (Achleitner, 2008). However, this variety should not mislead over the fact that CDVC is a relatively young concept. Although some US CDVC companies were already initiated in the 1970s, the issue gained momentum as recent as in the 1990s (Rubin, 2001).

Being a young and innovative concept, CDVC is assigned to so-called non-traditional VC. Due to CDVC companies specific approach they differ from traditional suppliers of equity capital among certain dimensions: The double bottom line approach usually leads to a lower degree of profit orientation and the acceptance of moderate growth rates of their portfolio companies if these have the potential to create social benefits like significant job creation (Benjamin, et al. 2004). This results in CDVCs operating in different regions than traditional VCs, in which only moderate returns are expected to be realised and are therefore ignored by traditional investors. In addition, their deal sizes and fund volumes tend to be smaller and their portfolio’s industry mix is typically more diversified compared to traditional VCs (Rubin, 2001). This leads to major challenges for the CDVC industry, particularly in raising capital and reaching scale, in attracting experienced talent, and coping with high costs of operation (Tesdell and Rubin, 1998).

For reasons of manageability, the heterogeneity of what is termed CDVC obliged us to narrow down our definition for the present investigation. As described above, regional disparities of

economic development still represent a central problem for Germany that should be tackled. Hence, within the present work we focus on CDVC companies aiming to promote economic development of specific deprived regions. We therefore apply a constricted definition of CDVC that only includes the social goal of fighting socio-economic deprivation by fostering economic development. This can be done in multiple ways, but is mostly pursued by providing capital and support to businesses which are creating new employment opportunities and innovations in underdeveloped regions. Hence, the two central features of CDVC companies in our understanding are (1) having economic development as a goal and (2) operating with a regional focus.

In Germany, CDVC is still rather unknown and there is hardly any experience or scientific literature on the issue, even though the general topic is up-to-date: As has been already argued, entrepreneurs and innovation are central success factors of economies because they induce growth and create employment. Therefore, they are highly welcome and policy-makers have introduced various ways of fostering economic development via this lever. However, a core problem for entrepreneurs and innovative companies is obtaining appropriate forms of financing. Thus, considerable amounts of public money have been spent to support entrepreneurship and innovation through numerous channels. We opine that CDVC can be a highly effective and efficient tool in fostering economic development by adding the financial perspective, i.e. CDVC companies' unconditional need to make a profit. From a policy-maker's perspective, the concept of CDVC could be a very attractive starting point for promoting economic development. CDVC companies do not only invest socially-driven but also aim at earning profits. Thus, public money invested into CDVC in order to foster economic development with a double-bottom line approach will presumably be spent efficiently and sustainably.

Consequently, in the next part of the present study we will take a look at the status quo and potential starting points of CDVC in Germany. We will start by taking a look at the German VC market and several market players already pursuing a business model equal or similar to CDVC. Then, we address the questions whether there are regional gaps in the supply of VC in Germany, and whether these regional gaps geographically correspond to the most deprived areas in Germany.

## **5. *The German VC Market and CDVC-relevant Particularities***

Related to its GDP, the German VC market is relatively small compared to other economies such as the US or the UK. Eminently early stage VC investments are at the lower end compared to these countries (Rammer, 2007; EVCA, 2007). We argue here that the main reason can not be found in a deficiency of potential investment objects, that is start-ups and growing companies, but in disadvantageous VC conditions. Several studies revealed disadvantageous conditions concerning several dimensions like the tax, legal and political environment for private equity and venture capital in Germany (Apax Partners, 2007; EVCA, 2007; Kaserer et al., 2007). Hence, it is not surprising that the German VC market is traditionally characterised by a high importance of the public sector. Although their share has decreased recently, government institutions as investors in VC funds or as public VC companies are still quite influential (EVCA, 2007 and earlier).

Related to the topic of the present paper, none of the pre-existing classifications describing VCs (e.g. Achleitner et al., 2006; Bredeck, 2002; Engel, 2003; Schertler, 2001) differentiates sufficiently among CDVC-relevant companies. Therefore, a more detailed classification of the German VC market accounting for CDVC-relevant particularities has been developed here. Starting point for a screening of the German market was the members list of the BVK (BVK, 2007a). In order to identify those members that bear a reference to CDVC, we draw on the definition set before: CDVC companies consider (1) economic development as a goal and have a (2) regional focus in which they operate.

