Venture Capital: An International Journal of Entrepreneurial Finance
Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/tvec20

Do business angel networks deliver value to business angels?

Dodo Zu Knyphausen-Aufseß [a] & Rouven Westphal [b]
[a] University of Bamberg , Germany
[b] Hasso Plattner Ventures , Germany
Published online: 15 Apr 2008.

To cite this article: Dodo Zu Knyphausen-Aufseß & Rouven Westphal (2008) Do business angel networks deliver value to business angels?, Venture Capital: An International Journal of Entrepreneurial Finance, 10:2, 149-169, DOI: 10.1080/13691060801946188

To link to this article: http://dx.doi.org/10.1080/13691060801946188

Venture Capital
Vol. 10, No. 2, April 2008, 149–169

Routledge
Taylor & Francis Group

Do business angel networks deliver value to business angels?

Dodo Zu Knyphausen-Aufseß[a]* and Rouven Westphal[b]

[a]*University of Bamberg, Germany;* [b]*Hasso Plattner Ventures, Germany*

(*Accepted 9 November 2007*)

Business angel networks act as a financial intermediary between investors and start-ups and are a means of overcoming the problem of matching entrepreneurs and business angels. In reality, most business angel networks do not accomplish this goal. Using the results of an empirical survey and five exploratory case studies, we develop three propositions concerning the business model of angel networks. We find theoretical and empirical evidence that angel networks actually foster adverse selection during the investment process. Consequently, angels, especially serial business angels, do not receive sustainable benefits from network services and actually face new risks during the investment process.

Keywords: business angels; business angel networks; business plans; financial intermediaries; matching problem

Introduction

Empirical studies and theoretical research show the tremendous impact young technology companies have on the creation of growth and wealth of economic systems. The backbone of success for these start-up companies is very often venture capital (Lessat et al. 1999; Gompers and Lerner 2001; Fingerle 2005). Venture capital falls into the category of either formal/institutional venture capital, which is invested by venture capital funds or corporate companies, or informal venture capital, which is directly invested by private individuals (often referred to as 'business angels') with no family connection to the business (e.g. Mason and Harrison 1995, 1997, 2000a; Sørheim and Landström 2001). Owing to their financing terms, business angels play a major role in closing the increasing gap of early-stage financing (Walker 1989; Mason and Harrison 2002). In Anglo-Saxon countries such as the UK or the US, informal investors invest more than 1.2% of the GDP in start-up companies, but only 0.55% is invested in Germany (Sohl 1999, 2003; Mason and Harrison 2000b; Liu 2000; Bygrave et al. 2003; Stedler and Peters 2003).

However, the market for business angel investments suffers from a matching problem. Although huge amounts of business angel capital are available in the market, start-up companies face great difficulties in accessing these resources, either because they cannot find the right angel, or because the angels are not able to find attractive investment opportunities (Mason and Harrison 1994; Berger and Udell 1998; Teel 1999; Harrison and Mason 2000; Paul, Whittam, and Johnston 2003; Harding and Cowling 2006). This is why

*Corresponding author. Email: dodo.knyphausen@uni-bamberg.de

ISSN 1369-1066 print/ISSN 1464-5343 online

DOI: 10.1080/13691060801946188
http://www.informaworld.com

researchers changed the term 'capital gap' to 'capital and knowledge gap' in the late 1990s (Harding 2002). The latter term describes two phenomena of the risk capital market of informal investors. First, the amount of capital needed by many start-up firms is greater than the entrepreneurs themselves can afford, but smaller than what venture capital firms are aiming to provide. Second, the information flow on supply (business angels) and demand (young technology companies) is so poor that the sheer lack of information impedes the conclusion of many transactions (Sohl 1999; BVCA 2001).

Business angel networks (BANs), which act as a financial intermediary between investors and start-ups, are a means to overcome this matching problem (Mason and Harrison 1997, 2000a; EBAN 2000a; CSES 2001). However, in reality, most North American and European BANs are relatively unsuccessful in matching business angels and entrepreneurs and offering services that provide a real benefit for their addressees (Wetzel and Freear 1996; Blatt and Riding 1996; Mason and Harrison 1996; Liu 2000). As a consequence, the networks have problems financing their activities and depend strongly on governmental subsidies (Mason and Harrison 1993, 1997; Harrison and Mason 1993, 1996; DG Enterprise 2001). This paradoxical situation, with market need or inefficiency on the one hand and the lack of success of BANs on the other, is the starting point of our research on German BANs. Simply stated, the research question for our study is: Why are the current business models of BANs unsuccessful?

We start with an analysis of BANs' existing range of services and the effect these services have on the investment process. We ask what impact does the networks' current range of services have on their clients? After analysing the supply side, we look at the demand side (business angels and young ventures) and analyse its real needs regardless of the services that might be offered. Finally, we ask how these services are generated. Can the costs plus a margin be passed along to the clients within a well-working profit mechanism, and is this profit mechanism sustainable?

The structure of this paper is as follows. In Section 2 we review the studies on BANs. In Section 3 we describe our method for exploring the sustainability of the business model of those networks. In Section 4 we present the results of our qualitative research, and in Section 5 we discuss these results and derive three propositions with respect to our research questions. Section 6 concludes.

Business models of business angel networks

Since the late 1990s the EU has attempted to spread the concept of business angel networks throughout Europe in order to remove the market inefficiency and to activate potential business angels (EBAN 2000b; CSES 2001). These activities have led to an increase in BANs from 54 in 1997 (almost all of them in the UK) to 196 by the end of 2003. The first German BANs were founded with the goal of increasing market transparency and the reduction of information asymmetry (Deutsche Bundesbank 2000; Just 2000). With their mobilizing role, and by facilitating intermediation, BANs increase the number of participants in the market and, in turn, the probability of a successful deal (Brettel, Jaugey, and Rost 2000; Stedler and Peters 2003). BANs are often organized on a regional level (Mason and Harrison 1995; BAND 2004).

How do the clients and the services offered by the BANs interact?

The European Business Angel Networks' (EBAN) umbrella organization defines BANs as 'private or semi-public bodies whose aim is to match entrepreneurs looking for equity with

business angels' (EBAN 2004). Based on this definition, services offered by BANs should focus primarily on young technology ventures and business angels (Klandt, Hakansson, and Motte 2001). Nevertheless, some networks have a broader focus and also include venture capital funds or governmental authorities as clients.

In this paper we focus on networks that serve start-ups and business angels. These networks have two main goals:

(1) Matching ventures looking for capital with business angels (Mason and Harrison 1997). To facilitate these matches, the network provides a transparent marketplace within the venture capital market and attempts to ensure the existence of a sufficient number of potential partners. The usual tools for facilitating these pairings are matching events, newsletters, matching databases, and electronic matching via the Internet (Teel 1999; Ege 2000; Klandt, Hakansson, and Motte 2001).
(2) To encourage matching activities, it is particularly important to mobilize and select both capital-seeking ventures and business angels, which will ensure that only sufficiently qualified partners meet (Aernoudt 1999; Ege 2000). Therefore, the deal flow must pass through a pre-selection process. Moreover, many BANs have a so-called Codex, or Code of Conduct (European Commission 2002), to which all members commit themselves. Doing so guarantees that only high-quality business angels are admitted to the network (e.g. that the signer is willing to invest private money and will not offer any services that would cause a cash-out in the company).

