

## **Overcoming the Matthew Effect in Status Dominated Environments – a Configurational Analysis of Venture Capital Investments**

Elisabeth S. C. Berger and Andreas Kuckertz\*

### **Abstract**

Entering status dominated environments as new entrant is a difficult endeavor. Accumulated advantages go along with the tendency of incumbents to succeed, whereas entrants are likely to lose (Matthew effect). This study examines what combination of deal resources accumulated by venture capital partners lead to high deal performance in order to analyze if new entrants can nonetheless overcome the burden of being new, i.e. having a low status position and only weak ties with current actors in status dominated environments. Our configurational analysis of 333 venture capital investments reveals opportunities for entrants to succeed that go beyond joining forces with established actors. Our findings contribute to research on interorganizational network formation and the strategic actions new entrants on the VC market may take to be successful. Furthermore, the study sheds light on the effect of syndicated opposed to single venture capitalist deals and suggests that successful syndicates require a certain degree of homogeneity among the investors.

### **Den Matthäus-Effekt in einem statusdominierten Umfeld überwinden – eine konfigurationale Analyse von Venture Capital-Transaktionen**

### **Zusammenfassung**

Die Behauptung als neuer Marktteilnehmer in einem statusdominierten Umfeld, ist ein kompliziertes Unterfangen. Eine Vielzahl an Vorteilen etablierter Akteure geht einher

---

\* Corresponding author: Dr. Elisabeth S. C. Berger, University of Hohenheim, Institute for Marketing & Management, Entrepreneurship (570 C), Wollgrasweg 49, 70599 Stuttgart, Germany, E-Mail: [elisabeth.berger@uni-hohenheim.de](mailto:elisabeth.berger@uni-hohenheim.de), phone: +49 (0)711 459-24822, fax: +49 (0)711 459-24826.

Univ.-Prof. Dr. Andreas Kuckertz, University of Hohenheim, Institute for Marketing & Management, Entrepreneurship (570 C), Wollgrasweg 49, 70599 Stuttgart, Germany, E-Mail: [andreas.kuckertz@uni-hohenheim.de](mailto:andreas.kuckertz@uni-hohenheim.de).

We thank Tereza Tykvová for helpful comments. An early version of this paper also benefited from discussions at the BCERC conference and the G-Forum. Furthermore, we gratefully acknowledge the support of the German Private Equity and Venture Capital Association (BVK).

mit deren Tendenz zum Erfolg, wohingegen Neueinsteiger wahrscheinlicher unterliegen (Matthew-Effekt). Diese Studie analysiert, welche Kombinationen von Venture Capitalists angehäuften Ressourcen zu erfolgreichen Transaktionen führen, um zu untersuchen, wie neue Marktteilnehmer trotz allem die Nachteile des Neu-seins überwinden können. Unsere konfigurationale Analyse von 333 Venture Capital Transaktionen bietet empirische Belege für Erfolgspfade für neue Marktteilnehmer, die über Allianzen mit bestehenden Marktteilnehmern hinausgehen. Unsere Resultate liefern einen Beitrag zur Forschung auf dem Gebiet der interorganisationalen Netzwerkbildung und welche strategischen Maßnahmen neue Marktteilnehmer in der VC Industrie ergreifen können, um erfolgreich zu werden. Weiterhin beleuchtet die Studie die Auswirkungen syndizierter Transaktionen im Vergleich zu Transaktionen von einzelnen VC Investoren und deutet darauf hin, dass erfolgreiche Syndikate einen gewissen Grad an Homogenität zwischen den Investoren erfordern.

**Keywords:** Performance, New Entrants, Status, Syndicate, Tie Strength

**JEL Classification:** D85, G24, L14, L26, M13

## I. Introduction

New entrants to an environment suffer from the so-called liabilities of newness, which result from lacking a history or track record, and links to other players (*Stinchcombe* 1965). This burden is often the reason why new entrants face challenges in identifying opportunities, getting access to resources, and ultimately becoming successful. At the same time, more established and connected actors in the environment acquire resources more easily and earn higher rewards for their actions, which results in the rich getting richer, while the poor are getting poorer, a vicious circle phenomenon *Merton* (1968) has termed the Matthew effect. Environments, where privileges are attributed above all to high status actors, may be ascribed as status-dominated.

Nevertheless, we do observe new entrants in a plethora of contexts (*Morrison* 2002). This is also true for the venture capital (VC) industry, where new entrants occasionally become top players. In this study we ask what are the characteristics of successful VC companies, which we approach by investigating successful deals and look at the combinations of resources the participating VC firms displayed. More specifically, we ask if an established VC partner is a necessary condition for success and if a new VC firm might also be part of a configuration explaining high performance. We take a multi-theoretic perspective to develop the subset, which might explain successful VC deals.

This is not only theoretically interesting, but important from a practical point of view as well, as in many economies policy makers call for a better availability of VC, which could among other means be achieved by an increase in the establishment of new VC firms (*Audretsch/Lehmann* 2004; *Lutz et al.* 2013).

