

Schäfer, Dorothea; Schilder, Dirk

Working Paper

Informed capital in a hostile environment: the case of relational investors in Germany

Freiberger Arbeitspapiere, No. 2006/03

Provided in Cooperation with:

TU Bergakademie Freiberg, Faculty of Economics and Business Administration

Suggested Citation: Schäfer, Dorothea; Schilder, Dirk (2006) : Informed capital in a hostile environment: the case of relational investors in Germany, Freiberger Arbeitspapiere, No. 2006/03, Technische Universität Bergakademie Freiberg, Fakultät für Wirtschaftswissenschaften, Freiberg

This Version is available at:

<https://hdl.handle.net/10419/27097>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

TECHNICAL UNIVERSITY BERGAKADEMIE FREIBERG
TECHNISCHE UNIVERSITÄT BERGAKADEMIE FREIBERG

FACULTY OF ECONOMICS AND BUSINESS ADMINISTRATION
FAKULTÄT FÜR WIRTSCHAFTSWISSENSCHAFTEN



Dorothea Schäfer
Dirk Schilder

Informed Capital in a Hostile
Environment – The Case of
Relational Investors in Germany

FREIBERG WORKING PAPERS
FREIBERGER ARBEITSPAPIERE

03
2006

The Faculty of Economics and Business Administration is an institution for teaching and research at the Technische Universität Bergakademie Freiberg (Saxony). For more detailed information about research and educational activities see our homepage in the World Wide Web (WWW): <http://www.wiwi.tu-freiberg.de/index.html>.

Addresses for correspondence:

PD Dr. Dorothea Schäfer
German Institute for Economic Research (DIW)
Königin-Luise-Straße 5, D-14195 Berlin (Germany)
Phone: ++49 / 30 / 89 78 91 62
Fax: ++49 / 30 / 89 78 91 04
E-mail: dschaefer@diw.de

Dipl.-Volksw. Dirk Schilder
Technical University Bergakademie Freiberg
Faculty of Economics and Business Administration
Lessingstraße 45, D-09596 Freiberg (Germany)
Phone: ++49 / 3731 / 39 36 78
Fax: ++49 / 3731 / 39 36 90
E-mail: dirk.schilder@tu-freiberg.de
(corresponding author)

ISSN 0949-9970

The Freiberg Working Paper is a copyrighted publication. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, translating, or otherwise without prior permission of the publishers.

Coordinator: Prof. Dr. Michael Fritsch

All rights reserved.

Contents

Abstract / Zusammenfassung.....	II
1. Introduction	1
2. What do we expect from the different types of start-up investors?.....	3
3. How can the flow of information be measured?.....	6
4. A first look at the data	7
5. Methodology.....	10
5.1 Variables	10
5.2 Who provides informed capital?.....	11
6. Tests and Results	14
6.1 Segmentation	14
6.2 Driving forces of informed capital provision and market segmentation...	16
7. Conclusion and Prospects	19
References.....	22

Abstract

Informed capital is a crucial ingredient to a well-functioning market for start-up finance, especially in times of difficult market conditions. For bank-based systems, the question regarding which investors actually supply informed capital has not yet been answered. To fill this gap, we conduct a survey among 85 German suppliers of start-up finance. We find significant differences between the investors which are linked to banks and those financiers which are not. Although, the bank-related group, including public equity suppliers, delivers some sort of informed capital, venture capital companies and Business Angels are the key providers of informed capital in the German market for start-up finance.

JEL-classification: G21, G24, D21, M13, O16

Keywords: Informed capital, start-up financing, venture capital, banks.

Zusammenfassung

“Informiertes Kapital im schwierigen Marktumfeld –Relationship-Investoren in Deutschland“

Informiertes Kapital ist ein wichtiger Bestandteil eines funktionierenden Marktes für Existenzgründungsfinanzierung. Im bankzentrierten deutschen Finanzsystem stehen neben VC-Gesellschaften auch Hausbanken im Ruf, die Voraussetzung für die Bereitstellung von informiertem Kapital zu erfüllen. Daher ist die Frage, welche Investoren hierzulande in welchem Maße informiertem Kapital anbieten, noch ungeklärt. Dieser Artikel leistet auf der Grundlage einer persönlichen Befragung von 85 Existenzgründungsfinanziers einen Beitrag, diese Lücke zu schließen. Die Ergebnisse zeigen, dass die Gruppe der bankähnlichen Finanziers, inklusive öffentlicher Anbieter, zu einem bestimmten Maße informiertem Kapital anbietet. Die Gruppe der unabhängigen Start-up Finanziers, bestehend aus VC-Gesellschaften und Business Angels, aber die Hauptanbieter auf dem Markt darstellt.

JEL-Klassifikation: G21, G24, D21, M13, O16

Schlagworte: Informiertes Kapital, Existenzgründungsfinanzierung, Venture Capital, Banken.

1. Introduction

Informed capital is commonly considered as being pivotal for growth prospects of risky start-ups. Relational investors such as venture capital companies are expected to provide consulting services and promote their portfolio firms' professionalism (Hellmann and Puri, 2002). The term informed capital for this kind of service is derived from the fact that in order to be successful a high expertise of both the firm itself and the employed technology is necessary. The intermediary needs to actively participate in both the information flow within the firm and between the firm and its business environment. Several studies found evidence that VC firms spend substantial time and effort to assist, to advise, and to monitor their portfolio firms (Kaplan and Strömberg, 2004; Macmillan et al., 1988; Sapienza, 1992; Sapienza et al., 1996). Thus, this means that the VC companies invest in obtaining proprietary information about their clients' businesses.

In this paper we define informed capital as a specific form of capital engagement by a financial intermediary. In particular, informed capital is characterized by a flow of information in two directions: information flows from the company to the financiers and consultancy and support flows in the opposite direction. The financier has some control- and information-rights to enforce the flow of data concerning the financed firm's development in management, technology, and product marketing. In return, the investor has to fulfill certain duties which are predominantly of an advisory or consulting nature. The flow of information continues during the whole investment period. As a result of this reciprocal information process, both parties obtain knowledge about each other. We analyze, in particular, how both the intensity of the reciprocal information flow and the intensity of the control and consulting services differ among distinct types of relational investors.

In the market-based US-financial system, VC companies and Business Angels are commonly considered unique relational investors. However, the situation may differ in a bank-based system like the one in Germany. The German financial system is characterized by two important features: one is the famous *Hausbank*-principle and the second is the importance of public intermediaries in firm financing. The *Hausbank*-principle is based on a close relationship between the bank and its client-firm.

Hausbanks are involved in the businesses they finance, and they monitor them closely (Elsas and Krahen, 2004). Thus, many German commercial banks can be viewed as relational investors, too. Moreover, despite the fact that public financing is often said to be passive by nature (Hellmann and Puri, 2002), several references are made in the literature indicating that German public equity suppliers are different because they are seeking to establish a close relationship with their target firms (Hood, 2000). Given that in the German system both the VC firms and banks are believed to be relational investors and public VCs are important players in start-up finance, the most natural question to ask is what makes the difference between different types of relational investors?

Although, a variety of potential providers of informed capital exists, thus far little work has been done to actually test to what extent these believed relational investors can compete with independent VC firms, particularly when it comes to financing start-up companies within a bank-based system. We contribute to fill this gap. Our study is guided by the following research questions: “Who actually provides informed capital in Germany’s bank-based system?” “What kind of informed capital is provided by distinct types of relational investors?” and “What determines the provision of informed capital?”.

We deal with these questions regarding the background with a specific market development: the follow-up of a sharp downturn. In the 1990s, Germans began to view VC as an important source for economic dynamism. Intense political promotion and the introduction of a specialized bourse for growth firms created the necessary incentives for German VC companies to enter the market. Consequently, the German VC industry experienced a boom in the late 1990s. This upswing ended abruptly in 2000 with the deterioration of the stock markets, particularly in the growth segments of the bourses. Unexpectedly the slump turned out to be more of a long-term phenomenon rather than a short episode. The German VC industry’s early stage investments between 2000 and 2004 slipped from 1.6 billion Euros to 0.35 billion Euros.¹ In addition to the weakening investments, the enthusiasm of the investors, policy makers, and entrepreneurs in the VC industry had vanished.

¹ German Private Equity and Venture Capital Association, 2004.