In addition to performing two core business goals – the increase in the transparency of the market and the number and quality of potential partners – BANs have started to provide a range of further services (Gulander and Napier 2003):

- BANs usually tend to support networking among investors and service providers such as lawyers and consultants (Ege 2000; Gulander and Napier 2003). The logic behind this support is straightforward. On the one hand, angel investors prefer to co-invest with other private investors (Harrison and Mason 2000; Liu 2000; Sohl 2003; Stedler and Peters 2003). On the other hand, service providers are needed to support the investment process. They also serve as potential sources of information on investment candidates.
- Another important activity of angel networks is the consulting services they can provide to young ventures in order to make them 'investment-ready', meaning that although BANs are structured as networks for investors, the majority of the consulting services are targeting young ventures (The Evaluation Partnership 2002). This service involves communicating the selection criteria and the general investment process of investors to the entrepreneurs, supporting the development of a business plan, and actively addressing investors (Sohl 1999; Aernoudt 1999; Mason and Harrison 2002). Furthermore, BANs provide special assistance to start-ups that could not be matched in any other way (Klandt, Hakansson, and Motte 2001). For the business angels, the networks provide advisory services through events, which include lectures, discussions, individual coaching, and workshops (EBAN 2003).

To a greater or lesser extent, these four business processes (matching, mobilizing/selection, networking, and consulting) can be found in almost any European BAN, although the way these functions work may vary. While all BANs focus on matching

activities, some favour consulting services and others see mobilization and selection as more important. For German BANs, both matching and mobilizing/selecting are core processes (BAND 2004, 2). We find it interesting that no network offers services for investments after a successful transaction.

So, in the broadest sense, BANs are financial intermediaries. They enable and facilitate trading between investors and capital seekers, but they do not invest any funds themselves. This is a major difference compared to traditional venture capital firms.

How do BANs provide their services?

The services of the networks are provided by the network employees. A survey of German networks conducted by the umbrella organization BAND found that the networks have an average of 2.6 employees, many of whom work only part time (BAND 2004). Owing to limited cash resources of the networks, services are rarely provided by external third parties, meaning that the quality and quantity of the services depend on the qualifications and capacity of the network managers. Therefore, the training of the network managers is vital to the success of a network. Moreover, since there are very few outsourcing opportunities, the number and abilities of the employees in the network who manage the organization are critical factors for making possible the services to business angels and start-ups. To utilize the services with maximum efficiency and to reduce costs, there is an effort to standardize them (e.g. coaching for business plan generation, matching channels). The goal of this standardization is the repeated sale of services with a minimum of individual customization.

How do BANs generate profit?

The Fraunhofer Institute's study (FHG-ISI 1998) has raised the question, at least for British networks, of whether BANs can be profitable. Unfortunately, no satisfactory answer to this question has been given until now. The broad EU benchmarking study concerning business angels only points out the lack of a successful profit mechanism for such networks, but does not offer a solution (European Commission 2002). European networks have tried many different ways to generate revenues through the services offered (Klandt, Hakansson, and Motte 2001; Nittka 2000): these include membership fees for business angels, success-based fees for young technology ventures, and fees for advisory services such as providing support in developing a business plan. So far, none of these revenue models seems to be sustainable. In fact, most European networks do not charge any membership fees (Klandt, Hakansson, and Motte 2001), as those fees might impede the recruiting of new business angels (Nittka 2000). Even investors who are already active within the network are not willing to pay fees. Moreover, there is also a problem with success-based payments, because networks would have to monitor and prove the causal connection between their services and the transactions on the one hand, and on the other hand, the networks might have an interest in transactions which were not reasonable for the investors (Nittka 2000). Fees for advisory services are not enforceable, simply because the start-up firms do not have the money to pay them. Hence, most networks in Europe, and especially in Germany, are nurtured, as is necessary, by public institutions or sponsors (DG Enterprise 2001; Saublens and Reino 2002; BAND 2002). Accordingly, almost all European BANs share the opinion that there is no lasting profit mechanism for services of BANs (The Evaluation Partnership 2002; BAND 2004).

Research method

It is difficult to conduct empirical research with BANs because of the challenging nature of the data collection task. This difficulty is due to the delicate nature of the investment situation and the limited number of networks that are successful in terms of deals that have been generated through the network. In particular, successful business angels are highly reluctant to talk about their investments (Harrison and Mason 1992). This is one of the major reasons why business angels' investments are still considered to be 'under-researched' (Mason and Harrison 2000a; Wiltbank and Sarasvathy 2002; Paul, Whittam, and Wyper 2007). Thus, we use an explorative approach to answer our research questions and to develop propositions that can guide future research on BANs (Eisenhardt 1989).

Our empirical analysis is based on the data of one BAN in Germany, the Northern Bavarian Business Angels (Nordbayerische Business Angels – NBA[1]). Although there are arguments stating that 'learning from samples of one or fewer' (March, Sproull, and Tamuz 1991) is possible (Siggelkow 2007), most researchers assume that to enhance the validity of the study, more cases are needed (Eisenhardt 1991; Eisenhardt and Graebner 2007). However, in our study, we choose the one-case approach for two reasons.

The first reason is that we consider the NBA to be the most successful BAN in Germany in terms of the number of participating business angels, the average size of the investments, and the number of deals per year (BAND 2004), even though the fundamental data, such as the number of employees and the proportion of public subsidies in the financing of the network, are similar to other German BANs (Westphal 2005). Our logic is that if the business model used by the most successful German BAN does not work, then there is no good reason to believe that the model works for other, less successful BANs. This reasoning allows for the possibility that German BANs do not represent 'best practice' compared to their counterparts in other countries, as has been observed for venture capital firms (e.g. Manigart et al. 2002; Hege, Palomino, and Schwienbacher 2003; Bruton, Fried, and Manigart 2005). However, the example of BANs in the United Kingdom shows that this may not be the case in the angel sector. Referring to Mason and Harrison (1997), *all* of the private sector commercial networks that focus exclusively on informal venture capital matching activities either no longer exist or else have a track record that is clearly below that of the NBA (see the respective websites).

Second, we were able to obtain access to all relevant data for deals, business angels, and start-ups. It was very important to find a network with a sufficient number of investments and a certain duration of activity. The NBA network was already in existence in 1999 and was institutionalized in 2000. Therefore, we were able to observe the effects caused by the appearance of the BAN on the local informal venture capital market. Table 1 provides an overview of its activity.

Table 1. An overview of NBA network activity: 1999–2002.

	1999	2000	2001	2002
Submitted business plans	–	172	197	149
Number of business angels	–	143	89	79
Number of investments	6	24	19	10
Number of investments with complete datasets	4	16	16	6
Amount of invested capital	€18,043	€19,737	€24,817	€9775
Amount of invested capital by business angels	€772	€5858	€8362	€3161

Our primary requirement was for quantitative operating figures and objective facts to minimize the risk of subjective interpretations of the questions and answers by the relevant players.