We utilize a combination of Social Network Analysis (SNA) and fuzzy-set Qualitative Comparative Analysis (fsQCA) (*Ragin* 2008) to answer our research question. The application of fsQCA allows us to identify patterns of combinations of deal resources accumulated by participating VC firms leading to the success of a deal, including those of new entrants in the VC industry. FsQCA is especially suitable as it rests upon the notion that an outcome can be explained by set-theoretic relations. We base our analysis on a longitudinal dataset of 1,072 German VC-backed deals conducted between 2003 and 2009 to derive information about the network resources of the VC firms in our sample. The performance of 333 deals closed in 2006 and 2007, evaluated from the VC firm's perspective, is then observed in 2013 and serves as the fundament to answer our research question.

The analysis presents eight different configurations that explain high deal performance. Seven of these configurations involve established VC firms and correspond to the Matthew effect. However, there is also one configuration indicating that in a specific context also new entrants to an environment, that is new VC firms on the market, can be successful.

The results of this study contribute to the literature in three ways: Firstly, we identify paths for new entrants to enter environments, which are shaped by the importance of network positions. Accordingly, we suggest concrete ways to structure strategic alliances that help new entrants gain better positions in the network of VC firms. Furthermore, we shed light on the effect of syndication on the success of VC deals and on the accumulation of VC resources in a deal leading to high performance.

In the next section, we will discuss the influence of relevant resources, which VC firms contribute to a deal and their impact on the performance of investments by VC firms into seed and early stage ventures. We will then describe our study design. Subsequently, the results of the fsQCA are presented, followed by the discussion, and derivation of implications. We close by drawing conclusions from the findings, highlighting potential limitations.

## II. Theoretical Foundations

Given the role of VC firms in enabling entrepreneurship and innovation, the process of new VC firms entering the market is of utmost importance (*Hochberg et al.* 2010). New VC firms can take root by identifying investment opportunities, selecting the most promising ones, adding value and eventually achieve a high deal performance when the portfolio company literally goes through the roof (*Hochberg et al.* 2007). In order to understand the configurations of factors leading to successful deal performances we build on multiple theoretic perspectives. If new entrants are not in the position to identify and exploit opportunities

because of the liabilities they face, there is a need to move into a better position to do so. There are generally two strategies how to proceed on the path to success: To try on one's own or to find a partner. The lone warrior might try to succeed by relying on past experience, externalized, accessible knowledge, or the trial and error approach, in case none of the above is available to the new entrant. Single VC investor deals are attractive as they can lead to maximum returns. This strategy might be especially interesting for established, experienced VC firms, as the resources for selection and post-investment support need to be available for single VC investor deals (Petkova et al. 2014). But also new entrants might choose this strategy in lack of suitable or available partners.

Forming alliances leads to the aggregation of expertise, experience, and network resources, and is widely agreed to grant a superior competitive advantage (De Clercq et al. 2008; Gomes-Casseres 1996). More than one VC firm investing in a portfolio company in the same financing round – termed syndication – is common in the VC industry and naturally increases the competencies available for identifying and exploiting an opportunity and consequently improves the performance (Lerner 1994). For new entrants, finding a partner is especially important as apart from the benefits for the focal investment deal, the new entrant also needs to ‘learn the ropes’ in the VC industry in terms of organizational knowledge, task mastery, and role clarity, which will be relevant for future deals (Morrison 2002). Accordingly, Manigart and colleagues (2002) find new VC firms to be looking for syndicates more actively than more established VC firms.

The syndicate partner can also be considered as an input to the production or in this case the investment deal and hence has the potential to improve the performance (Milanov/Shepherd 2013). Accordingly, Hopp (2010) has provided empirical evidence, that the VC firms’ characteristics primarily influence partner selection, and thus the composition of a syndicate. As in any cooperation, selecting partners, especially for long-term relationships such as co-investing VC firms, can be a difficult endeavor due to the altercentric uncertainty involved (Dimov/Milanov 2010). This uncertainty concerns the quality of the VC firm’s expertise to screen and add-value, its trustworthiness as well as common partnering norms (Milanov/Shepherd 2013) and leads to the fear of the returns from the investment being reduced due to costs related to the cooperation with the VC firm partner. Those costs might involve effort or coordination costs, as well as unjust returns due to free-riding (Dimov/Milanov 2010, Wright/Lockett 2003). While some characteristics to assess a potential partner are observable, other relevant aspects are often difficult to observe and ascertain, such as quality or network resources (Castellucci/Ertug 2010; Podolny 1993). In fact, this is comparable to the evaluation uncertainty involved in the investment criteria of VC firms selecting appropriate deals (Kollmann/Kuckertz 2010).

More established VC firms, those that have been in the business for quite some time and have gone through the entire fund life cycle, are expected to have more experience and expertise. Furthermore, if more established VC firms participate in a deal, this sends a positive signal to other investors and to business partners of the start-up, which reduces uncertainty when engaging with the still new start-up (Ozmel et al. 2012). On the other hand, ever since the seminal work by Gompers (1996) who empirically showed that younger or new VC firms might 'grandstand' more established ones with regards to taking portfolio companies public earlier, we are aware of the struggles and efforts of new VC firms in the academic discussion. That might be explained by the liability of newness that can afflict even VC firms. A firm that is not yet established needs to build a track record, which is relevant not only to increase the attractiveness for syndication partners but also to improve the fundraising (Kuckertz et al. 2015). The reward for a successful gamble could be a great exit, which would send out a positive signal to the field (Gompers 1996). This is in line with the study by Shepherd et al. (2003) who found evidence indicating that more experience does not necessarily equate with greater success, because beyond a certain threshold, a VC firm's experience may even hamper the performance of the firms it invests in.