Most of the research which investigates informed capital in more detail covers periods of upswings in the market for financing young and innovative companies. However, little is known about how financing companies cope with a hostile market environment and how the provision of informed capital is affected by sharp downturns in the market for start-up finance. On the one hand, if business becomes less profitable, cost-cutting could be an appropriate option. Since the provision of informed capital is expensive, this service could be negatively affected and, consequently, it becomes less important for the relational investor. On the other hand, if the market is in a negative state, the financier's support may gain even more importance for the firm's performance. This latter conjecture would imply that in tough business environments the provision of informed capital may become even more important for both the investor and the portfolio firm. Thus, the predicted impact of a strong downturn on the behavior of relational investors is ambiguous. Our paper investigates how Germany's relational investors actually behaved in recent periods after the irrational exuberance vanished.

The rest of the paper is organized as follows. In Section 3, we outline the hypotheses. Section 4 develops the method for measuring the nature and the intensity of the information flow between the financier and the portfolio firm. In Section 5, we describe the data set. Section 6 presents the methodology, followed by the results in section 7. In Section 8, we draw conclusions for the policy as well as for further research.

2. What do we expect from the different types of start-up investors?

In this section we briefly outline our expectations about the investors' capacity to provide portfolio companies with informed capital. Several surveys that summarize the findings on VC investment clearly state that VC companies are rather highly involved in the business of the financed companies (Macmillan et al., 1988; Hellmann and Puri, 2002; Lerner, 1995), have intensive contacts (Sapienza, 1992), and are well informed in regard to the financed companies' business through constant monitoring (Gompers, 1995). Corporate VC firms are believed to initiate an even more intensive flow of information than their independent counterparts (Bottazzi et al., 2004) due to a higher ratio of strategic investments (Block and MacMillan, 1993) and due to better

technical skills (Chesbrough, 2000). Therefore, we expect that VC companies are delivering a fully developed menu of informed capital services.

Hypothesis 1. VC firms deliver a high level of informed capital.

Business Angels, which are the main part of the informal VC market, are also considered to be deeply involved in the businesses they finance (Mason and Harrison, 1996; Osnabrugge, 1998). Furthermore, they often invest for hedonistic and altruistic reasons. Private benefits such as "happiness" created by the development of the company should improve the cooperation and result in a heavier flow of information between the Angels and their target firm (Sullivan and Miller, 1996). Thus, parallel to the literature, we do not expect to find a great difference in the provision of informed capital between informal VC suppliers, i.e., Business Angels and independent and corporate VC firms.

Hypothesis 2. Business Angels deliver informed capital on a similar level as VC companies.

Several aspects of the financial system suggest that German banks build a second group of potential suppliers of informed capital. German banks have a long history in relationship banking and in playing an active role in corporate control (Gerschenkron, 1962). Relationship-based financing is still considered to be the core business of most German banking institutions. German universal banks have never been legally restricted in both their contracting behavior and their ability to exert corporate control. As so-called *Hausbanks*, credit suppliers are prepared to be involved in their firms' business (Elsas and Krahn, 2004). Recently, German banks have started to fiercely promote certain types of mezzanine financial instruments for small- and medium-sized ventures. They have also set out subsidiary VC organizations in order to expand their equity financing.

In principle credit suppliers should behave differently from the equity suppliers since they sell different financial products and follow distinct strategies and goals. Nonetheless, a *Hausbank*-relationship is characterized by constant interactions, reciprocal flow of information (Elsas and Krahn, 2004, 208f.), and even a direct

influence on the financed companies by the creditor (Elsas, 2004). This behavior is compatible to what Boot (2000) called relationship financing. Thus, we expect them to provide informed capital for start-ups, especially as the *Hausbank*-relationship is common for financing small-sized and medium-sized companies which are high risks (Edwards and Fischer, 1994, 143; Lehman and Neuberger, 2001).

However, in the case of start-up financing, there are some caveats to mention that may constrain credit suppliers. First, credit transactions are likely to be based heavily on pre-investment information such as balance sheet statements and collateral. Due to the collateral, parts of the investor's risk exposure come from the fluctuations of the pledged assets' value. Thus, relational credit financiers may focus less on both the consulting activities and a regular exchange of information regarding the project's development but rather focus more on the assets, more than uncollateralized equity financiers would do (Manove et al., 2001). Secondly, the loan officers may have predominantly built up expertise on financial issues but lack technological knowledge. Given these caveats, we expect credit financiers to place more weight on information about the collateral's value and financial reports than equity financiers.

Hypothesis 3. Banks as credit financiers offer only a reduced menu of informed capital services.

We expect a VC-like behavior, as previously mentioned, in the provision of informed capital for the banks' VC subsidiaries. Bank-related VC companies seem to have similar investment criteria and employ analogous monitoring and consulting strategies (Bottazzi et al., 2004). However, their integration into the institutional background of banks and the dependency on their mother company might influence their aims and, therefore, their strategy (Tykvova, 2004; Osnabrugge and Robinson, 2001).

Hypothesis 4a. Similar to their independent counterparts, bank-related VC firms offer a full menu of informed capital services.

Hypothesis 4b. Similar to their parent companies, bank-related VC firms offer a reduced menu of informed capital services.

Public VC firms own a considerable market share in the start-up finance sector. Their lower return requirements (Bascha and Walz, 2002) in combination with strong ambitions to contribute to the local economic development (see e.g., Sunley et al., 2005; Tykvova, 2004) may allow and force these entities to establish an even more intensive contact to the target firms than their private counterparts can afford.

Hypothesis 5. Public equity suppliers offer a full range of informed capital services.

3. How can the flow of information be measured?

In this section we introduce the concept for measuring the provision of informed capital in detail. To capture the notion of informed capital as a reciprocal information process, we employ the concept of knowledge building. As Nonaka (1994) defines it, "... knowledge is created and organized on the very flow of information." Knowledge can be divided analytically into two types (Polanyi, 1966). The first type is the so-called explicit knowledge. Explicit knowledge can be codified and documented in the form of reports such as business assessments or balance-sheet statements. These features make information sharing among individuals fairly easy. Ergo, we measure the flow of explicit knowledge or information by the frequency of the codified information exchange, e.g., in the form of reports.

The second form, tacit knowledge, is more complex to handle. Tacit knowledge cannot be easily translated into numbers or even into words and is heavily linked with the individual itself. Typical examples are practical expertise or knowledge that a person gains by personally experiencing a specific situation. Tacit knowledge usually cannot be codified because of its implicit character (Nonaka, 1994). It is difficult to communicate and to share tacit knowledge via documenting, in particular, since it is often attached to what von Hippel (1994) calls sticky information. The exchange of sticky information is difficult and costly. Personal interaction is necessary for acquiring tacit knowledge (Nonaka, 1994). Thus, we employ the frequency of personal contacts and the amount of consulting services delivered by the investor as proxies for the extent to which tacit knowledge is exchanged between the two parties.

Based on the distinction between explicit and tacit knowledge, the data set allows us to identify the different components of informed capital.

4. A first look at the data

The analysis is based on a survey that provides us with micro data on the nature and the dimension of the flow of information between the investors and the portfolio firms. The survey was carried out between September 2004 and September 2005. It consists of 85 face-to-face interviews with different kinds of financiers which at least partly offer start-up financing and are located in distinct regional areas of Germany. The interviews are based on a largely standardized questionnaire. In detail, we have interviewed 22 VC companies, independent and corporate ones; eleven Business Angels; 21 banks of two types, public savings and private commercial banks; seventeen of their VC subsidiaries; and twelve public providers of equity.² After clearing the sample with respect to those financiers which do not offer any start-up financing, 75 observations remain.

The participants of the study are taken from member lists of the German Private Equity and Venture Capital Association, the Business Angels Network Germany, and the Association of German Banks. By focusing on these financiers that are still actively offering money for innovative young companies, we tried to build a sample that is representative of the different types of financial institutions and we are not aware of any bias in this sample.

The financiers in the sample cover a wide range of potential suppliers of informed capital and differ strongly in their structure.³ However, there is partial homogeneity with respect to the offered financial products, which is important for the level of informed capital. Through lower participation in the portfolio company's return and fewer rights of involvement, silent partnerships, mezzanine products, and credit might be connected with less monitoring and consulting and, therefore, represent a lower level of informed capital than direct equity investments (Bascha and Walz, 2002).

Apart from commercial and savings banks, which almost exclusively use credit financing, all other intermediaries in our survey offer equity capital or at least products that are equity linked. The majority of the equity-group directly invests and acquires

² We have to note that the banks and their subsidiaries are dominated by savings banks because they are more active in start-up financing than their private counterparts.

³ We have to annotate that the information about the financiers solely count for the interviewed departments or branches and not for the whole companies.

minority stakes in the portfolio firms. The second largest group of equity-investors uses silent equity and mezzanine products. Table 1 shows the average importance of the used financial products in a range from one, i.e., the investor does not use this product at all, to four, which means that this product is most frequently used. For example, the value 3.95 in line one indicates that banks concentrate almost totally on loans, whereas the figures around 1 indicate that the other types of financiers hardly use them. Silent equity investments and mezzanine financing occur more frequently with the bank's VC subsidiaries and public equity suppliers, respectively. Minority holdings are preferred by VC companies and Business Angels.