We analysed the range of services offered continuously for its content over a period of three years (2000–2002). We performed this analysis by repeatedly evaluating available external talks and presentations and also the network's internal documents about their services, and by regularly taking part in their service delivery (e.g. individual coaching, workshops). Simultaneously, we defined statistical operating figures, for example, the number of attendants who were matched, to measure the effects of these services. First, we analysed the individual groups of relevant players (business angels and young technology ventures) to determine their demand for services. By using continuous data collection, we were able to analyse the network services over a period of 36 months from January 2000 through December 2002. We consolidated the datasets to the end of the year (31 December) to ensure temporal comparability.

To obtain indications for the effect of the BAN on the investment process, we evaluated all investments within the network over the span of four years. Complete datasets from 42 investments were available, all of which were made between 1999 and 2002. We separated the investments into two groups. The first group comprised those that were conducted without either the business angels or the young technology venture being actively supported by the BAN. These investment partners met outside of the network or in the open marketplace of the network, e.g. the public business plan competition. The open marketplace had no pre-selection of start-ups or investors. Furthermore, neither angels nor ventures used much of the network's services later on in the investment process. We used this group to analyse how investments are conducted when there is no influence of the network services. Hence, we call these deals investments 'without BAN'. The second group consists of investments that were conducted in the network's closed marketplace, ensuring that both parties had passed a pre-selection process. During the investment process, both sides, especially the young technology ventures, made extensive use of the services offered by the BAN. To clearly delineate between the first and second groups, we include only those ventures that requested at least five further coaching or training sessions in the second group. We analyse this group, which we call investments 'with BAN', to see the influence of network services on investments.

In considering these two groups, we analysed the differences between investments with active participation of the BAN and investments without its participation. A more detailed analysis of the investment process and of the specific terms of the contract was not possible, owing to the complexity and the unavailability of detailed data. Therefore, we focused on the monetary conditions of the investment at the time when the contract was concluded. We used a fully standardized questionnaire in this cross-section analysis. We conducted this test through phone interviews, and collected the data as soon as possible after the conclusion of the investment.

To judge the real success of an investment and for a sufficient number of exits to be collected (e.g. five to ten years), we would have needed a longer period of investigation. Accordingly, we concentrated only on recording an investment if it was a total loss (disinvestment due to insolvency) or not. The first reason for doing so is the worst case scenario. For the investor, a failure due to the insolvency of the young technology venture is the worst way to disinvest (total loss). Every other method of disinvesting (e.g. a trade sale) means a smaller loss or a real return. The second reason is causality. Causes of insolvency that have their roots in the time before the investment, especially those that could have been discovered by carefully conducted due diligence, usually hit the start-up within the first

12 to 18 months after initial financing of the young technology venture (Westphal 2005). This problem with this approach is that it leaves a kind of fuzziness caused by 'living deads', investments that will never provide any return and also will never become insolvent, or investments that become insolvent at a later stage. This must be taken into account in the interpretation of the results of the analysis. To include the insolvencies, we expanded the study's time frame by 18 months following the last investment. As noted, we used a fully standardized questionnaire and rechecked it every three months for all investments. Table 2 provides an overview of all the information we received from our analysis.

In addition, we chose five investments out of the 42 to conduct more detailed case studies. Two of these case studies were investments without a BAN involved. The other three had a strong BAN involvement. The cases were chosen because they had the greatest potential to highlight the significance of the BAN phenomenon.

Three different angels made the five investments (two angels made two investments each). These angels come under the category of 'entrepreneur angels', as defined in the scheme created by Coveney and Moore (1998). According to their activity level, one of them was a 'virgin angel' and the other two investors were 'serial angels'. Both serial angels made at least five investments between 1999 and 2002. Serial Angel I invested funds up to €1.5m in young technology ventures that were in the early stage, but Serial Angel II invested well below €100k in ventures that were in the seed-money stage. All three business angels were members of the NBA. Three of the investee businesses were in the IT/software sector and two were in the high-tech sector. At the time of investment, all five were expected to be very successful and to be candidates for future IPOs.

For these case studies, we conducted face-to-face semi-structured oral interviews with the angels and the entrepreneurs of each investment. Further sources, such as internal documents, business plans, and information from the Internet, were used to enhance the datasets. As is typical for case studies, to allow further data collection the data collection and data analysis phases coincided. The whole process of data collection and data analysis took place between 20 September 2001 and 30 June 2004.

Results

First, we analyse the mobilization and selection effort and the outcome of the BAN. For the young technology ventures, we assess this information on the basis of the number of

Table 2. Nature and sources of data.

Content	Method	Timeframe	Data was collected	Number of datasets
Services	Content analysis	01.01.1999–31.12.2002	Continuously	–
Service delivery	Panel analysis with standardized questionnaire	01.01.1999–31.12.2002	Continuously, consolidation on 31.12.	464 (ventures) 234 (angels) 142 (service deliveries)
Conditions of contract	Cross selection analysis with standardized questionnaire	01.01.1999–31.12.2002	Onetime	42
Insolvency	Fully standardized question	01.01.2000–31.06.2004	Quarterly	(14)

business plans submitted per year, and on the basis of the plans that passed the various steps of the selection process (Table 3a). During the observation period, we closely monitored the data for every plan submitted.

Our analysis shows that the number of plans submitted to the network increased initially, but then dropped in 2002 despite the establishment of the network that should have led to a better deal flow. To interpret these figures, we benchmarked the numbers against the participants of business plan competitions during that time period. During the 2000–2002 period, the deal flow of the network was significantly better than those of other networks, at least in relative terms. The absolute number of deals between 2000 and 2002 only dropped to approximately 87%, compared to 56% and 76% for the benchmark networks. We therefore conclude that the network was relatively successful. Nevertheless, the network was influenced by the economic downturn during the observation period.

Another outcome of the data is the declining percentage of the deals that were accepted to enter the network. Possible reasons for this effect might be the better quality of screening, the decline in the quality of the business plans, or the founders' decision not to apply themselves as they previously had in order to overcome the new, stronger selection criteria. However, we were not able to link this trend to any single cause.

Table 3b examines the number and level of the business angels' activities. We divide the activities into three categories: (1) active business angels who made at least one investment over one year; (2) active business angels who, although they played an active part in the network, for example, by participating in events or negotiations with young technology ventures, did not make an investment; and (3) inactive business angels who were business angels by definition, but who did not make any investments and did not participate in any network activity. To collect the data, we monitored every event response of the angels to a

Table 3a. Trends in the mobilization and selection processes of ventures.

		2000	2001	2002
Mobilizing and selection of ventures	Rejected in stage I	60 (34.9%)	84 (42.6%)	83 (55.7%)
	Rejected in stage II	28 (16.3%)	43 (21.9%)	22 (14.8%)
	Accepted	84 (48.8%)	70 (35.5%)	44 (29.5%)
Total		172	197	149
Compared to Munich BPC	All stages	483	361	271
Compared to Northern Bavaria BPC	All stages	181	185	137

Table 3b. Trends in the mobilization and selection processes of business angels.