The traces of previous co-investments, in terms of links between VC firms, are understood to be forming a syndication network of VC firms and to capture the accessible social capital within the VC industry network (Sorenson/Stuart 2001). The relationships of a VC firm in the syndication network can thus increase the resources available for the deal and provide signals with regards to the perceived quality of a potential partner. Podolny (1993) defines the perceived quality of producers' products, such as their quality as a partner in investments, as the producers' status. An actor's status expresses his social standing in his environment, in other words the centrality to alter in the network (Podolny 1993; Washington/Zajac 2005). Podolny (2001) underlines the paramount role and value of status especially in a setting marked by uncertainty, which is especially true for early stage financing in the VC market. The status of a VC firm is relevant to performance in different ways. First, status is associated with an extensive social network, access to information, tacit knowledge, and higher quality that can improve both the screening and the value-add effect (Hochberg et al. 2007). Secondly, the status of a VC firm sends a signal to stakeholders outside the VC industry, such as suppliers or customers involved with the start-up, that serves to reduce uncertainty and hence can contribute to improved performance (Ozmel et al. 2012; Podolny 2001). In sum, high status firms are privileged when operating on their own and also perceived as high-quality partners in syndicates (Dimov/Milanov 2010).

Castellucci/Ertug (2010) argue that new entrants will have to compensate the lower status by contributing more effort to the partnership. The new entrant has immediate expenditure, but can profit from the high status partner. Further-

more, the additional effort can improve the overall performance of the deal, as the value-add effect of the VC firms will be higher. *Ma et al.* (2013) show that status can also act as a mechanism to create social order. In syndicated deals, the participation of different status partners can then become a disadvantage, when the high-status partners are dominating decisions and not making full use of the potential of lower-status partners.

The strength of ties reveals further information about an actor. Frequently conducting joint investments with the same VC firm builds up strong ties (*Bygrave* 1987). In a collaboration, strong ties facilitate and improve the exchange (*Uzzi* 1997). Moreover, strong ties also reduce the costs associated with management risks. The lower costs occasioned when forming syndicates with known partners, increases the deal performance, especially since some aspects of the cooperation between syndicate partners are apparently based on informal agreements rather than contractual terms (*Ma et al.* 2013; *Wright/Lockett* 2003). Having established strong ties through prior syndication hence signals attractiveness to partner up with that actor, as those strong ties will affect the performance of the investment. Information coming from strong ties might be more trustworthy and even more specific and hence increases the resources available for a deal. However, this information is likely to be less novel than those sourced from contacts that are more distant. In other words, VC firms tending to build strong relationships with the same VC firms without involving others, might have somewhat reduced access to new information and opportunities, so strong connections might not always be advantageous (*Uzzi* 1997).

The demarcation of VC firm types (such as independent, corporate, governmental or bank-dependent VC firms) links ownership characteristics with the strategic positioning of the firms, which is closely connected to how much effort and what kind of effort they put into pre- and post-investment activities (*Petkova et al.* 2014). While several studies have compared the performance of different VC firm types (e.g. *Croce et al.* 2015) there is insufficient clarity with regard to joint investment between different VC firm types. On the one hand, differing motives, governance structures, and expertise can combine to enrich the social capital available to start-ups, especially since the VC firms involved should have dissimilar links that provide access to a wide range of information and knowledge (*Alexy et al.* 2012). Consequently, deals involving different types of VC firms in other words a high degree of diversity might have a positive effect on performance. On the other hand, those dissimilarities might also be a source of conflict, and so give rise to costs for the syndication partners.

As being established, having high status, and being able to rely on strong ties not only leads to better performance, but also increases the attractiveness to join an alliance, which will enable the actor to profit from opportunities others have identified, this might be described as a virtuous cycle. Now, the question arises

of how new entrants can break into that cycle, even if they are by definition new in the industry. With regards to our research question of how new entrants can succeed in the VC firm industry, we have identified two general approaches of VC firms conducting deals. The single VC investor approach seems to be more relevant for circumstances under which uncertainty can be reduced, for instance due to the VC firms accessible social capital and past experience. New entrants need to learn the ropes first, which they can do best from established partners (*Morrison 2002*). *Wuebker et al. (2015)* refer to it as piggybacking on a more established or higher-status VC firm.

All the characteristics seem to be interlinked and cannot be examined in isolation. However, not all characteristics can be clearly identified as contributing to the greater success of some deals than others, as a characteristic might be hindering or boosting performance. Whether the presence or absence of a characteristic is decisive depends on the context. In turn, the context could be partly explained by other deal characteristics or those of the VC firm. We therefore analyze what combinations of resources in a deal explain high performance.

### III. Study Design

#### 1. Data

We base our analysis on a longitudinal dataset comprising 1,072 VC deals in the German market between 2003 and 2009. This figure includes target firms in different industries, with a majority operating in the life science and computer fields. The bulk of the firms were located in Germany, but some foreign start-ups with at least one German VC firm are involved. For the 333 investment deals in 2006 and 2007, we observed their performance in mid-2013. The point of observation for the outcome was six and seven years respectively after the investment, allowing for the development of the target firm and the value-add effect of the VC firm(s) to kick in. In order to establish the network position of the VC firms involved in the deals in 2006 and 2007 prior to and subsequent to a deal, we considered all 1,072 investments between 2003 and 2009.