Table 1: Importance of financial products (mean values)

Importance of product:	VCs	Business Angels	Banks	Bank-VCs	Public-VCs
Credits	1.05	1.27	3.95	1.00	1.00
Silent investments	1.04	1.00	1.31	2.43	3.33
Mezzanine products	1.00	1.00	1.37	1.19	1.33
Minority holdings up to 25%	3.00	2.28	1.00	2.29	1.67
Minority holdings 25-50%	3.14	3.64	1.00	3.57	2.67

A more heterogenic structure from the sample can be seen with regard to the managed portfolios. The portfolio size ranges from one company in a Business Angel's portfolio to around 1,500 financed companies in a bank's portfolio. Furthermore, the coaching load of investment managers covers a wide spectrum. On the one end of the spectrum, we find a VC firm with a ratio of 0.75 firms per manager. On the other end lies a bank whose portfolio managers have to coach on average 375 firms per person. Most likely such differences influence the quality of the informed capital. The more companies a manager has to advise the less time he can spend on each of them. Figure 1 clearly suggests that portfolio managers of banks are, on average, much more time restricted in their coaching activities per firm than any other supplier of informed capital.

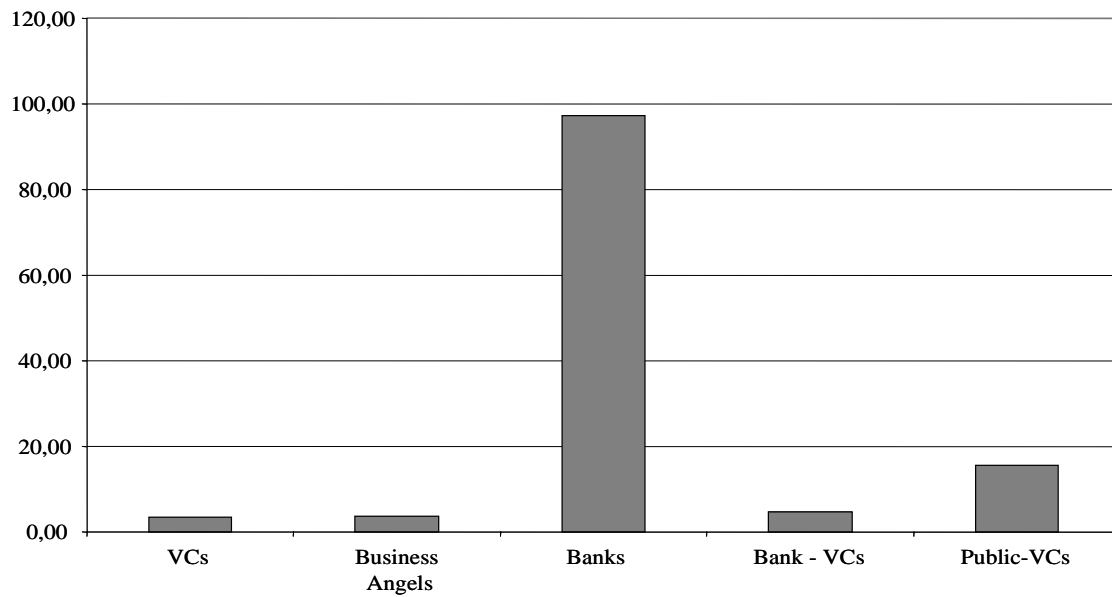


Figure 1: Portfolio firms per investment manager

Table 2 depicts two further portfolio attributes that are said to influence the level of informed capital because of the different needs for consulting activity: the share of early stage investments and the average investment period. Both features clearly differentiate the sample. On average, the banks, the Business Angels, and the public VC companies tend to show the longest investment horizon with more than 70 months; although, the average share of early stage investments in their portfolio differs drastically between around 30 percent and more than 90 percent. In contrast, the VC firms follow a rather short-term strategy with respect to the investment horizon (55 months) and invest on average more than two thirds of their money in early stages.

Table 2: Average share of early stage investments and average investment period per portfolio (in percentage)

	Share of early stage investments in portfolio (in percentage)	Average investment period in months
VCs	70.91	55.75
Business Angels	92.73	70.00
Banks	48.34	78.83
Bank-VCs	53.50	63.08
Public-VCs	29.22	74.50

Upon first looking at the data, it clearly indicates that the type of financier matters for the provision of informed capital. First, it is obvious that most investors tend to concentrate on one or two financial products. Second, the resources for the time spent on the supply of informed capital vary highly among investor types. And third, the amount of early stage investments and the average investment period show rather clear distinctions between different types of financiers. In the following sections, we investigate the distinct features more deeply.

5. Methodology

5.1 Variables

To answer our research questions, we group our data into two sets of variables that capture the different directions of the information flow. We use the frequency of reports (weekly, monthly, quarterly, or yearly) and the contents as an indicator for the flow of information from the firm to the financier. The flow of information in the opposite direction is measured by the importance and the magnitude of the financier's consulting activity.

In addition to quantifiable information such as the share of early stage investments in a portfolio, the data contain two types of categorical variables. The first type (Type A) varies within the range: never (1), seldom (2), frequently (3), very frequently (4). For example, if asked "How often do you receive accounting reports from your portfolio firm?" the respondent had the choice between the four alternatives. The second type (Type B) results from questions that aim at receiving a personal assessment of the financier's investment activity such as "How important do you consider your advice for the success of your portfolio firm?" In this case, the respondent had to decide between the alternatives not important (1), of minor importance (2), amongst other things important (3), very important (4), dominant (5).

Furthermore, we include two variables concerning the frequency of interaction between the two parties that can be used as a proxy for the flow of information in both directions. We asked for the frequency of contacts per month, either personal or via telecommunication means. These two variables are not categorical. The following paragraph provides a formal definition for all variables we use in the analysis:

CONSULTING (CS) is the frequency of the financier's consulting (Type A).

INFLUENCE (INF) shows the importance of influence by the financier (Type A).

EARLY-STAGE (EARL) is a variable that gives the percentage of early stage investment in the considered portfolio.

INVESTMENT-PERIOD (INVPER) is the average investment period in months.

Finally, we use Type B variables to indicate how important a specific financial product is for the financier:

CRED is credit financing.

MIHO25 is the minority holding up to 25 percent of the stakes.

MIHO50 is the minority holding between 25 percent and 50 percent of the stakes.

SILENT is the silent investment⁴.

MEZZ is the mezzanine product.

5.2 Who provides informed capital?

Table 3 shows the average values of the main variables for the five groups of financial intermediaries. Parallel to earlier research, we find that VC companies offer a high-level of informed capital. The first row reveals that VC firms use both forms of knowledge transfer – the explicit and implicit form – very intensely. In addition, they are more deeply involved in the business of the financed companies than the other types of financiers. VC firms do not only consult most frequently (lines 1 to 10) and exert direct influence (line 18) but are also well informed about what is going on in the portfolio companies (lines 12 to 15). Furthermore, they report, on average, a high frequency of contacts with their portfolio firms (lines 16 and 17). These results support hypothesis 1.

Business Angels largely behave in line with formal VC suppliers but fall behind in some aspects. This is especially evident for some kinds of consulting (lines 8 to 10) and reporting (lines 14 and 15). This restraint can be grounded in their relatively

⁴ Silent equity is a specific financial product and a rather passive kind of investments per definition since almost no influence rights are attached to it.

strong specialization, the restricted resources, and a very close informal relationship to their portfolio companies. Nevertheless, the statistics seems to back hypothesis 2.

In contrast, lines 12 and 18 show that banks as loan suppliers are hardly interested in the business of their start-up portfolio companies. As indicated in lines 1 to 12, this attitude results in a less intensive and a rather specific consulting activity. Moreover, the portfolio firms report less frequently (line 12) and interaction is rather scarce (lines 16 and 17). Such a behavior corresponds with hypothesis 3.