		2000	2001	2002
Mobilizing and selection of business angels	Invested angels	22 (15.4%)	17 (19.1%)	7 (8.8%)
	Active angels	23 (16.1%)	46 (51.7%)	45 (57.0%)
	Inactive angels	98 (68.5%)	26 (29.2%)	27 (34.2%)
Total		143	89	79
Classifying of business angels	Entrepreneur angel	49 (34.3%)	40 (44.3%)	35 (44.3%)
	Corporate angel	29 (20.3%)	14 (15.7%)	13 (16.5%)
	Wealth max. angel	4 (2.7%)	6 (6.7%)	8 (10.1%)
	Income seek. angel	61 (42.7%)	29 (32.7%)	23 (29.1%)

proposed plan or negotiation with a start-up. From this evidence it is striking that the total number of business angels was nearly halved (from 143 in 2000 to 79 in 2002). Especially notable is the fact that many inactive angels left the network. Their number dropped from 98 to 27, which is more than the total loss of the network, but the percentage of active and invested business angels first rose and then remained more or less constant for the business years 2001 and 2002. Within this active and investing group, the number of invested business angels dropped sharply, which corresponds with the market trend. Obviously, the network was not able to overcome this trend.

We also find that the quality of angels (active and invested angels compared to inactive angels) improved after 2000, the initial year of our survey, and that this improvement continued in the following years. The selective process of the network for investors changed the investor structure. The network seems to have been able to activate the investment willingness of the angels in the network and to discard those that were not willing to invest.

When we classify the angels according to the Coveney and Moore (1998) scheme[2] the decline in the number of income-seeking angels is striking, whereas the proportion of entrepreneur angels remains relatively constant after the establishment of the network at 40%. The number of wealth-maximizing angels increases continuously in the course of the three years, both proportionally and in terms of absolute numbers, but remains at a very low level. Also, many corporate angels left the network, especially in 2001. Our attempt to record the reasons for the withdrawals was not completely successful. However, we can state that the income-seeking angels came under pressure to leave the network, because the Code of Conduct we described in Section 2 prevented them from generating income from the ventures. (The Code demanded capital investment while prohibiting the withdrawal of liquid funds, for example in the form of consulting fees.) For the other categories, the drop in 2001 was exacerbated by the changing business climate resulting from the breakdown in the New Market, the German stock exchange for high-growth companies, and the downturn of the economy as a whole.

Overall, the empirical data show that the mobilization and selective processes have had a major impact on the structure and number of angels and start-ups in the network's closed marketplace. However, during the three-year period, the network did not succeed in raising the number of potential investment opportunities and of business angels in the network.

The method of contact (matching) between potential investors and ventures is the core process of the BAN (Table 4a). The contacts were made at matching events, via newsletters, or via a personal, individual oral approach. In comparing the various methods of contacting, it seems that the importance of matching events was initially very high (high number of participating angels) and then declined so that at the end of the evaluation (2002), such events played hardly any role at all in the matching process. In contrast, the number of contacts matched by phone, email, or personal address (=individual matching) rose continuously over time and became the most important method of matching used by the network in 2002.

One reason for the decrease in participants in matching events could relate to the changing structure of the participating business angels. In the early years, it was mainly the income-seeking angels who participated in the events, and as they withdrew from the network, so the number of participants in the events declined. A reason for the similarly strong decrease of the other participating business angel types, despite their relatively constant number in the network, may have been the attractiveness of the additional services offered during the matching events. To further investigate this issue, we examined

the two additional services that were offered at the matching events: networking services, which were the matching events that were the only way for angels to get to know other investors; and training or consulting services for investors. These services for business angels were offered exclusively at the matching events (e.g. new developments in contractual affairs).

We have seen that investors switched from the matching events to the individual matching channels. In contrast, outside the events, investors did not ask for networking and training services through other channels (e.g. individual meetings). It seems that the training services were not attractive enough for the business angels of the network to invest time using these services. However, this low interest could also have been caused by the poor quality of the services.

Table 4b shows that the demand for training and consulting services by start-up firms is quite different. The network offered consulting services and training for start-up managers through workshops and individual coaching sessions. The volume of training events rose continuously, which could be an indication of the high demand for this service from managers. The rise in one-to-one coaching is notable, and it leads us to suppose an intensive attendance during the investment process. These coachings were only available for teams that passed the selection process. On average, the number of coachings per team rose from 0.6 in the year 2000 to 1.5 (2001) to 3.4 in the year 2002. Hence, consulting services and training were accepted and heavily used by the start-ups, but not by the business angels. Matching on a one-to-one basis became the most important matching method.

Another aim of the networking activities was the syndication of the investors. Table 5 examines the syndications between business angels and/or in combination with VC

Table 4a. Use of matching and consulting services for investors.

		2000	2001	2002
Matching services	Matching events (n to n) (including networking, training and consulting)	7	9	5
	Participating angels on matching events	152	71	17
	Individual matching (1 to 1)	101	154	203
	Newsletter matching	10	12	12
Structure of business angels types attending matching events	Entrepreneur angel	23	8	3
	Corporate angel	43	30	8
	Wealth max. angel	8	7	4
	Income seeking angel	89	26	3

Table 4b. Use of matching and consulting services by start-ups.

		2000	2001	2002
Training and consulting services	Workshops (1 to n)	7	10	20
	No. of participants on the workshops	28	50	120
	Individual coaching (1 to 1)	54	103	148
	Average coaching per start-up team	0.6	1.5	3.4

companies. We see that the syndication activities within the network first rose and then declined sharply. This decline corresponds with the absence of investors from the social events, which were meant to serve as a networking platform, and also corresponds with the withdrawal of the VC companies from the initial seed-money financing (see statistics of the German Venture Capital Association for 2000–2003 at www.bvk-ev.de). The principal interest in co-investments that other researchers observe (Liu 2000; Sohl 2003; Stedler and Peters 2003) does not seem to have provided sufficient incentive for participating in networking activities.

We now focus on the financial terms of the investments in order to examine what has been the impact the activities of the BAN. In principle, our results are in line with various European studies (e.g. EBAN 2004) that assess the average investment volume of business angels up to €200,000. However, examining the development of the arithmetic mean of the investment sum from a business angel per deal and the amount of shares acquired for this investment during the observation period leads us to some interesting observations (Table 6a). Despite the general crash of the venture capital market, the business angels in the network continuously raised their investment volume. This increase can be explained by the decrease in investments by VC companies in the early-stage market, which created pressure on the business angels to invest more to close the expanding financing gap (KFW 2003). This explanation is supported by two other figures. First, the total volume of the first financing rounds dropped from over €2.6m in 1999 to below €1m in 2002. Second, the participation by the business angels in these rounds rose from below 10% (€192k in a €2.6m round) to 50% (€526k in a €951k round) in the same period. However, the stagnation in the percentage of shares that business angels received for their investments (average of 15% in 1999 and an average of 13% in 2002) means there was a significant rise in the valuation of the ventures during the period of observation, which is in total contrast to the general market developments.

Table 6b investigates the company valuation development for ventures with and without BAN involvement in order to analyse whether the BAN influenced the value of a young technology venture. The results indicate that the valuations for investments without the involvement of the network follow the general trend of company valuations on the venture capital market, increasing before 2000 and then dropping until 2002. In comparison, the valuations of the ventures that used the services of the BAN grew significantly. Even though the data can only be used as an indicator, since the empirical standard deviation of the measuring points is very high and other, unmonitored factors might also be influencing the valuation, the unequivocal nature of this finding is surprising. It seems that the services of the network did influence the valuation of the ventures.