As far as our analysis showed, private VC companies in Germany do not seem to invest according to the criteria we applied for CDVC. They have no explicit intention to promote economic development. However, as indicated before the German VC market has a relatively large share of (quasi-)public money. Such money is invested to induce growth and increase welfare. Within this (quasi-public) segment, we have identified four types of VC companies that are of relevance because they are also likely to have a regional focus:

To begin with, (1) *Mittelständische Beteiligungsgesellschaften* (MBG) are regional development agencies founded by private actors and public banks. Each German federal state runs one MBG (only the states of Berlin and the surrounding Brandenburg have a joint one). MBGs differ from (2) subsidiaries of institutions promoting economic development in that the

latter's major shareholders are mostly public promotional banks (Förderbanken) or non-profit associations. Less influenced by public money but acting similar to public institutions in terms of regional development are (3) subsidiaries of savings banks and, infrequently, cooperative banks. Their major shareholders are regional savings banks (Sparkassen) or cooperative banks (Raiffeisenbanken and Volksbanken). Similarly, we classify (4) subsidiaries of state banks and cooperative central institutes, owned by state banks (Landesbanken) or central institutes of cooperative banks, in this group of CDVC-relevant market players.

Because of their behavior and shareholder structure the latter two types of VC companies are regarded as quasi-public. Many subsidiaries of savings banks do have regional economic development as an objective accruing from their regional field of operation, strong regional links and a long term business relationship orientation of their mother institutions. This behavior also applies to subsidiaries of state banks and cooperative central institutes since savings banks, public institutions as well as local cooperative banks, which only operate within a certain region, are major shareholders of the VCs' mother institutions. However, a transition to a stronger concentration on financial returns can be acknowledged within the latter group.

Since investment volumes and number of portfolio companies are not available for individual German VC companies, market shares cannot easily be calculated. However, a first impression of the importance of this group of (quasi-)public VC companies featuring some CDVC characteristics can be obtained by considering their number in relation to the number of members in the BVK. In June 2007 the association had 185 members altogether, of which the four types of institutions mentioned above represent 31% (57 members).<sup>8</sup>

All these companies meet our first criteria – fostering economic development – to some extent but it has not been accounted for our second criteria yet. In order to check whether they have a regional focus, we reviewed the companies' regional preferences as shown in the BVK website (BVK, 2007b). A VC company was considered to have a regional focus if it limits its

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<sup>8</sup> The subgroups within this group of 57 (31%) are: 15 MBGs (8% of overall total), 9 subsidiaries of institutions promoting economic development (5%), 16 subsidiaries of savings banks (9%), and 16 subsidiaries of state banks and cooperative central institutes (9%). The High-Tech Gründerfonds is not considered here since it does not fall into one of the named categories.

operations to a specific area within Germany. This lavish procedure revealed that 39 of these 57 VC companies do have an explicit regional focus in doing their business.<sup>9</sup> This leads to a final share of CDVC-relevant VC companies in Germany by number of 21%, concerning both criteria.

To further characterize the potentially CDVC-relevant types of VC companies identified above an existing dataset from a previous study conducted for the KfW-Bankengruppe was reanalyzed (Achleitner et al., 2006). In the course of this study 177 VC companies, which are members of the BVK, have been asked to complete a questionnaire concerning their characteristics and investment preferences in September 2005. Due to the support of the BVK a very high response rate of 47% has been achieved.

However, for the purpose of the present paper this available data on general VC investments in Germany was filtered, rearranged, and regrouped in order to identify relevant market segments that can be characterized as CDVC. This allowed for analyzing VC companies assigned to this segment among several dimensions. These dimensions are their respective stage focus, used financial instruments, extend of hands-on management, investments per investment professional, as well as specific investment requirements (see figure 2).

--- Insert figure 2 here ---

The focus of the different (quasi-)public VC companies on the investment stage shows a heterogeneous picture.<sup>10</sup> The study suggests that the majority of MBGs clearly focuses on later stage deals while subsidiaries of institutions promoting economic development are either specialized on early stage investments or do not have any obvious preference. The majority of subsidiaries of savings banks focuses on later stage deals or does not show any preference.