Financing stages differ in terms of motivations, strategies, and risk levels as well as resources put into the portfolio company (*Hopp/Lukas 2014; Lerner 1994; Podolny 2001; Sapienza et al. 1996; Sorenson/Stuart 2008*). To ensure the comparability of the studied VC deals, we hence focused on similar investments in terms of seed and early stages, as for instance, *Sapienza et al. (1996)* found that the VC firms' value-adding effort declines with the later stages of financing. Data was originally compiled by the German Private Equity and Venture Capital Association (BVK), which has been found to encompass the most comprehensive data set for Germany and is comparable to other data sets such as Venture-



Source (Lutz et al. 2013). The dataset was complemented with details on deal characteristics (e.g. the diversity of types of VC firm involved), the venture capitalists (type of VC firms, years in business at point of investment), and the target firms involved (performance in 2013) by accessing several national and international web-based sources.

## 2. Method

This study employs an explorative, configurational approach. Fuzzy-set Qualitative Comparative Analysis (fsQCA) (Ragin 1987, 2008) is increasingly employed by the management research community (Berger 2016). Nevertheless, QCA offers a unique option for tracing patterns explaining outcomes of causal relationships while focusing on complex phenomena. QCA analyses different causal conditions explaining a defined outcome. Cases with high performance are characterized by different conditions. However, how conditions affect the performance may depend on the context, that is, on other deal resource conditions. Rather than looking for the single route to success, this method accounts for the realistic possibility that there are different combinations or configurations of VC firm and deal characteristics that might lead to the outcome, referred to as equifinality (Ragin 2006). Another strength of this method is that configurations explaining the outcome are asymmetric in relation to configurations explaining the non-outcome. In other words, the combination of conditions leading to high performance cannot be reversed to describe non-performance, as to do so would neglect the causal relationship (Mackie 1965). Accordingly, the complexity of the VC firms' characteristics captured in a deal and their impact on performance is accounted for. The comparison of cases, applying Boolean algebra and algorithms, allows the logical reduction of the set of configurations and helps us to explore the question of how new entrants to the VC industry can become successful in the market.

Figure 1 visualizes the resources involved in an investment as they are linked to the VCs, who invest. Based on the theoretical foundations, we further elaborate how high or low levels of the considered conditions might contribute to the success of VC firms and should therefore be considered in the set explaining high deal performance. As elaborated in section II, these conditions are all interlinked and cannot be studied in isolation, which is why we choose a Venn diagram for the visualization. It shows all logically possible configurations of the theoretically derived set of conditions explaining high deal performance. Regions within a closed curve present high levels of this condition, regions outside of the closed curve on the other hand present low levels, which are nevertheless part of the configuration.



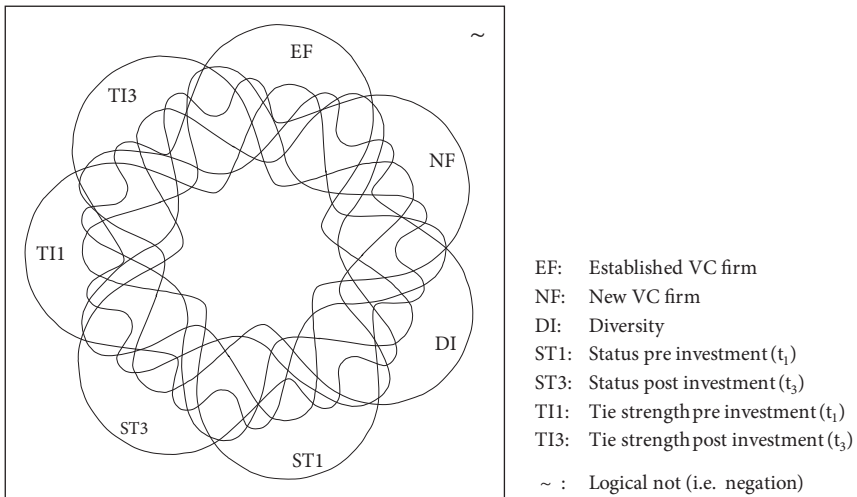


Figure 1: Factors Affecting Deal Performance

### 3. Outcome Description

The outcome is defined as the performance of the investment deal, implying that we look at the success of a deal from the VC firm perspective. The outcome ranges from full membership or high performance to non-membership, or low performance. According to *Hochberg et al. (2007)*, the highest returns can be generated by an acquisition (trade sale) or an initial public offering and consequently can be considered an investment's success and we have therefore calibrated these exits as a success, that is, they are fully integrated into the set of strongly performing deals. Furthermore, *Hochberg et al. (2007, p. 262)* conclude that "unsuccessful investments are typically shut down" implying that insolvent firms can be justifiably considered unsuccessful; a notion that provides the anchor for the bottom of the range of performance. The mere fact of survival can still qualify firms as part of the set representing well performing deals (see e.g. *Baum/Silverman 2004* for a study employing survival as performance measure) and therefore needs to be above the point of maximum ambiguity.<sup>1</sup>

<sup>1</sup> We have also tested different calibrations, such as dichotomous coding, which results in the same configurations with slightly lower consistency.

#### 4. Conditions

The current study analyses eight conditions, one indicates the presence or absence of a syndicate and seven of them refer to the VC firm's particular and deal characteristics.