Our next question is whether the networks had any influence on the success of a deal, aside from their evaluating service. To answer this question, in Table 7 we analyse the number of investments and disinvestments through insolvency. We also extended our

Table 5. Syndication activities.

	1999	2000	2001	2002
Syndication between business angels	0	4	3	0
Syndication between angels and VCs	0	2	2	0
Syndication between one angel and VCs	3	4	1	1
No syndication	1	6	10	5
Total	4	16	16	6

observations for a period of 18 months (up to mid 2004) so that we could cover the effects on the 2002 investments as well as possible. We see that the number of investments increases during the time in which the venture capital market collapsed in 2002, and that there are more investments in 2002 than in 1999. On the other hand, there are also a large

Table 6a. Financial characteristics of investments by round.

	1999	2000	2001	2002
Average size of investment round	€2,634,403	€1,244,520	€1,002,224	€951,893
Average amount invested by business angel	€192,984	€296,992	€405,161	€526,892
Average equity stake for the business angel	15%	18%	18%	13%

Table 6b. Company valuations.

	1999	2000	2001	2002
Company valuation with network support		€1,378,530	€3,343,393	€5,660,377
Company valuation without network support	€1,286,563	€1,876,156	€1,645,750	€645,420

Table 7. Insolvencies amongst businesses that raised finance.

	1999	2000	2001	2002
Financed ventures without BAN	4	9	8	3
• of these Insolvency in 2000	1			
• of these Insolvency in 2001		1		
• of these Insolvency in 2002		2	1	
• of these Insolvency in 2003	1	1		
• of these Insolvency in 2004 (first half)		1		
Sum of insolvencies up to 30.06.2004	2	5	1	0
Insolvency rate	50%	55%	12.5%	0%
Financed ventures with BAN	0	7	8	3
• of these Insolvency in 2000				
• of these Insolvency in 2001		2		
• of these Insolvency in 2002		3	3	
• of these Insolvency in 2003		1	3	
• of these Insolvency in 2004 1. HJ			1	1
Sum of insolvencies up to 30.06.2004	0	6	7	1
Insolvency rate	n/a	85.7%	87.5%	33%
Total	4	16	16	6
• of these Insolvency in 2000	1	–	–	–
• of these Insolvency in 2001		3	–	–
• of these Insolvency in 2002		5	4	–
• of these Insolvency in 2003	1	2	3	
• of these Insolvency in 2004 1. HJ		1	1	1
Sum of insolvencies up to 30.06.2004	2	11	8	1
Insolvency rate	50%	69%	50%	17%

number of observable insolvencies. Indeed our statistics show that, ironically, the more the young technology ventures were consulted by the network, the more they tend to become bankrupt, and vice versa (Figure 1).[3] Those start-ups that raised finance and also received intensive consulting and training from the network during the investment process had a distinctly higher level of insolvency than did those that were financed on the open marketplace. The network offered no consulting services, which, as a follow-up to the financing, could have influenced the implementation of the business plan and affected the success of the enterprise. Certainly, other factors, such as general market conditions or specific factors of the business model, also influenced the insolvency risk. Nevertheless, the evidence is striking that through the services of the BAN, more young technology ventures that were financed had business models that were not workable. Since the sample we analyse is coupled only to the consulting and selection processes, we conjecture that more non-successful investments were made on the closed marketplace of the network.

Our results are confirmed by our case study interviews. Table 8 provides examples of quotes from these interviews. The only deal with a successful exit (IPO) was one of the deals that the serial entrepreneur made without the BAN. Looking into the quotes from the interviewees, the serial angels saw value only in the quantity of the deal flow, not the quality. Most of the angels were not particularly interested in other services from the network. Business angels and start-ups saw greater value from the network services for the start-ups than for the investors. One serial angel had already seen the impact of the BAN on the signalling of the start-ups: 'Teams with high-quality business plans have better chances to receive money, even if their product is from low quality.'

Discussion

The information asymmetries between the investor and investment object seem to be a good starting point for an assessment of the BAN's services (Harrison, Dibben, and Mason 1997; Amit, Brander, and Zott 2000; Van Osnabrugge and Robinson 2000). As Leland and Pyle (1977) recognized, a financial intermediary is a 'natural response to asymmetric information'. They found that the existence of transaction costs can explain

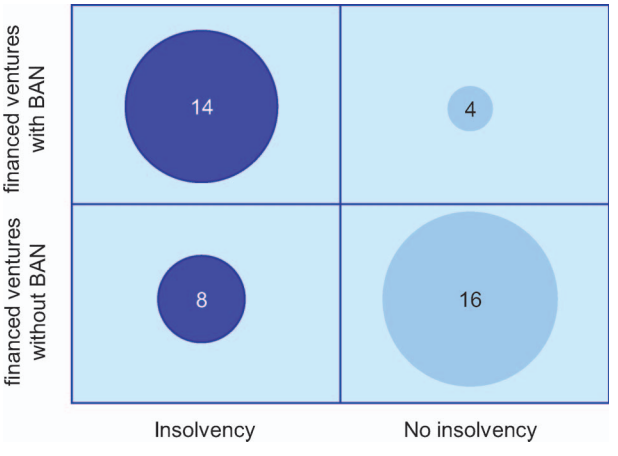

Figure 1. The relationship between insolvency and the involvement of the business with the network.

Table 8. Sample quotes from case study interviews.

	What impact does the networks' current range of service have on their clients?	Which services are in demand from the side of the clients?	Can a sustained profit mechanism be developed from the services being offered?
Serial Angel I	The differences between teams with or without network support are the business plans. Teams within the network know how to fool the investors and to catch them. Teams with high-quality business plans have better chances to receive money, even if their product is from low quality.	The quality of the deal flow is not better than from my private network but the number of deals is higher. I am not looking for more service.	The teams should pay the services, e.g. with stocks.
Serial Angel II		The most important service for the business angels is the deal flow. I cannot imagine any know-how transfer for business angels. Teams are looking for angels and know-how consulting.	I am not willing to pay anything. My membership in the network is value enough for the network.
Virgin Angel	If I get a recommendation from the network it is like a quality signal.	I am looking for individual one-to-one matching. The network helps the teams to know the investors and what they want to see.	I will not pay any fee for finding a deal. I would have a problem if the network wants to make money with their services.
High-tech AG	It would have been harder without the network to find a business angel. Our business plan was definitely better after the feedback of the network.	The workshops and seminars had a great value for us.	At least 50% of the teams are not willing to pay a fee.
Software GmbH	The contact with the business angels and the feedback on my business plan was valuable. I definitely saved money.		I prefer free services for the teams. The angels should pay for the network.
Software AG	The feedback on the business plan was helpful.	The contact to the investors and the workshops are very helpful for the teams.	I will agree on a fee, if the network services lead to a successful matching. Basically the angels should pay the network.

intermediary activity on the capital market, but in many cases it is not sufficient as the only reason. Only the additional consideration of agency costs allows a complete explanation of a financial intermediary (Gompers and Lerner 1999).