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<sup>9</sup> All of the MBGs and the subsidiaries of institutions promoting economic development, 13 of the 16 (81%) subsidiaries of savings banks but only 2 of the 16 (13%) subsidiaries of state banks and cooperative central institutes have a regional focus.

<sup>10</sup> A VC company was said to have an early stage focus if more than 70% of their 2002-2004 investment volume were seed and start-up transactions. Analogical a VC company was said to have a later stage focus if more than 70% of their 2002-2004 investment volume were expansion, buyouts, public-to-private, or pipe transactions.



There are only few VCs in this group focusing on early stage deals. The majority of subsidiaries of state banks and cooperative central institutes has no stage focus, while the remaining share specializes on later stage deals.

VC companies participating in the survey reported to use a wide range of financial instruments. In general MBGs and subsidiaries of savings banks predominantly invest in the form of silent partnerships whereas subsidiaries of savings banks also frequently invest directly. Subsidiaries of institutions promoting economic development as well as subsidiaries of state banks and cooperative central institutes seem to prefer direct investments, but also use silent investments and other mezzanine instruments.

In order to investigate the extent and frequency of management support provided by the specific type of investor the VC companies have been asked which share of their portfolio companies are managed hands-on. In addition, the average number of investments per investment professional has been calculated. It turns out that MBGs usually do not offer any hands-on support and investment professionals are in charge for considerably more investments (5.83) compared to private VC companies (0.40). Even though investment professionals working for subsidiaries of institutions promoting economic development have to take care of more investments than private VCs, they report a comparable frequency of hands-on management. Subsidiaries of savings banks as well as subsidiaries of state banks and cooperative central institutes report only few or moderate hands-on frequencies while the latter have relatively large human resources available for their investments.

Most VCs state certain investment requirements in regard to investment volume, revenue of the potential portfolio company or estimated gross return. Comparing (quasi-)public VC companies to private VC companies it turns out that the former have significantly lower investment requirements. Only subsidiaries of state banks and cooperative central institutes exhibit investment requirements with regard to volume and revenue of the potential portfolio company comparable or even higher than private VCs.

## **6. Indications for Possible Regional Equity Gaps in Germany**

If in any region demand for VC exceeds available supply, an equity gap prevails. In order to identify possible regional equity gaps in Germany several location quotients have been calculated. Location quotients are a statistical device deployed to detect concentrations and deficiencies of VC investments across regions and have been already applied in several studies. For instance, Martin et al. (2005) analyze several location quotients, which map the region's share of VC investments compared to macroeconomic variables. These indicators represent proxies for investigating demand and supply of VC in a given region (e.g. Jeng and Wells, 2000; Gompers et al., 1998).

A region's location quotient is calculated by dividing the regional share of the national VC investments by the regional share of a proxy for VC demand. A quotient larger than unity signals that, on a national level, a larger share of VC is invested in this region than expected. This means that a concentration of VC investments can be found in this region. In turn, a quotient smaller than unity indicates less VC investments than expected based on the region's national share of the proxy for VC demand – i.e. a potential deficiency could prevail.

$$\text{Location quotient (LQ)} = \frac{\text{Regional share of national VC investments}}{\text{Regional share of proxy for VC demand}}$$

Main advantages of this methodology are its easy use and the relatively low data requirements; therefore, being a suitable method for an exploratory investigation as the present. Regional VC investments can be measured either by numbers of VC financed companies or by volume of money invested. As proxies for regional VC demand could serve different macroeconomic indicators, such as GDP, size of firm stock, or number of start-ups (Martin et al., 2005).

For our analysis the volume and number of regional VC investments in the period from 2004 to 2006 as reported by the BVK are taken as proxies for actual VC activity (BVK, 2007c). Since BVK data on VC investments is only available on the level of federal states, these are chosen as units of analysis. As proxy for demand in terms of volume we refer to regional share of GDP. In terms of number we differentiated between early stage on the one hand and expansion stage as well as total VC on the other. In the former case it is assumed that the

regional share of the nation's overall start-ups can serve as best proxy easily accessible, while for expansion stage and total VC it is drawn on the regional share of the nation's overall firm stock.

## **7. Findings**

For analyzing the actual VC investments in relation to the potential regional VC demand, LQs were computed for each federal state. Additionally early stage, expansion stage, and their total have been investigated separately. Further, for each of these three categories per state we provide a LQ based on (a) regional share of VC investments in terms of volume in relation to regional share of GDP as well as (b) regional share of VC financed companies in relation to regional share of start-ups in the early stage category and firm stock in the two remaining categories.<sup>11</sup> The six location quotients we have calculated for each federal state are shown in figure 3.

