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

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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 Existenzgründungsfinanciers einen Beitrag, diese Lücke zu schließen. Die Ergebnisse zeigen, dass die Gruppe der bankähnlichen Financiers, inklusive öffentlicher Anbieter, zu einem bestimmten Maße informiertem Kapital anbietet. Die Gruppe der unabhängigen Start-up Financiers, 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.

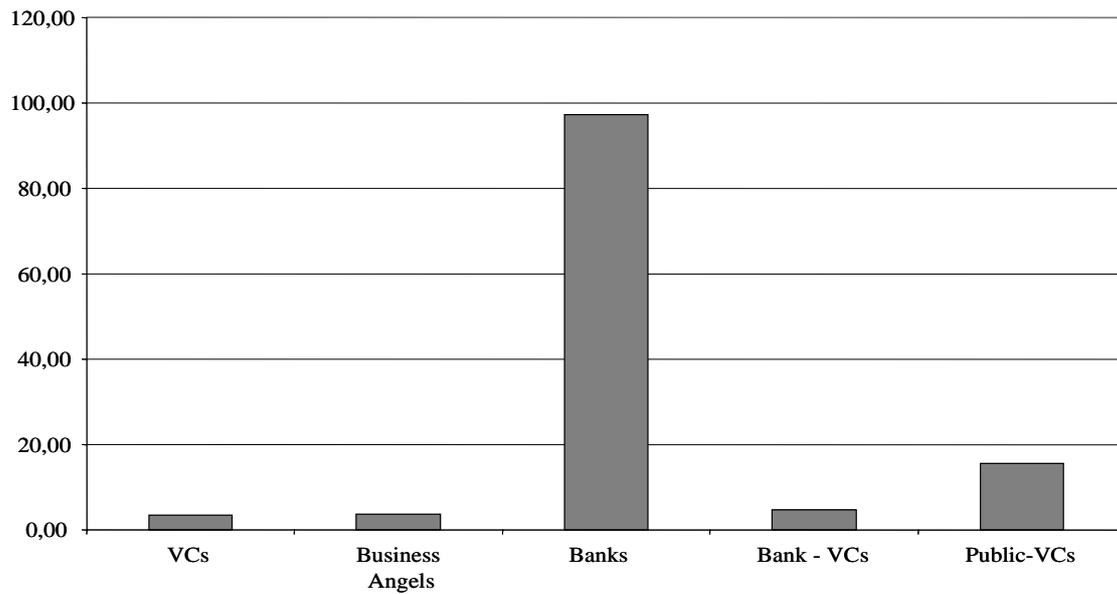


Figure 1: Portfolio firms per investment manager

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.

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