**Syndication:** the literature is not clear on whether syndication in isolation generates high performance, or whether it is an indication of especially risky investments. We include syndication as a binary condition indicating whether the current investment is made in unison with at least one other VC firm (1) or not (0) in the same financing round.

Two conditions capture the age of the VC firms, which we define as years since the founding until the year of the considered deal (cf., *Manigart et al. 2002; Petkova et al. 2014; Sorenson/Stuart 2001*). Since the research question is directed toward the success of new entrants to a market, the condition new VC firm captures the age of the youngest VC firm participating in the deal. *Milano/Shepherd (2013)* have emphasized that even if a new VC firm consists of individuals with former experience in the VC firm industry, the VC firm itself will still be regarded as new firm. On the other hand, we also gather the age of the most senior alliance partner participating in the deal, to indicate whether an established VC firm is involved. In order to calibrate these two conditions we draw to the average fund life cycle of 10 years (e.g. *Gompers 1996; Hochberg et al. 2007*). Accordingly, a new entrant is a full member being in business for less than a year and a non-member, when having been in business for 10 years. For the condition of established VC firms, 10 years mark full-membership as those are assumed to have completed an entire fund life cycle, but anything under two years of business is coded as definitely not established.

In order to assess the network resources associated with a deal, we consider the network created by joint syndications. Most studies focus on the network resources established in the past by observing the position of a VC firm within the syndication network prior to an investment (e.g. *Hochberg et al. 2007; Ma et al. 2013; Podolny 2001*). *Weber (2009)* is a notable exception, who empirically shows that social networks of Corporate VC firms change significantly over time. The network resources acquired following the initial investment can also strongly influence the value-add effect, for example, by providing access to new, valuable information that benefits the portfolio company. The theoretical rationale for the post-deal network position's effect on performance is scant. In a way, scholars allude to this by stating that the structure of a syndication network at one point in time influences the formation of future ties (*Hopp 2010; Sorenson/Stuart 2008*). As there are motives for syndication, where the partner composition might benefit from network resources available pre-investment, such as the screening motive, and other motives, which might also profit from the net-

work resources available post-investment, we differentiate the network resources between those two phases. Accordingly, the network position for each VC firm in the three-year window preceding the deal is determined, (that time period being referred to as pre-deal) and in the three years after the deal, starting in the very year of the deal (labelled post-deal).

From the SNA, we determine four network variables – degree centrality (that is the number of different VC firms an actor is connected to) and average weight of ties (that is the frequency of joint deals between two VC firms) pre and post to the deal – and convert them into status and tie strength conditions, in two further steps: First, as the network position was determined for every VC firm, syndicated deals can be attributed more than one value. Syndicated deals can be understood as cooperation, therefore the most valuable resources are relevant (Ozmel et al. 2012). Accordingly, we used the maximum of the degree centralities and average tie strength associated with an investment deal to determine the network conditions in the two points in time. Secondly, the network measures need to be calibrated. As there is scant research on what might be considered high or low degrees of centrality, or average strength per tie, these measures can only be interpreted following a comparison of the value of the VC firms.

Therefore, we base the calibration on case knowledge (Ragin 2008). For degree centrality, having established ten per cent or more of the theoretically possible connections to other VC firms has been identified as full membership of high status. In the period 2007–2009, for instance, this would mean having connections to at least 28 different VC firms. Non-membership is assigned to VC firms without any links, hence those who have only undertaken financing rounds alone. Concerning the tie strength, an average strength of two qualifies as the full membership threshold. VC firms attaching little importance to establishing strong links by repeatedly co-financing deals with different VC firms will display an average weight per edge of around one, which marks the threshold for non-membership.

Differences in motives and experience among dissimilar types of VC firms lead to different compositions of social capital within syndicated deals with unlike VC firm types. We refer to this characteristic as diversity. Diversity can affect high performance positively because the VC firms have a wider range of experience and differing social capital to call upon. Alternatively, diversity might have a negative effect resulting from the potential for conflicts between the VC firms (Wright/Lockett 2003). The diversity condition is dichotomous, indicating whether dissimilar VC firm types are involved in the relevant deal coded with 1 (e.g. CVC and independent VC firm), or if the participating VC firms are of the same type, coded with 0.

IV. Results

1. Descriptive Statistics

The descriptive statistics and the set calibration for the conditions and the outcome are shown in Table 1. For the 333 investments conducted in 2006 and 2007, we observe the outcome in mid-2013. There are 146 observations for the diversity condition, as it can only be evident when there is more than one VC firm involved. Correspondingly, 146 out of the 333 deals are syndicated. This share is in line with the average rate of syndicated deals in the entire sample. The mean of the diversity condition indicates about 53 per cent of those syndicated deals involve different types of VC firms.

In order to account for the dynamics of the syndication network and the increase in VC activity in Germany, we have analyzed the syndication network prior to the considered deals and in the three years time span after. The descriptive statistics show that the mean of the status, which refers to the degree centrality and the tie strength are higher in the post-investment phase. Despite larger number of deals in the post investment phase, the density of the network has increased, which underlines the importance of normalizing the network measures when comparing the networks in two different points in time.