--- Insert figure 3 here ---

We marked all LQs that indicate a significant regional gap. As threshold we have drawn on a LQ of 0.67, which means the actual regional VC investments only cover two third of the expected VC demand derived from the respective proxy. Due to the exploratory nature of the present paper, the theoretically more intuitive threshold of unity has not been chosen. Reason is that only rough proxies for VC demand can be included, meaning that an inaccuracy in identifying possible gaps can only be avoided by increasing the deficit of VC supply that is regarded as definitely signaling a deficiency. Furthermore the present paper has the intention to concentrate on the most severe potential deficiencies.

At first glance, looking for an undersupply of VC, i.e. low LQs across early and expansion stage, four Bundesländer ought to be highlighted: Brandenburg, Hesse, and – to a certain

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<sup>11</sup> In the course of our analysis also other LQs with other proxies for VC demand, like population for example, have been calculated as a check for plausibility. Since results and implications do only change slightly they are not reported here.

extent – Bremen and North Rhine-Westphalia. To start with, Brandenburg seems to face the most dramatic deficiency in the supply of equity, having LQs significantly lower than 0.67 across both stages in terms of number and volume. The other state with a general deficiency in the supply of VC is Hesse, which lies in the old Länder. The state shows low regional VC investments across all stages, with the exception that the LQ based on volume in expansion stage of 0.79 exceeds the critical mark. Next to these states, Bremen should also be mentioned in this group of states undersupplied with VC, as regional VC investments are low across all stages, with only a relatively high share of expansion stage investments by volume. A similar situation is indicated in North Rhine-Westphalia, which also shows a palpable deficiency if the judgment is based on numbers solely.

Remarkably, Brandenburg seems to be the only state in the new Länder being short of VC. Quite the contrary, for example Mecklenburg-Western Pomerania – after all coming in last in the ranking of deprivation – receives far more VC than its GDP and firm stock suggest. The LQs of 1.65 in numbers and even 2.80 in volume clearly show a larger VC activity than expected. Similar arguments apply to Thuringia and Saxony-Anhalt.

Examining early stage investments independently, it can be seen that no other state joins the group of the four mentioned so far (Brandenburg, Hesse, Bremen, and North Rhine-Westphalia). Only these have lower LQs than 0.67 in terms of volume and number. Particularly, Hesse and Bremen in the old Länder exhibit a significantly lower level of VC investments as might have been expected on basis of supply proxies; again, Brandenburg is their counterpart in the new Länder. The results for Berlin, Thuringia, and Saxony-Anhalt draw specific attention since the VC investments in these states are about double as they should be according to our proxies of demand. In particular, Berlin in terms of volume shows the highest of all computed LQs with 3.48.

Contemplating expansion stage exclusively, deficiencies are clearly indicated for Berlin and Brandenburg in the new Länder, showing LQs lower than 0.67 for volume and number. In turn, Thuringia and Mecklenburg-Western Pomerania have extremely high LQs, meaning there is a lot more VC in these areas than had been anticipated. In the old Länder, the situation is not as clear: none of the states has a potential deficiency according to volume and number. For instance, Bremen seems to have only few firms in expansion stage to be financed with

VC, exhibiting a deficiency (LQ of 0.55), but the amount of money invested results in a LQ of 1.13 in terms of volume.

Bringing the two perspectives of socio-economic deprivation and regional VC activity together leads us to a quite simple picture. Mainly the new Länder are deprived. Only Brandenburg shows a specifically low level of VC investments and it is this state, which seems to be the primary target area (on the level of federal states) for CDVC investments in Germany.

## **8. Conclusion**

Summing up our analysis of central players within the German CDVC market, existing public and quasi-public market players are of high relevance in the CDVC context. Most of these institutions show some degree of profit orientation, pursue the goal of promoting economic development and operate with a regional focus. As Figure 2 shows most of them do not offer hands-on support and instead rather passively provide capital to targets. Furthermore the definition of their regional focus is highly influenced by political decisions and territories rather than the need for economic development.