BANs extensively influence the principal–agent relationship. They help to reduce the initial information asymmetries that exist during the discovery phase of the financing process between the investor and the recipient. However, for a real assessment of the influence on the information asymmetries, we must evaluate the total process chain. There is evidence that the networks increase the information asymmetries in the later process steps of selection and due diligence. The careful selection and due diligence of a young technology venture requires more than expert knowledge and experience in the areas of technology and business. It also demands a great deal of time. Business angels have general business experience, but they seldom have the specific technological knowledge that is needed for understanding the background of a new venture, and the time for a careful evaluation. Therefore, they tend to rely on the signalling of the young business ventures and the possibility of influencing the venture's management after a contract has been written.

These specific and heterogeneous service needs of the business angels towards a BAN meet with a common and homogeneous service need from young technology ventures towards a BAN for information about investors, the investment process, and the preparing of business plans. Without the help of the network, a business angel can observe and differentiate between the varied strengths signalled by the young technology ventures (e.g. a good written business plan). If these signals are influenced by the network's services to the ventures, then the ability to differentiate will be evened out and the weaker young technology ventures will be able to send out strong signals to the business angel (e.g. a good written business plan due to the help of network coaching). This signalling facilitates a better negotiating position for the start-up and thus leads to better contracts and company evaluations. But for the business angel, the danger of adverse selection grows considerably. Because angels often use somewhat intuitive methods of choosing their investments, they are likely to favour the less promising ventures that have strong signals due to their use of the network's services rather than the more promising ventures that do not. We are mindful that, especially in the early-stage investment phase, adverse selection will almost always lead to the loss of the entire investment. Therefore, false signals due to the influence of BANs can lead agency costs to a maximum (total) loss.

With these considerations as a background, we derive three propositions from our empirical research that are directly related to our research questions. First, our data show that for the business angels, the services offered by the BAN lead to a sharp rise in the company valuations. The initial and follow-up training, which is so heavily used by the start-ups, creates a false value. Apart from the terms, which become more expensive, a high insolvency quota is especially observable among the enterprises guided by the network. The comparison with the investments that were made without the active involvement of the network is striking. Moreover, there is evidence that where the business plans and management in the selection and due diligence phase are concerned, the BANs' services do not reduce the information asymmetry experienced by the business angels. Because of the considerable transfer of the BANs' knowledge to the young technology ventures, it is more difficult for the business angels to distinguish between 'good' and 'weaker' investment opportunities.

Weaker ventures can easily imitate those signals that are generally considered to be indicators of a good business plan. To discover these false signals, the business angels

would have to change their due diligence approach to closely evaluate the plan. Angels do not seem to recognize this issue and therefore do not change their due diligence process. This reluctance leads to an increasing danger of adverse selection. There is also evidence that the business angel, handicapped by the increased competition of having many other angels in the network, no longer succeeds in getting the necessary contractual rights of control without limitations. Therefore, the method of incomplete contracts, which is generally used by business angels and includes strong ex-post control and consulting, is no longer practicable. At the same time, BANs do not offer any services for the investment after the closing of the contract. Such services could help the angels counterbalance their incomplete contracts. On the other hand, young technology ventures gain simultaneous access to a number of investors through the network. This competitive situation increases the company valuation. Thus, we state the following proposition:

Proposition 1: If the present offer of services by the business angel network results in a one-sided advantage for the young technology ventures, then it leads to a deterioration of (investment) conditions for the business angel.

Second, our empirical data show that the business angels had little interest in the standardized service offerings. Business angels did not accept initial or continued training, networking services, or even the global mediation services through events. The business angels we interviewed in the case studies strengthen these findings, especially for the serial, well-experienced angels (see Table 8).

Virgin angels are special customer group. (Their small number and classification will change with their involvement/experience.) They especially need experience and knowledge from experienced, serial angels. Only if such serial angels are in the network can the network help the virgin angels. Therefore, we focus in our research on the serial angels, assuming that they are a precondition for any value-added service to virgin angels.

To reduce the information asymmetry between themselves and the young technology ventures, experienced business angels are particularly interested in information and due diligence services that precede the contracts. However, these services are very specific for technology as well as the assessment of business models, especially in the case of young technology ventures. For example, there are large differences between the markets for a biotechnological product or consumer goods. Hence, investments in early phases of technology-intensive companies require a wide range of specialization on the investor side (Betsch, Groh, and Schmidt 2000). This specialization implies very high transaction costs incurred on every investment opportunity. Business angels are aware of this implication and try to reach the investment decision on the basis of their experience and not on the basis of an in-depth due diligence exercise (Paul, Whittam, and Wyper 2007). We cannot expect to find this kind of experience in BANs.

The service offerings of the networks for the period of investment represent a different case. There are several standardized services that could be offered, such as monthly financial controls. But the direct execution of these activities by the business angel is a basic precondition for reducing the information asymmetry between the investor and the start-up. The existence of an intermediary could introduce additional asymmetries, since it would double the principal–agent relationships. Therefore, the additional value from reduced transaction costs due to ‘after closing’ services by the networks can be rapidly compensated by new agency costs (agency relation between investor and network and network and start-up). Moreover, a network involvement at this stage contradicts the fact that business angels are, by definition, ‘active’ investors, meaning that they have to be actively involved in the development of the company through coaching and guiding. If a

third party takes over these tasks, it contradicts the fundamental definition of a business angel. Thus, our second proposition is as follows:

Proposition 2: Business angel networks do not offer sustainable customer benefit to serial business angels who, in contrast to young technology ventures, do not need or request standardized services.

Third, the empirical data are a strong indicator that young technology ventures receive a great advantage in financing if a BAN is involved. The company evaluations within the network are significantly higher than are those outside the network. The relatively higher insolvency level is a sign that the young technology ventures with weaker business models are able to gain access to advantageous financing through the services of the network. This faulty selection is disadvantageous for the better ventures and favourable for those with weaker business models. Thus, the latter should be prepared to pay a fee to the network, because they would have more difficulties in obtaining financing without the network. We note that in our sample, the more promising young technology ventures were financed on the open marketplace (hence they show a lower insolvency rate), yet at distinctly lower evaluation levels.

For the business angels, the presence of the network leads to a deterioration of terms and to a higher risk of mistaken selection in connection with an insolvency. There is no sign of an added value that might justify a fee. The marketplace itself, which has no control over quality, is accepted as an additional possibility for deal flow. The different services offered by the network were seldom demanded by the business angels. Furthermore, our empirical analysis shows no evidence that BANs generate an added value for virgin angels.

The only argument we could find from our evidence for a network fee is the higher company valuation. This fee should be paid by the beneficiary, the young technology ventures. So why do they not pay? One answer would be that the young technology venture simply cannot judge whether the valuation is significantly higher with the help of the network than without. If the network wants to generate income by offering consulting services, then this aspect should be disclosed before a contract is closed. This disclosure would contradict the image of a fair marketplace. The higher valuation harms the business angel to the same extent. No wonder, then, that the business angels usually withdraw from the marketplace when they realize the aforementioned disadvantages.