Table 1  
Descriptive Statistics and Set Calibration Criteria



	Descriptive Statistics			Membership criteria		
	N. Obs.	Mean	St. Dev.	Full membership	Crossover point	Full non-membership
Syndication <sup>a)</sup>	333	0.44	0.50	dichotomous (1;0)		
Established VC firm <sup>a)</sup>	333	15.64	18.42	10	4.5	2
New VC firm <sup>a)</sup>	333	7.20	7.87	0	4.5	10
Status pre-investment <sup>a)</sup>	333	0.07	0.06	0.1	0.02	0
Tie strength pre-investment <sup>a)</sup>	333	1.19	0.53	2	1.5	1
Status post-investment <sup>a)</sup>	333	0.10	0.07	0.1	0.02	0
Tie strength post-investment <sup>a)</sup>	333	1.62	0.68	2	1.5	1
Diversity <sup>a)</sup>	146	0.53	0.50	dichotomous (1;0)		
Performance <sup>b)</sup>	333	0.56	0.32	1	0.5	0



<sup>a)</sup> non-calibrated values    <sup>b)</sup> qualitative, calibrated values

## 2. Configurations

The fsQCA solution is presented using filled and empty circles, indicating presence and absence of conditions explaining the outcome in Figure 2. Following *Fiss* (2011), we distinguish between core and peripheral conditions, which permits a relevance ranking of the conditions according to the strength of evidence in relation to the outcome. Core conditions (large circles) are at the heart of the solution set, occurring in the parsimonious and intermediate solution, whereas peripheral conditions (small circles) are evident only in the intermediate solutions.

Conditions	Configurations							
	1	2	3	4	5	6	7	8
Established VC firm	●	●	●	●	●	●	●	○
New VC firm	○	○	○			●	●	●
Status pre investment <sup>b)</sup>	●			●		●	○	●
Tie strength pre investment <sup>c)</sup>	●	○	○		○	●	○	○
Tie strength post investment <sup>d)</sup>		○	○	○	○		●	●
Diversity <sup>a)</sup>	●	●			●	○	○	○
Consistency	0.827	0.874	0.885	0.880	0.870	0.837	0.873	0.837
Raw coverage	0.157	0.144	0.238	0.395	0.172	0.119	0.060	0.025
Unique coverage	0.056	0.013	0.016	0.098	0.024	0.048	0.034	0.016
Solution consistency					0.85			
Solution coverage					0.62			

 Core condition (present) 
  Peripheral condition (present)

 Core condition (absent) 
  Peripheral condition (absent) 
 Blank space: do not care

a) Diversity of VC firm type b) Max. status of participating VC firms prior to investment c) Max. tie strength of participating VC firms prior to investment d) Max. tie strength of participating VC firms post investment

Figure 2: Configurations for High Performance

The eight configurations that explain the outcome high performance equi-finally, at a credible consistency level ( $\geq 0.8$ ) and with unique cases dropped (frequency cut-off: 2) (Ragin 2008) are visualized in Figure 2. Overall the solution set displays a consistency level of 0.85 and a coverage level of 0.62. Consistency evaluates the extent to which the subset relates to the outcome, whereas coverage gauges the share of the outcome explained by a configuration, or by all configurations taken together (Ragin 2006).

Each configuration is sufficient to explain strongly performing deals but is not necessary to do so, as there are alternative paths to explain the outcome (Mackie 1965). Based on the necessity analysis which separately precedes the analysis of sufficient conditions to explain an outcome, we identified syndication (consistency: 1.0; coverage: 0.63) and high status after the deal (consistency 0.94; coverage: 0.64) as necessary conditions.

The result of the relevance check of the necessary conditions, shows that syndication and post-deal status are irrelevant, since also the opposite outcome of non-performance requires both characteristics as necessary condition. Consequently, we omit syndication and post deal status from the presentation in Figure 1, nevertheless the conditions were included in the sufficiency analysis (Braumoeller/Goertz 2000).

Having an established VC firm involved in a deal is a common trait for seven configurations, however, configuration number eight explains the high performance under the absence of this condition. The remaining conditions cannot clearly be defined as present, absent, or irrelevant in explaining the outcome, as they appear in all traits within the solution set and are thus context dependent. Which configurations are core to and which peripheral to the solution also differs.

Configurations 1–3: Established VC firms without new VC firms. The first three configurations are marked by only established VC firms participating in the syndicate: Whereas two of them seem to display a source of social capital from involving different VC firm types (No. 1 and 2) and displaying high status in the pre-investment phase as well as strong ties as a core condition (No. 1), the third configuration shows no indication of social capital maximizing approaches.

Configurations 4–5: Established VC firms. Configurations four and five also explain high performing deals of established VC firms, while the presence or absence of new VC firms is irrelevant. Also both configurations have absent tie strength post-investment at the core of the solution. Configuration four has high pre-investment status, in combination with the neutral permutation of the diversity condition. Furthermore, configuration four has the highest empirical importance due to the raw coverage level of 0.4. Configuration five on the other hand has the presence of different types of VC firms at the core of the solution.

Configurations 6–7: Established VC firms in alliance with new VC firms. These two configurations represent successful syndicates between established and new VC firms, yet the involved VC firms are of the same type. Configuration 6 shows good network resources before the deal in terms of status and even more importantly tie strength. In contrast, the seventh configuration emphasizes that years in business do not necessarily accompany high status. Here, neither the new nor the established VC firm display a high status position before the deal. This might point to an avenue of established players partnering up with new entrants when they do not have a high status position themselves. Yet, in this constellation strong ties are formed in the period after the deal, which might be in a way compensating the lack of status and tie strength before the deal.