Table 3: Importance of variables (mean values)

Line	Frequency of...	VCs	Business Angels	Banks	Bank-VCs	Public-VCs
1	consulting	3.91	3.92	3.21	3.71	3.60
	Frequency of consulting in...					
2	accounting	2.36	2.00	2.58	2.64	2.56
3	controlling	2.5	1.82	2.47	2.79	2.78
4	marketing	2.6	2.18	2.11	2.43	1.78
5	technical problems	2.36	1.55	1.05	1.50	1.44
6	strategical problems	3.60	3.18	2.53	3.43	3.11
7	network advantages	3.00	3.27	2.37	2.71	2.56
8	financing	3.50	2.00	3.79	3.29	3.44
9	patent protection	2.60	1.36	1.26	1.79	1.33
10	juridical problems	2.27	1.18	1.32	1.43	1.56
11	Importance of consulting for success of portfolio firm	4.23	4.46	3.74	4.00	3.99
	Frequency of...					
12	reports	3.00	2.73	2.16	2.93	2.67
	Thereof reports about...					
13	business assessments	3.96	4.00	3.90	3.93	4.00
14	collateral	1.23	1.00	2.68	1.36	1.78
15	technological development	3.27	2.18	2.26	2.79	2.44
16	Number of face-to-face contacts (per month)	1.35	1.64	0.43	1.06	1.03
17	Number of contacts via telecommunication (per month)	8.05	3.73	1.60	4.21	2.30
18	Degree of influence by the financier	3.32	2.55	2.11	2.86	2.44

VC-subsiidiaries of banks are in some respect very similar to their mother companies. On average, they report less frequent interactions with their portfolio firms (lines 16 and 17) than Business Angels and the group of independent and corporate VC companies. Overall, consulting activities (lines 1 to 10) are of minor importance for bank-dependent VC firms; although, they offer similar products as independent and corporate VC companies. Their consulting activity is mainly focused on financing issues and business related topics such as strategic problems. These findings support hypothesis 4b more than hypothesis 4a.

The public equity suppliers show a fairly similar pattern to the bank subsidiaries. On the one hand, they indicate a strong involvement in the business of the portfolio firms by a rather high frequency of consulting in some areas (see e.g., lines 1/3 and 8). On the other hand, they hardly reach the overall average of contacts per month (lines 16 and 17). Such findings do not correspond with hypothesis 5. However, they suggest that the public equity suppliers offer only a reduced menu of informed capital services.

Line 11 shows an interesting finding on how German start-up financiers judge the importance of consulting. Despite considerable differences in the amount of consulting services offered to the companies, all types of financiers regard consulting as an important driver for the portfolio firm's success.

Overall, the descriptive statistics of the different components of the informed capital menu show that all financiers offer some sort of informed capital, but there are considerable differences in the intensity of information flows. Furthermore, an immediate intuition derived from the descriptive analysis suggests that the market for informed capital is segmented. On the one hand, there is the "bank-related" group containing private commercial and public savings banks as credit and equity financiers. On the other hand, there is the "non-bank" group that includes VC firms and Business Angels. Unfortunately, table 3 does not provide us with a clear-cut intuition on how to group public equity suppliers. However due to fairly similar resources and comparable institutional background – some public VC companies are subsidiaries of public merchant and development banks – we subsume them under the segment of the bank-related group. Thus, we arrive at the following market segmentation hypothesis:

Hypothesis 6. The market for informed capital is dichotomously segmented. One segment consists of independent and corporate VC firms and Business Angels. The other segment entails commercial and savings banks, VC subsidiaries of these banks, and public equity suppliers.

6. Tests and Results

6.1 Segmentation

We explore the dichotomy as stated in hypothesis 6 by employing the Wilcoxon-Mann-Whitney test.⁵ This test allows the comparison of two samples by assigning a rank to each single observation. Furthermore, the test is able to reveal the relation of two groups even if the assumption of a normal distribution is violated, or if the variances between the sub-samples are inhomogeneous.

To be clear, we name the first segment the “bank-related group.” The second segment is denoted as the “non-bank group.” The dummy variable “group” is zero for the bank-related group (42 observations) and one for the non-bank group (33 observations). Table 4 illustrates the results. A negative z-value indicates that the sum of the ranks for the bank-related group must be smaller than the sum of the ranks for the non-bank group. For example, the value -3.56 in the first row of table 4 indicates a more frequent consulting by the non-bank group. The p-value in the second column of 0.00 reveals that the result is significant at the 1%-level.

The findings from the rank-sum test confirm hypothesis 6. The flow of explicit and tacit knowledge is significantly different between the two groups. For example, the non-bank group receives reports from the start-ups significantly more often than the bank-related group. These results indicate that the flow of information is more intense in this group. The reporting activity in the bank-related group focuses predominantly on collateral. Furthermore, the frequency of personal contacts in both forms, face-to-face and via telecommunication, is significantly lower for the bank-related group.

By examining the responses in regard to the flow of information that goes from the financier to the financed company, we can conclude that the non-bank group is also more involved in the business of their portfolio firms. We observe differences in the

⁵ The two sample ranks-sum test is the non-parametric version of the independent samples t-test.

amount of consulting and the areas covered. For example, the non-bank group delivers more consulting in technical, strategic, patent-related, and juridical problems. Any of the differences are significant at the 5 percent level, at least. Not surprisingly, we fail to find many significant differences in business related topics such as accounting or financing. In these areas, bank-related financiers and non-bank intermediaries are likely to have comparable skills. However, there is a significant distinction concerning the degree of the financier's influence on the portfolio firms, which is the strongest form of information flow. Non-bank financiers consider the exertion of influence as significantly more important than their bank-related counterparts.

Table 4: Comparison of bank-related financiers and non-banks

Frequency of...	z-value	p-value
consulting	-3.56	0.00**
Frequency of specific consulting in...		
accounting	1.95	0.05
controlling	2.24	0.03*
marketing	-1.81	0.07
technical problems	-4.32	0.00**
strategical problems	-2.67	0.01*
network advantages	-3.35	0.00**
financing	0.93	0.35
patent protection	-3.06	0.00**
juridical problems	-2.57	0.01*
Importance of consulting for success of portfolio firm	-3.01	0.00**
Frequency of...		
reports	-3.57	0.00**
Thereof reports about...		
business assessments	-0.34	0.69
collateral	4.67	0.00**
technological development	-2.16	0.03*
Number of face-to-face contacts (per month)	-3.24	0.00**
Number of contacts via telecommunication (per month)	-3.83	0.00**
Degree of influence by the financier	-3.61	0.00**

* significant at a 5%-level; ** significant at a 1%-level

As both groups use a variety of financial products, the results from the Wilcoxon-Mann-Whitney test indicate that the market segmentation is rather based on the institutional background than on the specific financial product that is used for financing. In the next section, we explore the possible impact of the financial product in more detail and take a closer look at additional driving forces of the segmentation.

6.2 Driving forces of informed capital provision and market segmentation

In the following section we investigate whether specific features of the financial institutions' portfolios influence the provision of informed capital. The literature clearly states that younger companies need more intensive monitoring and consulting (see i.e., Gupta and Sapienza, 1992; Sapienza et al., 1996; Sorensen and Stuart, 2001). The effect of the investment horizon is less clear. On the one hand, a longer investment horizon may go hand-in-hand with a slower expected growth of the portfolio company. However, slow growth portfolio companies should have a smaller need for intensive involvement and consulting than fast growing companies. Furthermore, long-term investors often target stable and relatively safe firms but stay away from high-risk-high-return companies (Gompers, 1995). The former types of firms seem to be in the position to organize most of their growth themselves.⁶ On the other hand, patience could be an indicator for a particularly strong commitment and, thus, signal heavy involvement in the firm.

To estimate how both factors, the share of early stage investment (EARL) and the investment horizon (INVPER), influence the level of informed capital in both groups, we employ a small econometric model. We proxy the level of informed capital by two variables: the level of consulting (CS) undertaken by the financier and the degree of the financier's direct influence (IFL). Both dependent variables are highly correlated with the amount of reports sent to the financier and with the frequency of the contacts. Thus, high values of CF and IFL indicate an intense flow of information between the financial institution and the start-up company in both directions. To capture the effect of the type of the financial products on the segmentation, with respect to informed capital provision, we include the categorical variable for the used

⁶ Gompers (1995) explains the relationship between investment horizon and the level of monitoring with transaction costs. If the investment is not expected to need a lot monitoring then VC firms should avoid setting up a row of short-term financing contracts because of additional costs for writing contracts.

financial product. Finally, we employ two interaction dummies to detect possible distinctions between the bank group and the non-bank group by multiplying them with the dependent variables EARL and INVPER.

The average investment period is missing in seventeen observations. Even though the missing values are almost equally distributed over the different groups, we have to be cautious when interpreting the results. We abstain from calculating the marginal effect due to the missing value problem in some specifications and to the ordinal character of the used variables. We only comment on the direction but not on the magnitude of the coefficients.