As we have seen, it is mostly the serial angels who do not receive the services that could lower their agency or transaction costs. The only costs that are reduced are the opportunity costs in the discovery step of the process. But from an agency theory point of view, there is evidence to the effect that we must assume a distinct rise in agency and transaction costs for the following phases of the investment process, such as selection, due diligence, and monitoring. Putting these effects together leads to the conclusion that, despite the fact that the information asymmetries may be reduced in the discovery step, the view of the entire investment process leads to a significant increase in agency and transaction costs for the serial angels. The virgin angels might receive a kind of basic training that would facilitate their start in investment activity. Nevertheless, the disadvantages which we described for serial angels are true for virgin angels as well. Thus, business angels have no sustainable customer benefit from network services that could serve as the basis for a revenue model for the BANs. This implication can be stated in the following proposition:

Proposition 3: If business angel networks have no sustainable benefit for the business angels, then they can not develop a lasting profit mechanism, neither through fees from business angels nor from the start-ups.

Concluding remarks

Our analysis of the services offered and demanded of a business angel network and the value added by these networks suggests that an efficient business model for those networks does not exist. Why is this the case? With respect to the four most important services of a BAN, we draw the following conclusions from our research:

- Access to maximum deal flow is certainly the most important service offered by business angels. However, there are many players on the capital market who offer the service of matching contacts between ventures and business angels free of charge (e.g. banks, tax accountants). Because of the nature of their business relationship (business angels are very important customers), most of the players have a quality filter in their deal recommendations to the business angel. Thus, BANs lack a unique selling proposition. We are not able to show that the business angels have any need for services which go beyond their intent to increase their deal flow. Therefore, deal flow generation is important, but obviously a network cannot charge a fee for that service.
- Unfortunately, the advantage of the mobilizing and selection services that are generated by a closed marketplace such as a network are not very convincing when compared to the same services offered in the open market. This fact is primarily due to the specific attributes of the active participants and the venture capital market itself. On the contrary, the transparency of the closed market influences the terms and is disadvantageous to the business angels. Consequently, this group has strong motives to withdraw from the closed market of the network. This could be a reason why there is still little organization of BANs.
- Business angels do not make sufficient demands for consulting services, nor do the consulting services generate enough relevant value added to the ventures. These services lead to a biased market that favours the young technology ventures, alters the market mechanisms, and leads to erroneous allocations.

We can summarize our conclusions as follows: The present intermediary business model not only does not make it possible for BANs to generate a decisive value added for a successful investment of business angels in young technology ventures, but might even inhibit this investment. A business model that does not generate sustained added value or client value can never be profitable in business management terms.

Research on BANs in Europe, and especially in Germany, is still in its infancy. This study reveals various additional new problems that require further discussion (Westphal 2005). We are well aware that the dataset for our research is very small and that it must be expanded in future research. Nevertheless, discussions with many serial business angels over the last years support our results. Therefore, additional research is necessary to discuss these results, since they might make a turning point in the attitude for fostering of business angel investments.

Notes

1. The abbreviation NBA was the official abbreviation of the network from 1999. In 2004, the network was rebranded under the name ‘netzwerk-nordbayern’ (www.n-b-a.de).
2. We performed this classification during personal interviews that every angel had with the network manager.
3. These findings were not contradicted by a check-survey on the dataset companies in summer 2007. Three successful exits via IPO were made; all three companies belonged to the group

without BAN involvement. Six further companies went out of business or were facing severe financial problems due to lack of business success, three of them with BAN involvement, three of them without.

References

Aernoudt, R. 1999. Business angels: Should they fly on their own wings? *Venture Capital* 1: 187–95.

Amit, R., J. Brander, and C. Zott. 2000. Venture capital financing of entrepreneurship: Theory, empirical evidence and a research agenda. In *The Blackwell Handbook of Entrepreneurship*, ed. D.L. Sexton and H. Landström, 259–82. Oxford: Blackwell.

BAND. 2002. *Befragung der Business Angels-Netzwerke Deutschland*. Essen: BAND.

———. 2004. *Business angels und ihre Netzwerke in Deutschland: Ergebnisse einer empirischen Untersuchung des Business Angels-Netzwerks Deutschland e.V*. Essen: BAND.

Berger, A.N., and G.F. Udell. 1998. The economics of small business finance: The role of private equity and debt markets in the financial growth cycle. *Journal of Finance* 53: 613–73.

Betsch, O., A. Groh, and K. Schmidt. 2000. *Gründungs- und Wachstumsfinanzierung innovativer Unternehmen*. Vienna: Oldenbourg.

Blatt, R., and A. Riding. 1996. ' ... Where angels fear to tread': Some lessons from the Canada Opportunities Investment Network experience. In *Informal venture capital: Evaluating the impact of business introduction services*, ed. R. Harrison and C. Mason, 75–88. Hemel Hempstead: Prentice Hall.

Brettel, M., C. Jaugey, and C. Rost. 2000. *Business angels: Der informelle Beteiligungsmarkt*. Wiesbaden: Gabler.

Bruton, G.D., V.H. Fried, and S. Manigart. 2005. Institutional influences on the worldwide expansion of venture capital. *Entrepreneurship Theory and Practice* 29: 737–60.

BVCA. 2001. *Report on business angel network investment activity 1999/2000*. London: BVCA.

Bygrave, W.D., M. Hay, E. Ng, and P. Reynolds. 2003. Executive forum: A study of informal investing in 29 nations composing the Global Entrepreneurship Monitor. *Venture Capital* 5: 101–16.

Coveney, P., and K. Moore. 1998. *Business angels: Securing start-up finance*. Chichester, UK: John Wiley & Sons.

CSES. 2001. *Guide to venture financing in regional policy*. Brussels: European Commission.

Deutsche Bundesbank. 2000. *Monatsbericht Oktober 2000: Der Markt für Wagniskapital in Deutschland*. Frankfurt: Deutsche Bundesbank.

DG Enterprise. 2001. Benchmarking of business angels and business angel networks in EU countries. EU Working Paper.

EBAN. 2000a. Business angels networks in Europe. Seminar, 22–23 May, Brussels.

———. 2000b. *European Business Angel Network Info*. Brussels: EBAN, Nr. 1.

———. 2003. Synopsis of the EBAN-LINC Scotland event held 19–20 May, Edinburgh.

———. 2004. Business angel networks in Europe: Their role and rationale. www.eban.org/download/EBAN%20Presentation.ppt (accessed 8 August 2004).

Ege, C. 2000. Aufbau eines Business Angels-Netzwerks. Forschungsberichte des Instituts für Wirtschaftsinformatik der Universität des Saarlandes (IWI), No. 162.

Eisenhardt, K.M. 1989. Building theories from case study research. *Academy of Management Review* 14: 532–50.

———. 1991. Better stories and better constructs: The case for rigor and comparative logic. *Academy of Management Review* 16: 620–7.

Eisenhardt, K.M., and M.E. Graebner. 2007. Theory building from cases: Opportunities and challenges. *Academy of Management Journal* 50: 25–32.

European Commission. 2002. *Benchmarking business angels*. Brussels: European Commission.

Fingerle, C. 2005. *Smart money: Influence of venture capitalists on high potential companies*. Sternenfels: Verlag Wissenschaft & Praxis.