The situation of potential regional equity gaps in Germany varies depending on the proxy used (VC volume or number of VC financed companies) and the stage considered (early, expansion). It had been expected that the north-east of the country (new Länder) is not only more deprived but also clearly disadvantaged concerning VC activity compared to the rest of the country. However, the situation regarding VC investments in the new Länder is not as bad as had been expected. In fact, there is no clear north-east/south-west- or new Länder/old Länder-gap. We expect the large amounts of VC in the new Länder to be mainly of public nature. For many years now, the states in the former GDR have been a destination of governmental initiatives to foster economic development by providing public money. This strong public commitment has obviously already led to a relatively high share of VC investments in this area.

At this point, critics may argue that the supply of sufficient VC might not have induced enough momentum to successfully fight socio-economic deprivation in the new Länder. From our point of view two arguments can be objected here: First, the degree of economic and

social shortfall in the area of the former GDR has already been reduced. The public infrastructure for promoting entrepreneurship and the supply of public VC has surely made its contribution to this positive trend. Second, and more important in the present context, we argue that CDVC is not simply providing equity, but also actively supporting invested companies with their expertise, networks, and, last but not least, their own intrinsic motivation to be successful. Such motivation is a prerequisite for effectiveness and efficiency. In fact, our analysis of relevant market players' key characteristics shows that such hands-on support of entrepreneurs by (quasi-)public VCs can be only found to a limited extent. This result is also supported by another empirical study conducted by Schilder, 2006. This central advantage of VC financing – management support for entrepreneurs – is hardly available from public institutions.

In addition, the relatively high share of public money in the VC market is already decreasing. We expect this trend to continue in times of continuously decreasing public expenditures. Therefore, CDVC funds with their financial goals might attract capital from private financiers seeking social responsible investments that can replace the decreasing public capital for economic development. This has already been recognized by a regional development initiative called XperRegio. This initiative recently started a pilot fund offering relatively small volumes of mezzanine capital combined with strong management support to companies located in certain districts in the eastern part of Bavaria which are in danger of deprivation. One of the main purposes of this fund is to replace previously provided capital for regional development from the European Union. However, this endeavor does not simply try to find other sources of finance, but also to incorporate the insight that private double bottom line approaches offer a unique opportunity for efficient and sustainable economic development.

Assuming that public and especially private CDVC like in this example could be a tool to foster economic development, a primary target area must be identified. It should be relatively deprived in order to feature a need for development and, to start with, be relatively short of VC money. Despite the general finding of the present study that the new Länder are not unequivocally the potential target area for possible CDVC measures, the most disadvantaged state across all stages is located there: Brandenburg. This state is not only one of the most deprived according to the *Zukunftsatlas 2007* but also seems to suffer from severe undersupply of VC. Hence, according to our exploratory results, the primary target area of

initial CDVC investments in Germany would be Brandenburg. In fact, this lack of investments in Brandenburg has already been recognized. Hence, the state experienced increasing public financial support in recent years (Handelsblatt Nov 26, 2007). However, capital is provided in the form of traditional subsidies and subsidized loans. The authors of the present paper argue that new instruments like CDVC could offer more efficient and sustainable means in order to stimulate economic development.

Of course, by taking a closer look it becomes visible that CDVC might be a sensible instrument in other regions as well: For example, economic development in Bremen might benefit from a supply of CDVC in early stage. This federal state does not belong to the most deprived quartile of regions according to the Zukunftsatlas 2007, but has a relatively weak position with an average ranking of 296 out of 439, particularly in comparison to the other old Länder in Germany. According to our line of reasoning, economic development could be fostered here by supplying CDVC for individuals and/or enterprises in seed and start-up stage of their endeavor. Similar arguments could also be applied to Berlin in expansion stage, or even Hesse in general, even though this federal state is currently well developed.

### ***9. Implications and Future Research***

In other countries such as the USA and UK, CDVC has emerged as a measure to tackle regional disparities in terms of deprivation within an economy. It seems that the supply of CDVC might be a powerful instrument that is hardly used in Germany so far. Given the fact that we were able to identify areas in Germany which suffer from an undersupply of VC and, at the same time, from a high level of socio-economic deprivation, attracting CDVC might be an alternative or complementary measure to promote regional economic systems.