We estimate four different model specifications for each of the two dependent variables. Table 5 presents the results of the ordered logit estimation. Consistent with the literature, we find that the ratio of early stage investments significantly influences the importance of consulting. However, the ratio has no statistically significant impact on the exertion of influence. The non-significance might be due to a waiting position of the financiers in early stages. The exertion of direct influence will become more important if the investor feels that his portfolio firm could be under pressure. However, distress problems mainly arise after the firm has existed for a certain period of time, e.g., through strong growth. Furthermore, early stage investments are usually smaller in magnitude than later stage investments (Gompers, 1995). Consequently, in the early stages the investor's risk exposure is very high in nature and, therefore, his incentive to intervene might be rather low. The impact of early stage investments on the consulting activity is significantly positive for both non-banks and banks. Furthermore, we find a group-specific negative impact of the ratio of early stage investments on the financier's influence for the bank-related group. This can partly be explained by the focus on credit and silent partnership products that have a significantly negative impact on the influences.

The average investment period significantly affects the intensity of consulting, in particular for the bank-related group. The longer the investment horizon the less intensive the consulting is. This result is consistent with Gompers (1995) and rejects the assumption that patience may be an indicator for heavy involvement. The financier's influence is not significantly affected the investment period neither for the non-bank group nor for the bank-related financiers.

Table 5: Determinants of informed capital⁷

	CS (1)	CS (2)	CS (3)	CS (4)	IFL (1)	IFL (2)	IFL (3)	IFL (4)
EARL	0.02* (2.43)				-0.01 (1.59)			
INVPER			-0.04* (2.45)				-0.2 (1.64)	
CRED	0.65 (1.64)	0.63 (1.46)	1.01 (1.77)	0.48 (0.74)	-0.84* (2.46)	-0.99** (2.47)	-1.08* (2.43)	-1.01* (2.02)
MIHO25	-0.06 (0.39)	-0.06 (0.32)	-0.39 (1.04)	-0.48 (1.17)	-0.26 (0.97)	-0.28 (1.05)	-0.08 (0.29)	-0.08 (0.27)
MIHO50	-0.01 (0.32)	-0.01 (0.33)	0.54 (1.10)	0.52 (1.02)	0.53* (1.88)	0.53* (1.88)	0.25 (0.77)	0.26 (0.78)
SLEEP	-0.03 (0.33)	-0.04 (0.36)	0.24 (0.51)	-0.43 (0.73)	-0.40 (1.43)	-0.55* (1.68)	-0.70* (2.07)	-0.61 (1.32)
MEZZ	0.30 (0.44)	0.29 (0.45)	0.68 (1.05)	0.39 (0.56)	0.14 (0.35)	0.89 (0.22)	-0.56 (0.89)	-0.50 (0.76)
Non-bank-dummy		0.02* (2.03)				-0.01 (0.92)		
Bank-dummy		0.02* (2.14)				-0.02* (1.80)		
Non-bank-dummy				-0.02 (0.79)				0.02 (1.61)
Bank-dummy				- 0.05** (-2.78)				0.02 (1.15)
observations	75	75	58	58	75	75	58	58

* significant at a 5% level; ** significant at a 1% level

The predominantly used financial products affect the influence by the financier on the financed firm but not the consulting activity. Minority holdings between 25 percent and 50 percent show a positive impact on the influence. In contrast, credits and silent partnerships have a significantly negative impact on influence as the holder's ability to exert influence is limited through the few rights of involvement. This finding does not necessarily contradict the *Hausbank* tradition of Germany's credit institutions. *Hausbank*-relationships enable creditors to exert influence on an informal basis. Yet, as the exertion of influence is more of an ad hoc phenomenon according to

⁷ Ordered Logit Estimation; value of z-statistics in parenthesis

the perceived needs of the firm, it may not occur frequently enough to gain significance in our econometric estimation.

The used financial product does not have a significant influence on the second and more important indicator for informed capital, the consulting activity by the financier. This result strengthens further our hypothesis that the institutional background of the financier is far more important for the provision of informed capital than the applied financial instrument.

Overall, we can conclude that for both groups the level of informed capital is positively affected by the share of early stage investments in a portfolio. The average investment period turns out to exert a significantly negative influence in the bank-related group but has no influence in the non-bank group. We experimented with other possible determinants of informed capital such as the ratio of portfolio firms per investment manager or the size of the intermediary measured by the number of investment managers. Since we are unable to find any significant impact on the level of informed capital, we abstain from reporting these specifications. The observed rather minor impact of financial products on the level of informed capital – they only affect the influence exerted by the financier - is consistent with the attached control rights. Since both groups use the whole menu of financial products, the differences between bank-related financiers and non-banks seem to be predominantly caused by the financing institution itself.

7. Conclusion and Prospects

In this paper we explore a special part of the German market for start-up finance: the market for informed capital. The analysis reveals a dichotomous separation of the market in Germany. One group consists of “bank-related” investors under which we subsume public and private banks, their equity subsidiaries, and public equity suppliers; the other group, the non-bank group, contains independent and corporate VC companies and Business Angels. In line with the previous research on relationship lending and similar to the VC literature, we find that both groups deliver informed capital. However, the extent and the manner are different. The non-bank group is well informed about the financed companies and offers a complete menu of informed capital services. In contrast, the bank-related financiers only offer a reduced

menu. In particular, these investors are less deeply involved in the financed businesses and offer less consulting.

With respect to the determinants of informed capital, we find that the share of early stage investments in a portfolio and the investment horizon affect the level of informed capital. The influence of the offered financial product is minor. This result regarding the importance of the financial products is somewhat contrary to the literature on financial contracting but rather in line with the empirical literature on VC financing. It indicates that the observed separation of the market is mainly driven by the institutional background of the relational investors and less so by the offered financial product.

Though we lack detailed data on the actual amount invested in start-ups by the different types of financiers, we can conclude from our survey results that the commitment to the provision of informed capital is still strong amongst Germany's early stage financiers; despite the downturn in the market for start-ups and the breathtaking default rates in the portfolios. Moreover, the surviving companies of the still immature venture capital industry in Germany are struggling to overcome the slump in investment activity and fundraising, and they are trying to build a strong reputation as unique providers of a specific form of informed capital.

Germany's venture capital industry may gain some support for its ambition to achieve a more dominant position in the market for informed capital from two important legislative changes that only concern the banking sector. The state guarantees for Germany's public savings banks have already been dropped due to restrictions from the European Union. The expiration of this guarantee will complicate refinancing and may lead to a change in the public banks' business strategies. Such a change is likely to affect the public saving banks' attitude towards relational investing. A second challenge for bank-related start-up investors comes from the new Capital Adequacy Directive (Basel II). This directive is likely to have further impact on the banks' general attitude toward risky start-up finance.

Although our analysis enables us to identify two distinct groups in the market for informed start-up capital, we are aware of the considerable heterogeneity among Germany's relational investors. Each segment has its own business strategy and specific goals. The members are far from being homogeneous within each segment.

This could lead to incompatibilities between the financiers in case of syndication. Moreover, the observed heterogeneity suggests that entrepreneurs searching for capital have to specify exactly what form of capital and which level of consulting they need before they approach possible financiers.

This observed heterogeneity of the providers for informed capital opens up areas for further research. First, syndication may show different results depending on whether the syndication is arranged within a group or between groups. Second, regional dispersion and its influence on both the investment strategy and the flow of information is an important issue for further research. And third, the question of how different forms of relational capital affect the success of the portfolio firms is still unexplored.⁸

⁸ First steps in this direction have been made by De Clercq and Sapienza (2006) who analyze the perception of performance of venture capital firms in combination with the relational capital.