FHG-ISI. 1998. Gutachten für das Bundesministerium für Wirtschaft und Technologie Referat VI A5 - Kurzfassung: Beteiligungskapital und Technologieorientierte Unternehmensgründungen, prepared by Fraunhofer Institut für Systemtechnik und Innovationsforschung (FhG-ISI) and the Zentrum für Europäische Wirtschaftsforschung (ZEW). Karlsruhe and Mannheim.

Gompers, P., and J. Lerner. 1999. *The venture capital cycle*. Cambridge, MA: MIT Press.

———. 2001. *The money of invention: How venture capital creates new wealth*. 2001. Boston: Harvard Business School Press.

Gulander, S., and G. Napier. 2003. Handbook in business angel networks: The Nordic case. http://www.d-i-f.dk/upload/handbook_in_business_angel_networks_the_nordic_case.pdf (accessed 17 August 2006).
Harding, R. 2002. Plugging the knowledge gap: An international comparison of the role for policy in the venture capital market. *Venture Capital* 4: 59–76.
Harding, R., and M. Cowling. 2006. Points of view: Assessing the scale of the private equity gap. *Journal of Small Business and Enterprise Development* 13: 115–32.
Harrison, R.T., M. Dibben, and C. Mason. 1997. The role of trust in the informal investor's investment decision: An exploratory analysis. *Entrepreneurship Theory and Practice* 21: 63–81.
Harrison, R.T., and C.M. Mason. 1992. International perspectives on the supply of informal venture capital. *Journal of Business Venturing* 7: 459–75.
———. 1993. Finance of the growing business: The role of informal investment. *National Westminster Bank Quarterly Review* (May): 17–29.
———. 1996. Developing the informal venture capital market: A review of the Department of Trade and Industry's informal investment demonstration projects. *Regional Studies* 30: 765–71.
———. 2000. Venture capital market complementarities: The links between business angels and venture capital funds in the United Kingdom. *Venture Capital* 2: 223–42.
Hege, U., F. Palomino, and A. Schwienbacher. 2003. Determinants of venture capital performance: Europe and the United States. Working Paper, HEC School of Management, Paris.
Just, C. 2000. *Business angels und technologieorientierte Unternehmensgründungen*. Stuttgart: Fraunhofer IRB Verlag.
KFW. 2003. Angebotslücken in der Frühphasenfinanzierung. *Venture Capital Magazin*, no. 08: 20–1.
Klandt, H., P.-O. Hakansson, and F. Motte. 2001. *VADEMECUM für Unternehmensgründer, Business Angels und Netzwerke*. Norderstedt: Books on Demand Verlag.
Leland, H.E., and D.H. Pyle. 1977. Informational asymmetries, financial structure, and financial intermediation. *Journal of Finance* 33: 371–87.
Lessat, V., T. Eckerle, G. Licht, E. Nerlinger, J. Hemer, and M. Kulicke. 1999. *Beteiligungskapital und technologieorientierte Unternehmensgründungen*. Wiesbaden: Gabler Verlag.
Liu, Y. 2000. An overview of angel investors in Canada. Bank of Canada Paper. http://www.bis.org/publ/cgfs19boc1.pdf (accessed 17 August 2006).
Manigart, S., K.D. Waele, M. Wright, K. Robbie, P. Desbrieres, H.J. Sapienza, and A. Beekman. 2002. Determinants of required return in venture capital investments: A five-country study. *Journal of Business Venturing* 17: 291–312.
March, J.G., L.S. Sproull, and M. Tamuz. 1991. Learning from samples of one or fewer. *Organization Science* 1: 1–13.
Mason, C.M., and R.T. Harrison. 1993. Strategies for expanding the informal venture capital market. *International Small Business Journal* 11, no. 4: 23–38.
———. 1994. The informal venture capital market in the U.K. In *Financing SMEs: A comparative perspective*, ed. R. Cressy, B. Gandemo and C. Olofsson, 127–62. Stockholm: Nutek.
———. 1995. Closing the regional equity gap: The role of informal venture capital. *Small Business Economics* 7: 153–72.
———. 1996. LINC: A decentralized approach to the promotion of informal venture capital. In *Informal venture capital: Evaluating the impact of business introduction services*, ed. R. Harrison, and C. Mason, 119–41. Hemel Hempstead: Prentice Hall.
———. 1997. Business angel networks and the development of the informal venture capital market in the UK: Is there still a role for the public sector? *Small Business Economics* 9: 111–23.
———. 2000a. Informal venture capital and the financing of emergent growth businesses. In *The Blackwell Handbook of Entrepreneurship*, ed. D.L. Sexton and H. Landström, 221–39. Oxford: Blackwell.
———. 2000b. The size of the informal venture capital market in the United Kingdom. *Small Business Economics* 15: 137–48.
———. 2002. Barriers to investment in the informal venture capital sector. *Entrepreneurship and Regional Development* 14: 271–87.
Nittka, I. 2000. *Informelles Venture Capital am Beispiel von Business Angels*. Stuttgart: Deutscher Sparkassen Verlag.
Paul, S., G. Whittam, and J.B. Johnston. 2003. The operation of the informal venture capital market in Scotland. *Venture Capital* 5: 313–35.

Paul, S., G. Whittam, and J. Wyper. 2007. Towards a model of the business angel investment process. *Venture Capital* 9: 107–25.

Saublens, C., and M. Reino. 2002. *Introduction to the activities of regional business angels networks*. Brussels (B): EBAN.

Siggelkow, N. 2007. Persuasion with case studies. *Academy of Management Journal* 50: 20–4.

Sohl, J.E. 1999. The early-stage equity market in the USA. *Venture Capital* 1: 101–20.

———. 2003. The private equity market in the USA: Lessons from volatility. *Venture Capital* 5: 29–46.

Sørheim, R., and H. Landström. 2001. Informal investors: A categorization, with policy implications. *Entrepreneurship and Regional Development* 13: 351–70.

Stedler, H.R., and H.H. Peters. 2003. Business angels in Germany: An empirical study. *Venture Capital* 5: 269–76.

Teel, C. 1999. *Report on US venture capital network and business angel network activity 1999*. Chicago: Business Angels International.

The Evaluation Partnership. 2002. *Evaluation of the commission programme to support the development of Business Angels Network in the EU*. Final Report. Twickenham (UK).

Van Osnabrugge, M., and R.J. Robinson. 2000. *Angel investing: Matching start-up funds with start-up companies*. San Francisco: Jossey-Bass.

Walker, D. 1989. Financing the small firm. *Small Business Economics* 1: 285–96.

Westphal, R. 2005. *Kundennutzen und Auswirkungen von Business Angels-Netzwerken*. Lohmar: Josef Eul Verlag.

Wetzel, W.E., and J. Freear. 1996. Promoting informal venture capital in the United States: Reflections on the history of the Venture Capital Network. In *Informal venture capital: Evaluating the impact of business introduction services*, ed. R. Harrison and C. Mason, 61–74. Hemel Hempstead: Prentice Hall.

Wiltbank, R., and S. Sarasvathy. 2002. Selection and return in angel investment. Paper presented at the Babson Conference, Boulder, CO, 5–9 June, http://www.effectuation.org/ftp/Angels.doc