To start with, an improved data base, which allows for a differentiation between public and private money, could provide important insights. For the case of Germany, we assume a large portion of VC in the new Länder to be of public origin. CDVC-relevant regional equity gaps can not be identified until such information is available. In addition to this aspect, more detailed information on the geographic distribution of VC supply would allow entering the level of more realistic geographical units, such as metropolitan areas or districts, and carrying out more refined analysis. Equity gaps could be identified in the dimensions of volume, stage,

or even industry, presumably allowing a better judgment of potential needs for CDVC and, if that is the case, providing policy-makers with a superior basis for decision-making. In other words, it would be possible to deal scientifically with CDVC on the level where it should be located, communities.

Moreover, we think future efforts should explicitly target the question, to what extent public VC companies already offer real CDVC. By qualitatively assessing public VC companies' business models against the background of the CDVC concept, it should be possible to reveal whether only money is supplied or entrepreneurs and companies are actively supported. Furthermore, it should be investigated in more detail whether the definition of the regional focus is mainly driven by political interests or the need for economic development due to a relative regional deprivation.

In summary, this paper represents a first exploratory step in assessing the mechanisms of CDVC and its potential role in regional economic development in Germany. Future research should challenge these findings presented here. Econometric models could help to unleash relationships between CDVC investments in connection with a certain entrepreneurial dynamic (as a strong driver of VC demand) and a region's development in terms of deprivation.



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## Figures

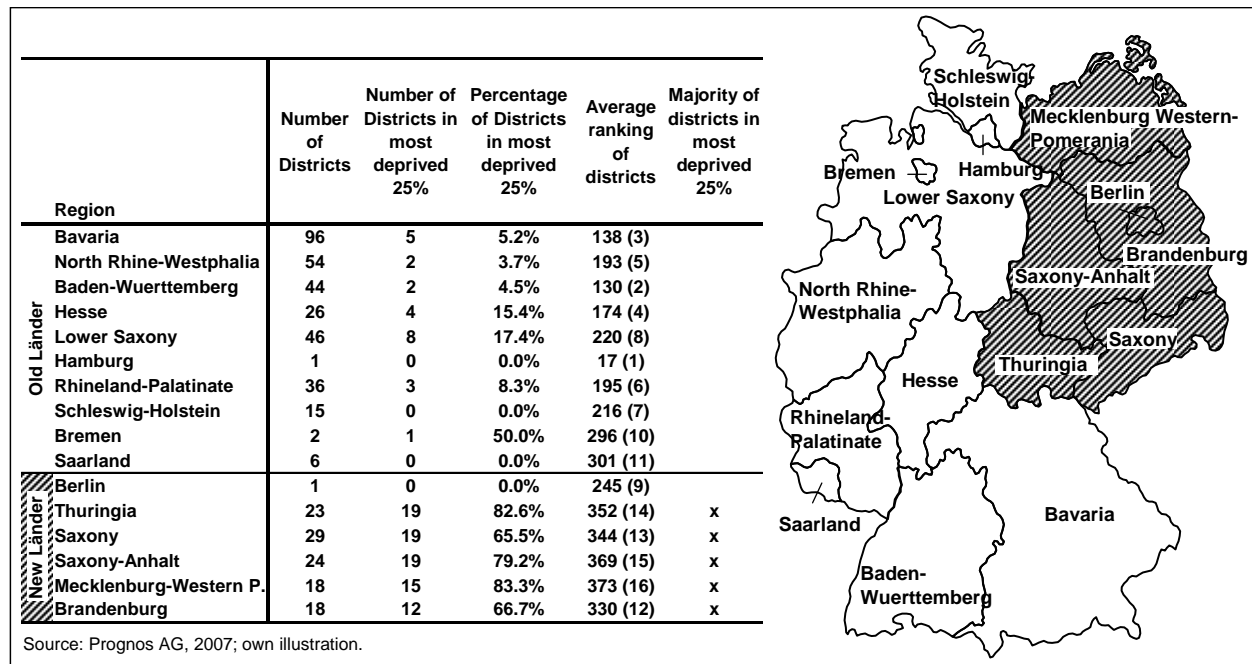


Figure 1: Germany's economic development on the level of federal states (Zukunftsatlas 2007, own illustration).