References

- Bascha, Andreas and Uwe Walz (2002): Financing practices in the German venture capital industry an empirical assessment, *CFS Working Paper* 2002/08.
- Block, Zenas and Ian C MacMillan (1995): *Corporate venturing: creating new businesses within the firm*, Harvard: Harvard Business School Press.
- Boot, Arnoud W. A. (2000): Relationship banking: What do we know? *Journal of Financial Intermediation*, 9, 7-25.
- Bottazzi, Laura, Marco DaRin and Thomas Hellmann (2004): The changing face of the european venture capital industry: Facts and analysis, *Journal of Private Equity*, 7, 26–53.
- Chesbrough, Henry (2000): Designing corporate ventures in the shadow of private venture capital, *California Management Review*, 42, 31-49.
- De Clercq, Dirk and Harry J. Sapienza (2006): Effects of relational capital and commitment on venture capitalists' perception of portfolio company performance, *Journal of Business Venturing*, (forthcoming).
- Edwards, Jeremy and Klaus Fischer (1994): *Banks, finance and investment in Germany*, Cambridge: Cambridge University Press.
- Elsas, Ralf (2004): Empirical determinants of relationship lending, *Journal of Financial Intermediation*, 14, 32-57.
- Elsas, Ralf and Jan Pieter Krahnert (2004): Universal Banks and Relationships with Firms, in Jan Pieter Krahnert and Reinhard H. Schmidt (eds.): *The German financial system*, New York: Oxford University Press, 197-232.
- German Private Equity and Venture Capital Association (2004): *Statistics 2004*, Berlin.
- Gerschenkron, Alexander (1962): *Economic backwardness in historical perspective*, Cambridge, MS: Belknap Press.
- Gompers, Paul A. (1995): Optimal investment, monitoring, and the staging of venture capital, *Journal of Finance*, 50, 1461-1489.
- Gupta, Anil K. and Harry J. Sapienza (1992): Determinants of venture capital firms' preferences regarding the industry diversity and geographic scope of their investments, *Journal of Business Venturing*, 7, 347-362.
- Hellmann, Thomas and Manju Puri (2002): Venture capital and the professionalization of start-up firms: Empirical evidence, *Journal of Finance*, 57, 169-197.
- Hood, Neil (2000): Public venture capital and economic development: the Scottish experience, *Venture Capital*, 2, 313-341.
- Kaplan, Steven N. and Per Strömberg (2004): Characteristics, contracts, and actions: evidence from venture capitalist analyses, *Journal of Finance*, 59, 2177-2210.
- Lehmann, Erik and Doris Neuberger (2001): Do lending relationships matter? Evidence from bank survey data in Germany, *Journal of Economic Behavior & Organization*, 45, 339–359.

- Lerner, Joshua (1995): Venture capitalists and the oversight of private firms, *Journal of Finance*, 50, 301-318.
- Macmillan, Ian C., David M. Kulow and Roubina Khoylian (1988): Venture capitalists' involvement in their investments: extent and performance, in Bruce A. Kirchoff et al. (eds.): *Frontiers of entrepreneurship research*, Wellesley, Mass: Babson Park, 303-323.
- Manove, Michael, Jorge A. Padilla and Marco Pagano (2001): Collateral versus project screening: A model of lazy banks, *Rand Journal of Economics*, 32, 726-44.
- Mason, Collin M. and Richard T. Harrison (1996): Informal venture capital: a study of the investment process, the post-investment experience and investment performance, *Entrepreneurship and Regional Development*, 8, 105-126.
- Nonaka, Ikujiro (1994): A dynamic theory of organizational knowledge creation, *Organization Science*, 5, 14-37.
- Osnabrugge, Mark van (1998): *Comparison of business angels and venture capitalists: Financiers of entrepreneurial firms*, Oxford: University of Oxford.
- Osnabrugge, Mark van (2001): The influence of a venture capitalist's source of funds, *Venture Capital*, 3, 25-39.
- Polanyi, Michael (1966): *The Tacit Dimension*, Doubleday NY: Garden City.
- Sapienza, Harry J. (1992): When do venture capitalists add value, *Journal of Business Venturing*, 7, 9-27.
- Sapienza, Harry J., Sophie Manigart and Wim Vermeir (1996): Venture capitalist governance and value added in four countries, *Journal of Business Venturing*, 11, 439-469.
- Sorensen, Olav and Toby E. Stuart (2001): Syndication networks and the spatial distribution of venture capital investments, *American Journal of Sociology*, 106, 1546-1588.
- Sullivan, Mary K. and Alex Miller (1996): Segmenting the informal venture capital market: Economic, hedonistic, and altruistic investors, *Journal of Business Review*, 36, 25-35.
- Sunley, Peter, Britta Klagge, Christian Berndt and Ron Martin (2005): Venture capital programmes in the UK and Germany: In what sense regional policy? *Regional Studies*, 39, 255-273.
- Tykvova, Tereza (2004): Who are the true venture capitalists? *ZEW Discussion Paper* No. 04-16.
- Von Hippel, Eric (1994): 'Sticky information' and the locus of problem solving: Implications for innovation, *Management Science*, 40, 429-439.

**List of Working Papers of the Faculty of Economics and Business Administration,
Technische Universität Bergakademie Freiberg.**

2000

- 00/1 Michael Nippa, Kerstin Petzold, Ökonomische Erklärungs- und Gestaltungsbeiträge des Realoptionen-Ansatzes, Januar.
- 00/2 Dieter Jacob, Aktuelle baubetriebliche Themen – Sommer 1999, Januar.
- 00/3 Egon P. Franck, Gegen die Mythen der Hochschulreformdiskussion – Wie Selektionsorientierung, Nonprofit-Verfassungen und klassische Professorenbeschäftigungsverhältnisse im amerikanischen Hochschulwesen zusammenpassen, erscheint in: *Zeitschrift für Betriebswirtschaft (ZfB)*, 70. (2000).
- 00/4 Jan Körnert, Unternehmensgeschichtliche Aspekte der Krisen des Bankhauses Barings 1890 und 1995, in: *Zeitschrift für Unternehmensgeschichte*, München, 45 (2000), 205 – 224.
- 00/5 Egon P. Franck, Jens Christian Müller, Die Fußball-Aktie: Zwischen strukturellen Problemen und First-Mover-Vorteilen, *Die Bank*, Heft 3/2000, 152 – 157.
- 00/6 Obeng Mireku, Culture and the South African Constitution: An Overview, Februar.
- 00/7 Gerhard Ring, Stephan Oliver Pfaff, CombiCar: Rechtliche Voraussetzungen und rechtliche Ausgestaltung eines entsprechenden Angebots für private und gewerbliche Nutzer, Februar.
- 00/8 Michael Nippa, Kerstin Petzold, Jamina Bartusch, Neugestaltung von Entgeltsystemen, Besondere Fragestellungen von Unternehmen in den Neuen Bundesländern – Ein Beitrag für die Praxis, Februar.
- 00/9 Dieter Welz, Non-Disclosure and Wrongful Birth , Avenues of Liability in Medical Malpractice Law, März.
- 00/10 Jan Körnert, Karl Lohmann, Zinsstrukturbasierte Margenkalkulation, Anwendungen in der Marktzinsmethode und bei der Analyse von Investitionsprojekten, März.
- 00/11 Michael Fritsch, Christian Schwirten, R&D cooperation between public research institutions - magnitude, motives and spatial dimension, in: Ludwig Schätzl und Javier Revilla Diez (eds.), *Technological Change and Regional Development in Europe*, Heidelberg/New York 2002: Physica, 199 – 210.
- 00/12 Diana Grosse, Eine Diskussion der Mitbestimmungsgesetze unter den Aspekten der Effizienz und der Gerechtigkeit, März.
- 00/13 Michael Fritsch, Interregional differences in R&D activities – an empirical investigation, in: *European Planning Studies*, 8 (2000), 409 – 427.
- 00/14 Egon Franck, Christian Opitz, Anreizsysteme für Professoren in den USA und in Deutschland – Konsequenzen für Reputationsbewirtschaftung, Talentallokation und die Aussagekraft akademischer Signale, in: *Zeitschrift Führung + Organisation (zfo)*, 69 (2000), 234 – 240.
- 00/15 Egon Franck, Torsten Pudack, Die Ökonomie der Zertifizierung von Managemententscheidungen durch Unternehmensberatungen, April.
- 00/16 Carola Jungwirth, Inkompatible, aber dennoch verzahnte Märkte: Lichtblicke im angespannten Verhältnis von Organisationswissenschaft und Praxis, Mai.
- 00/17 Horst Brezinski, Der Stand der wirtschaftlichen Transformation zehn Jahre nach der Wende, in: Georg Brunner (Hrsg.), *Politische und ökonomische Transformation in Osteuropa*, 3. Aufl., Berlin 2000, 153 – 180.
- 00/18 Jan Körnert, Die Maximalbelastungstheorie Stützens als Beitrag zur einzelwirtschaftlichen Analyse von Dominoeffekten im Bankensystem, in: Eberhart Ketzler, Stefan Prigge u. Hartmut Schmidt (Hrsg.), *Wolfgang Stützel – Moderne Konzepte für Finanzmärkte, Beschäftigung und Wirtschaftsverfassung*, Verlag J. C. B. Mohr (Paul Siebeck), Tübingen 2001, 81 – 103.
- 00/19 Cornelia Wolf, Probleme unterschiedlicher Organisationskulturen in organisationalen Subsystemen als mögliche Ursache des Konflikts zwischen Ingenieuren und Marketingexperten, Juli.
- 00/20 Egon Franck, Christian Opitz, Internet-Start-ups – Ein neuer Wettbewerber unter den „Filteranlagen“ für Humankapital, erscheint in: *Zeitschrift für Betriebswirtschaft (ZfB)*, 70 (2001).