Configuration 8: New entrants. The most striking characteristic of the deals described by configuration eight is the absence of established VC firms, while new firms are present. Core to those deals is also that comparable VC firm types are involved. At least one of the new entrants has however been active in the VC industry as the syndicate includes a high status player. While tie strength is absent prior to the deal, it is strong in the period after the deal.

## V. Discussion and Implications

### 1. *Discussion of Results*

Our results suggest that understanding high performing investments in VC portfolio companies requires the analysis of complex patterns. The combination of VC firms' particular characteristics and the characteristics of the syndicate explain a large part (62 %) of high performance. The fsQCA approach enables us to analyze context dependencies between conditions and as a result to show the different paths to high performance as an outcome rather than evaluating the positive or negative effect of variables. The results suggest a complex solution of eight different configurations. All equifinally lead to high performance, yet differ in coverage, which hints toward empirical relevance, while the theoretical relevance is rooted in the outliers. However, those eight configurations can be sorted into three groups with respect to our research question: Group one explaining high performance of established VC firms (explicitly without new entrants or with an indifferent position toward new entrants: Configurations 1–5), group two explaining the success of alliances between established VC firms and new entrants (Configurations 6–7), and group three showing a path for new entrants to be successful in alliance with other new entrants (Configuration 8). Hence, there are substantial differences between the groups and more particularly between the configurations all describing high performance.



## 2. Implications

Our finding contribute to the interorganizational network formation, VC syndication literature in three ways.

Firstly, the results point toward a way how to overcome the Matthew effect. Although we consider an environment, which is dominated by status and strong ties, the analysis identifies combinations of characteristics, which indeed include new entrants in the recipe for high performance and reveal that the participation of an established VC firm is not a necessary condition. In other words, our results provide empirical evidence of the Matthew effect operating in the VC industry as other researchers have found (e.g. *Fund et al.*, 2008). Yet, the three configurations involving new entrants suggest strategic alliance formation in order to demonstrate a successful entry into an environment. That is, new entrants might be able to overcome the burdens of being new, by first learning the ropes from more established players in syndicated deals. Actors, which are not really in the center might be adequate points of first contact, because the high status players prefer especially in contexts of large uncertainty peers in terms of status (*Lerner* 1994). The absence of a high status VC firm in this configurations is in line with *Podolny's* (1994) findings of actors preferring high status partners, but frequently they form links to others with similar (lower) status, as high status players are looking for peers in terms of status. This combination might be especially effective as those cases avoid the phenomenon of status shaping the social order within a syndicate, and therefore facilitate all partners being equally involved in the decision making (*Ma et al.* 2013). The second step would be joining a syndicate with higher status-partners, as the new entrant has more to contribute to a syndicate then. New entrants can probably best compensate their missing status and liabilities of newness by putting in more effort (*Castellucci/Ertug* 2010). Yet, not all contexts or alliances provide the opportunity for compensation. Lastly, a new entrant can form alliances, maybe even as lead investor, even under the absence of established partners. With this suggestion we only partly agree with the conclusion *Ozcan/Eisenhardt* (2009) draw from their empirical study that new entrants should first collect achievements and then form ties with more established players. Our results show that indeed new entrants can create achievements by collaborating with more established VC firms, which later on enables them to succeed even without a more senior partner. This approach is also encouraged by *Milanov/Shepherd* (2013), who emphasize the positive impact of the first network partner.

Secondly, the results also add to the discussion surrounding the relevance of syndicated opposed to single VC investor deals. More than one VC firm investing in a portfolio company is a necessary condition for both the outcome high performance and low performance, this supports the argument of syndication being a strategy to deal with uncertainty and risk (*Lerner* 1994) and even sug-

gests that it might be the most relevant syndication motive. Consequently, we have found no indication of the success of single VC investor deals regardless of the VC firms' characteristics. Another interpretation might be that syndication has become a standard in the VC industry, that it no longer aids the explanation of high performance. Yet, in our sample only 46 percent are syndicated deals, implying that syndicated deals tend to explain the distinct failures or successes, but not the more ambiguous performances. Consequently, our results provide support to the understanding of syndication leading to higher variety in the outcome (Brander et al. 2002). However, we also underline that even when considering different deal resources, syndication cannot be attributed a strictly positive impact on the deal performance.

Thirdly, the results add to the discussion on syndicate compositions with regards to benefits from inhomogeneity. The configurations explaining high performance under the participation of new entrants require the simultaneous absence of the diversity condition and likewise, all configurations involving different types of VC firms require the absence of new VC firms or treat this condition as a neutral permutation. This is particularly interesting, as it allows us to speculate that there might be maximum degree of heterogeneity in a deal, that can lead to high performance. Coordination and management cost in alliances are higher if one partner has missing or weak organizational knowledge and role clarity as it might be the case with new entrants (Morrison 2002) and if the alliance partners have differing strategic objectives, as it might be true when different VC firm types syndicate (Bertoni et al. 2015; Dushnitsky/Lenox 2006). In consequence, different VC firm types might not be part of the same syndicate as new firms, as the expected costs might exceed the potential benefits from this combination (Brander et al. 2002). In the context of team formation in start-ups, a lower degree of heterogeneity can also be observed in earlier stages, and a higher degree in later stages (Kaiser/Müller 2015). This could also be the case for VC syndicates, possibly accepting or being able to cope with a higher degree of heterogeneity only in later phases.