Dimension	MBGs	Subs. of institutions promoting econ. development	Subsidiaries of savings banks	Subs. of state banks and coop. central institutes	
<b>Regional focus</b>	• Most (Länder level)	• Most (Länder level)	• Most (regional level)	• Few (Länder level)	
<b>Double bottom line</b>	• yes	• yes	• partly	• partly	
<b>Stage focus</b>	• Later stage	• Early stage • No specialisation	• Later stage • No specialisation	• No specialisation	
<b>Financial instruments</b>	• Pred. <sup>1</sup> silent partnerships	• Pred. direct investments, frequent silent partnerships	• Pred. silent partnerships, frequent direct investments	• Pred. direct investments, frequent mezzanine financings	
<b>Hands-on management</b>	• Usually no hands-on management	• Frequent hands-on management	• Few hands-on management	• Moderate hands-on management	
<b>Investments per investment professional<sup>2</sup></b>	• Considerably more than private VCs (av.: 5.83)	• More than private VCs (av.:0.77)	• More than private VCs (av.: 0.93)	• Less than private VCs (av.: 0.23)	
<b>Inv. requirements</b>	<b>Vol.</b>	• Pred. <0.15m€, rest 0.15 - 0.75m€	• Pred. 0.15 - 0.75m€, rest <0.15m€	• Pred. 0.15 - 0.75m€, rest <0.15m€	• Pred. 0.75 - 5m€, rest 0.15 - 0.75m€
	<b>Rev.</b>	• Pred. none, rest 1.5 - 5 m€	• None	• Pred. none and 0 - 1.5m€	• 0 - 1.5 and 5 - 50m€
	<b>Gr.return</b>	• < 12%	• 8 - 28%	• 12 - 28%	• 8 - 28%

<sup>1</sup> Pred. = predominantly

<sup>2</sup> Average investments per investment prof. of private VC comp.: 0.40

Figure 2: Important characteristics of CDVC-relevant VC companies (based on data of Achleitner et al., 2006).

Region	Development (Zukunftsatlas 2007)			Location Quotients of VC investments									
	Average ranking of districts	Percentage of districts in most deprived 25%	Majority of districts is most deprived 25%	Early				Expansion				Total VC	
				Volume GDP	Number Start-ups	Volume GDP	Number Firm Stock	Volume GDP	Number Firm Stock				
Old Länder	Bavaria	138 (3)	5.2%		1.51	1.11		1.13	1.14		1.22	1.10	
	North Rhine-Westphalia	193 (5)	3.7%		0.61	X 0.27	X	0.76	0.26	X	0.73	0.26	X
	Baden-Wuerttemberg	130 (2)	4.5%		1.10	1.74		1.32	1.57		1.27	1.55	
	Hesse	174 (4)	15.4%		0.23	X 0.25	X	0.79	0.62	X	0.66	X 0.49	X
	Lower Saxony	220 (8)	17.4%		0.55	X 0.73		1.18	0.64	X	1.03	0.66	X
	Hamburg	17 (1)	0.0%		1.13	1.53		0.99	1.17		1.02	1.29	
	Rhineland-Palatinate	195 (6)	8.3%		0.69	0.97		0.58	X 1.05		0.61	X 1.01	
	Schleswig-Holstein	216 (7)	0.0%		0.46	X 1.99		0.77	2.92		0.70	2.58	
	Bremen	296 (10)	50.0%		0.11	X 0.30	X	1.13	0.55	X	0.89	0.46	X
	Saarland	301 (11)	0.0%		1.23	0.84		0.54	X 0.82		0.70	0.81	
New Länder	Berlin	245 (9)	0.0%		3.48	1.54		0.64	X 0.59	X	1.30	1.28	
	Thuringia	352 (14)	82.6%	X	1.72	2.54		2.97	1.52		2.68	1.84	
	Saxony	344 (13)	65.5%	X	1.10	0.98		0.73	1.22		0.82	1.16	
	Saxony-Anhalt	369 (15)	79.2%	X	1.96	1.98		1.24	2.03		1.41	2.11	
	Mecklenburg-Western P.	373 (16)	83.3%	X	1.06	2.10		1.82	3.08		1.65	2.80	
	Brandenburg	330 (12)	66.7%	X	0.55	X 0.39	X	0.11	X 0.34	X	0.21	X 0.37	X

Figure 3: Location Quotients – Share of Volume-Number of BVK Investments (2004-06) / Share of Indicator (2006) (based on data of Zukunftsatlas 2007; BVK, 2007).