- 00/21 Egon Franck, Jens Christian Müller, Zur Fernsehvermarktung von Sportligen: Ökonomische Überlegungen am Beispiel der Fußball-Bundesliga, erscheint in: Arnold Hermanns und Florian Riedmüller (Hrsg.), *Management-Handbuch Sportmarketing*, München 2001.
- 00/22 Michael Nippa, Kerstin Petzold, Gestaltungsansätze zur Optimierung der Mitarbeiter-Bindung in der IT-Industrie - eine differenzierende betriebswirtschaftliche Betrachtung -, September.
- 00/23 Egon Franck, Antje Musil, Qualitätsmanagement für ärztliche Dienstleistungen – Vom Fremd- zum Selbstmonitoring, September.
- 00/24 David B. Audretsch, Michael Fritsch, Growth Regimes over Time and Space, *Regional Studies*, 36 (2002), 113 – 124.
- 00/25 Michael Fritsch, Grit Franke, Innovation, Regional Knowledge Spillovers and R&D Cooperation, *Research Policy*, 33 (2004), 245-255.
- 00/26 Dieter Slaby, Kalkulation von Verrechnungspreisen und Betriebsmittelmieten für mobile Technik als Grundlage innerbetrieblicher Leistungs- und Kostenrechnung im Bergbau und in der Bauindustrie, Oktober.
- 00/27 Egon Franck, Warum gibt es Stars? – Drei Erklärungsansätze und ihre Anwendung auf verschiedene Segmente des Unterhaltungsmarktes, *Wirtschaftsdienst – Zeitschrift für Wirtschaftspolitik*, 81 (2001), 59 – 64.
- 00/28 Dieter Jacob, Christop Winter, Aktuelle baubetriebliche Themen – Winter 1999/2000, Oktober.
- 00/29 Michael Nippa, Stefan Dirlich, Global Markets for Resources and Energy – The 1999 Perspective - , Oktober.
- 00/30 Birgit Plewka, Management mobiler Gerätetechnik im Bergbau: Gestaltung von Zeitfondsgliederung und Ableitung von Kennziffern der Auslastung und Verfügbarkeit, Oktober.
- 00/31 Michael Nippa, Jan Hachenberger, Ein informationsökonomisch fundierter Überblick über den Einfluss des Internets auf den Schutz Intellektuellen Eigentums, Oktober.
- 00/32 Egon Franck, The Other Side of the League Organization – Efficiency-Aspects of Basic Organizational Structures in American Pro Team Sports, Oktober.
- 00/33 Jan Körnert, Cornelia Wolf, Branding on the Internet, Umbrella-Brand and Multiple-Brand Strategies of Internet Banks in Britain and Germany, erschienen in Deutsch: *Die Bank*, o. Jg. (2000), 744 – 747.
- 00/34 Andreas Knabe, Karl Lohmann, Ursula Walther, Kryptographie – ein Beispiel für die Anwendung mathematischer Grundlagenforschung in den Wirtschaftswissenschaften, November.
- 00/35 Gunther Wobser, Internetbasierte Kooperation bei der Produktentwicklung, Dezember.
- 00/36 Margit Enke, Anja Geigenmüller, Aktuelle Tendenzen in der Werbung, Dezember.
- 2001**
- 01/1 Michael Nippa, Strategic Decision Making: Nothing Else Than Mere Decision Making? Januar.
- 01/2 Michael Fritsch, Measuring the Quality of Regional Innovation Systems – A Knowledge Production Function Approach, *International Regional Science Review*, 25 (2002), 86-101.
- 01/3 Bruno Schönfelder, Two Lectures on the Legacy of Hayek and the Economics of Transition, Januar.
- 01/4 Michael Fritsch, R&D-Cooperation and the Efficiency of Regional Innovation Activities, *Cambridge Journal of Economics*, 28 (2004), 829-846.
- 01/5 Jana Eberlein, Ursula Walther, Änderungen der Ausschüttungspolitik von Aktiengesellschaften im Lichte der Unternehmenssteuerreform, *Betriebswirtschaftliche Forschung und Praxis*, 53 (2001), 464 - 475.
- 01/6 Egon Franck, Christian Opitz, Karriereverläufe von Topmanagern in den USA, Frankreich und Deutschland – Elitenbildung und die Filterleistung von Hochschulsystemen, *Schmalenbachs Zeitschrift für betriebswirtschaftliche Forschung (zfbf)*, (2002).
- 01/7 Margit Enke, Anja Geigenmüller, Entwicklungstendenzen deutscher Unternehmensberatungen, März.

- 01/8 Jan Körnert, The Barings Crises of 1890 and 1995: Causes, Courses, Consequences and the Danger of Domino Effects, *Journal of International Financial Markets, Institutions & Money*, 13 (2003), 187 – 209.
- 01/9 Michael Nippa, David Finegold, Deriving Economic Policies Using the High-Technology Ecosystems Approach: A Study of the Biotech Sector in the United States and Germany, April.
- 01/10 Michael Nippa, Kerstin Petzold, Functions and roles of management consulting firms – an integrative theoretical framework, April.
- 01/11 Horst Brezinski, Zum Zusammenhang zwischen Transformation und Einkommensverteilung, Mai.
- 01/12 Michael Fritsch, Reinhold Grotz, Udo Brixy, Michael Niese, Anne Otto, Gründungen in Deutschland: Datenquellen, Niveau und räumlich-sektorale Struktur, in: Jürgen Schmude und Robert Leiner (Hrsg.), *Unternehmensgründungen - Interdisziplinäre Beiträge zum Entrepreneurship Research*, Heidelberg 2002: Physica, 1 – 31.
- 01/13 Jan Körnert, Oliver Gaschler, Die Bankenkrise in Nordeuropa zu Beginn der 1990er Jahre - Eine Sequenz aus Deregulierung, Krise und Staatseingriff in Norwegen, Schweden und Finnland, *Kredit und Kapital*, 35 (2002), 280 – 314.
- 01/14 Bruno Schönfelder, The Underworld Revisited: Looting in Transition Countries, Juli.
- 01/15 Gert Ziener, Die Erdölwirtschaft Russlands: Gegenwärtiger Zustand und Zukunftsaussichten, September.
- 01/16 Margit Enke, Michael J. Schäfer, Die Bedeutung der Determinante Zeit in Kaufentscheidungsprozessen, September.
- 01/17 Horst Brezinski, 10 Years of German Unification – Success or Failure? September.
- 01/18 Diana Grosse, Stand und Entwicklungschancen des Innovationspotentials in Sachsen in 2000/2001, September.
- 2002**
- 02/1 Jan Körnert, Cornelia Wolf, Das Ombudsmannverfahren des Bundesverbandes deutscher Banken im Lichte von Kundenzufriedenheit und Kundenbindung, in: *Bank und Markt*, 31 (2002), Heft 6, 19 – 22.
- 02/2 Michael Nippa, The Economic Reality of the New Economy – A Fairytale by Illusionists and Opportunists, Januar.
- 02/3 Michael B. Hinner, Tessa Rülke, Intercultural Communication in Business Ventures Illustrated by Two Case Studies, Januar.
- 02/4 Michael Fritsch, Does R&D-Cooperation Behavior Differ between Regions? *Industry and Innovation*, 10 (2003), 25-39.
- 02/5 Michael Fritsch, How and Why does the Efficiency of Regional Innovation Systems Differ? in: Johannes Bröcker, Dirk Dohse and Rüdiger Soltwedel (eds.), *Innovation Clusters and Interregional Competition*, Berlin 2003: Springer, 79-96.
- 02/6 Horst Brezinski, Peter Seidelmann, Unternehmen und regionale Entwicklung im ostdeutschen Transformationsprozess: Erkenntnisse aus einer Fallstudie, März.
- 02/7 Diana Grosse, Ansätze zur Lösung von Arbeitskonflikten – das philosophisch und psychologisch fundierte Konzept von Mary Parker Follett, Juni.
- 02/8 Ursula Walther, Das Äquivalenzprinzip der Finanzmathematik, Juli.
- 02/9 Bastian Heinecke, Involvement of Small and Medium Sized Enterprises in the Private Realisation of Public Buildings, Juli.
- 02/10 Fabiana Rossaro, Der Kreditwucher in Italien – Eine ökonomische Analyse der rechtlichen Handhabung, September.
- 02/11 Michael Fritsch, Oliver Falck, New Firm Formation by Industry over Space and Time: A Multi-Level Analysis, Oktober.
- 02/12 Ursula Walther, Strategische Asset Allokation aus Sicht des privaten Kapitalanlegers, September.

02/13 Michael B. Hinner, Communication Science: An Integral Part of Business and Business Studies? Dezember.

2003

03/1 Bruno Schönfelder, Death or Survival. Post Communist Bankruptcy Law in Action. A Survey, Januar.

03/2 Christine Pieper, Kai Handel, Auf der Suche nach der nationalen Innovationskultur Deutschlands – die Etablierung der Verfahrenstechnik in der BRD/DDR seit 1950, März.

03/3 Michael Fritsch, Do Regional Systems of Innovation Matter? in: Kurt Huebner (ed.): *The New Economy in Transatlantic Perspective - Spaces of Innovation*, Abingdon 2005: Routledge, 187-203.

03/4 Michael Fritsch, Zum Zusammenhang zwischen Gründungen und Wirtschaftsentwicklung, in Michael Fritsch und Reinhold Grotz (Hrsg.), *Empirische Analysen des Gründungsgeschehens in Deutschland*, Heidelberg 2004: Physica 199-211.

03/5 Tessa Rülke, Erfolg auf dem amerikanischen Markt

03/6 Michael Fritsch, Von der innovationsorientierten Regionalförderung zur regionalisierten Innovationspolitik, in: Michael Fritsch (Hrsg.): *Marktdynamik und Innovation – Zum Gedenken an Hans-Jürgen Ewers*, Berlin 2004: Duncker & Humblot, 105-127.

03/7 Isabel Opitz, Michael B. Hinner (Editor), Good Internal Communication Increases Productivity, Juli.

03/8 Margit Enke, Martin Reimann, Kulturell bedingtes Investorenverhalten – Ausgewählte Probleme des Kommunikations- und Informationsprozesses der Investor Relations, September.

03/9 Dieter Jacob, Christoph Winter, Constanze Stuhr, PPP bei Schulbauten – Leitfaden Wirtschaftlichkeitsvergleich, Oktober.

03/10 Ulrike Pohl, Das Studium Generale an der Technischen Universität Bergakademie Freiberg im Vergleich zu Hochschulen anderer Bundesländer (Niedersachsen, Mecklenburg-Vorpommern) – Ergebnisse einer vergleichenden Studie, November.

2004

04/1 Michael Fritsch, Pamela Mueller, The Effects of New Firm Formation on Regional Development over Time, *Regional Studies*, 38 (2004), 961-975.

04/2 Michael B. Hinner, Mirjam Dreisörner, Antje Felich, Manja Otto, Business and Intercultural Communication Issues – Three Contributions to Various Aspects of Business Communication, Januar.

04/3 Michael Fritsch, Andreas Stephan, Measuring Performance Heterogeneity within Groups – A Two-Dimensional Approach, Januar.

04/4 Michael Fritsch, Udo Brixy, Oliver Falck, The Effect of Industry, Region and Time on New Business Survival – A Multi-Dimensional Analysis, Januar.

04/5 Michael Fritsch, Antje Weyh, How Large are the Direct Employment Effects of New Businesses? – An Empirical Investigation, März.

04/6 Michael Fritsch, Pamela Mueller, Regional Growth Regimes Revisited – The Case of West Germany, in: Michael Dowling, Jürgen Schmude and Dodo von Knyphausen-Aufsess (eds.): *Advances in Interdisciplinary European Entrepreneurship Research Vol. II*, Münster 2005: LIT, 251-273.

04/7 Dieter Jacob, Constanze Stuhr, Aktuelle baubetriebliche Themen – 2002/2003, Mai.

04/8 Michael Fritsch, Technologietransfer durch Unternehmensgründungen – Was man tun und realistischerweise erwarten kann, in: Michael Fritsch and Knut Koschatzky (eds.): *Den Wandel gestalten – Perspektiven des Technologietransfers im deutschen Innovationssystem*, Stuttgart 2005: Fraunhofer IRB Verlag, 21-33.

04/9 Michael Fritsch, Entrepreneurship, Entry and Performance of New Businesses – Compared in two Growth Regimes: East and West Germany, in: *Journal of Evolutionary Economics*, 14 (2004), 525-542.

- 04/10 Michael Fritsch, Pamela Mueller, Antje Weyh, Direct and Indirect Effects of New Business Formation on Regional Employment, Juli.
- 04/11 Jan Körnert, Fabiana Rossaro, Der Eigenkapitalbeitrag in der Marktzinsmethode, in: *Bank-Archiv* (ÖBA), Springer-Verlag, Berlin u. a., ISSN 1015-1516. Jg. 53 (2005), Heft 4, 269-275.
- 04/12 Michael Fritsch, Andreas Stephan, The Distribution and Heterogeneity of Technical Efficiency within Industries – An Empirical Assessment, August.
- 04/13 Michael Fritsch, Andreas Stephan, What Causes Cross-industry Differences of Technical Efficiency? – An Empirical Investigation, November.
- 04/14 Petra Rünger, Ursula Walther, Die Behandlung der operationellen Risiken nach Basel II - ein Anreiz zur Verbesserung des Risikomanagements? Dezember.

2005

- 05/1 Michael Fritsch, Pamela Mueller, The Persistence of Regional New Business Formation-Activity over Time – Assessing the Potential of Policy Promotion Programs, Januar.
- 05/2 Dieter Jacob, Tilo Uhlig, Constanze Stuhr, Bewertung der Immobilien von Akutkrankenhäusern der Regelversorgung unter Beachtung des neuen DRG-orientierten Vergütungssystems für stationäre Leistungen, Januar.
- 05/3 Alexander Eickelpasch, Michael Fritsch, Contests for Cooperation – A New Approach in German Innovation Policy, April.
- 05/4 Fabiana Rossaro, Jan Körnert, Bernd Nolte, Entwicklung und Perspektiven der Genossenschaftsbanken Italiens, in: *Bank-Archiv* (ÖBA), Springer-Verlag, Berlin u. a., ISSN 1015-1516, Jg. 53 (2005), Heft 7, 466-472.
- 05/5 Pamela Mueller, Entrepreneurship in the Region: Breeding Ground for Nascent Entrepreneurs? Mai.
- 05/6 Margit Enke, Larissa Greschuchna, Aufbau von Vertrauen in Dienstleistungsinteraktionen durch Instrumente der Kommunikationspolitik – dargestellt am Beispiel der Beratung kleiner und mittlerer Unternehmen, Mai.
- 05/7 Bruno Schönfelder, The Puzzling Underuse of Arbitration in Post-Communism – A Law and Economics Analysis. Juni.
- 05/8 Andreas Knabe, Ursula Walther, Zur Unterscheidung von Eigenkapital und Fremdkapital – Überlegungen zu alternativen Klassifikationsansätzen der Außenfinanzierung, Juli.
- 05/9 Andreas Ehrhardt, Michael Nippa, Far better than nothing at all - Towards a contingency-based evaluation of management consulting services, Juli
- 05/10 Loet Leydesdorff, Michael Fritsch, Measuring the Knowledge Base of Regional Innovation Systems in Germany in terms of a Triple Helix Dynamics, Juli.
- 05/11 Margit Enke, Steffi Poznanski, Kundenintegration bei Finanzdienstleistungen, Juli.
- 05/12 Olga Minuk, Fabiana Rossaro, Ursula Walther, Zur Reform der Einlagensicherung in Weißrussland - Kritische Analyse und Vergleich mit dem Deutschen Einlagensicherungssystem, August.
- 05/13 Brit Arnold, Larissa Greschuchna, Hochschulen als Dienstleistungsmarken – Besonderheiten beim Aufbau einer Markenidentität, August.
- 05/14 Bruno Schönfelder, The Impact of the War 1991 – 1995 on the Croatian Economy – A Contribution to the Analysis of War Economies, August.
- 05/15 Michael Fritsch, Viktor Slavtchev, The Role of Regional Knowledge Sources for Innovation – An Empirical Assessment, August.
- 05/16 Pamela Mueller, Exploiting Entrepreneurial Opportunities: The Impact of Entrepreneurship on Economic Growth, August.
- 05/17 Pamela Mueller, Exploring the Knowledge Filter: How Entrepreneurship and University-Industry Relations Drive Economic Growth, September.

05/18 Marc Rodt, Klaus Schäfer, Absicherung von Strompreissrisiken mit Futures: Theorie und Empirie, September.

05/19 Klaus Schäfer, Johannes Pohn-Weidinger, Exposures and Exposure Hedging in Exchange Rate Risk Management, September.

2006

06/1 Michael Nippa, Jens Grigoleit, Corporate Governance ohne Vertrauen? Ökonomische Konsequenzen der Agency-Theorie", Januar.

06/2 Tobias Henning, Pamela Mueller, Michael Niese, Das Gründungsgeschehen in Dresden, Rostock und Karlsruhe: Eine Betrachtung des regionalen Gründungspotenzials, Januar.