With regard to the application of fsQCA in the field of management, we have further contributed by applying fsQCA in a setting that has addressed recent fsQCA issues. First, mixing QCA with other methods seems likely to become a standard practice in the future, but is currently rare in QCA studies (Berger 2016). Our study goes some way to addressing this issue by using SNA to define four of the conditions. As the study looks at both the network position before and after the investment deal, the challenge of combining QCA with time is also addressed. Finally, this study contributes by further establishing this methodology in management research as a prime example for the alignment between a complex phenomenon requiring a multi-theoretic perspective and a research methodology capable of capturing the complexity and interdependencies (Berger/Kuckertz 2016).

Regarding practical implications, we recommend start-ups engaging with VC firms acknowledge that non-prestigious VC firms, in terms of status and age, can just as well forge successful deals. Instead of being guided by status and experience, start-ups might look at the future engagements a candidate VC firm targets. The right future engagements can not only boost the VC firm's performance, but also offer the start-up access to new information that can bolster the value-add effect. Having more than one VC firm involved in the same financing round, is on the other hand no guarantee for better value-adding, instead it opens up the avenue for possible free-riding problems (*Dimov/De Clercq* 2006).

Another point concerns the syndication network of VC firms within the industry. Start-ups need to be aware of the connectedness between VC firms, as information such as that revealing a start-up has sought capital but been turned down by a VC firm is likely to be shared in the industry and to increase the likelihood of being denied again (*Bygrave* 1987). As a result, start-ups should be well prepared and have carefully assessed which VC firm they wish to approach.

### 3. Limitations

FsQCA requires the calibration of sets. This process is based on the researcher's expertise, and owing to the lack of set calibration in comparable studies. Although we have tested different membership criteria for robustness, there might be arguments for setting the threshold values differently. More studies in management applying fsQCA will enrich the basis for creating membership criteria by offering comparisons across studies. We limited our sample to seed and early stage investments in portfolio companies, but maybe the participation of VCs in later stages has a greater effect on performance. Also in terms of entry opportunities for new actors into the status and strong ties environment later stages might reveal new insights, as it is especially the early stages where VC firms tend to syndicate with peer established firms (*Lerner* 1994). *Hopp* (2010), for instance, argues that the involvement of new VC firms can help to bridge a competency gap, which might have stalled the progress stemming from an initial investment. Accordingly, the participation of new VC firms can have a significant impact on the portfolio firm's performance. Therefore, analyzing the deals considering subsequent investment phases could provide insights in which phase of the development of a portfolio company a VC firm has the greatest impact on performance. The generalizability of our findings might be limited with respect to varying screening and value-adding abilities across VC firms in different nations. Researchers such as *Bertoni et al.* (2016) have found VC firms from the USA to have better screening abilities than in thin VC markets, such as Europe. Accordingly, in the USA, characteristics relevant to the screening effect, such as the network position before the deal and the composition of the syndi-

cate, might be relatively more important than those related to the value-add effect, that is, the social capital acquired after the deal.

## VI. Conclusion

To sum up, our findings clearly show that new entrants can successfully overcome the burdens of being new and exhibiting low status positions and that an established VC firm is not a necessary condition for success. More specifically, by applying a fuzzy-set qualitative comparative analysis, we were able to explain a large part of the phenomenon of high performing VC deals with the deal resources accumulated by the participating VC firms. In other words, we have provided empirical evidence that being established and status are very relevant in the industry, but can be overcome. Tie strength on the other hand does not appear to be an obstacle for new entrants. These findings are relevant for future research in interorganizational alliance formation as well as in VC firm syndication research and lastly for the operations of VC firms.

## References

- Alexy, O. T./Block, J. H./Sandner, P./Ter Wal, A. L. J. (2012): Social capital of venture capitalists and start-up funding, *Small Business Economics*, Vol. 39, pp. 835–851.
- Audretsch, D. B./Lehmann, E. E. (2004): Financing high-tech growth: the role of banks and venture capitalists, *Schmalenbach Business Review*, Vol. 56, pp. 340–357.
- Baum, J. A. C./Silverman, B. (2004): Picking winners or building them? Alliance, intellectual, and human capital as selection criteria in venture financing and performance of biotechnology startups, *Journal of Business Venturing*, Vol. 19, pp. 411–436.
- Berger, E. S. C. (2016): Is qualitative comparative analysis an emerging method? – Structured literature review and bibliometric analysis of QCA applications in business and management research. In: *Complexity in entrepreneurship, innovation and technology research*, edited by Berger, E. S. C./Kuckertz, A. pp. 287–308. Cham: Springer.
- Berger, E. S. C./Kuckertz, A. (2016): The Challenge of Dealing with Complexity in Entrepreneurship, Innovation and Technology Research – An Introduction. In: *Complexity in entrepreneurship, innovation and technology research*, edited by Berger, E. S. C./Kuckertz, A. pp. 1–9. Cham: Springer.
- Bertoni, F./Colombo, M. G./Quas, A. (2015): The patterns of venture capital investment in Europe, *Small Business Economics*, Vol. 45, pp. 543–560.
- Bertoni, F./D’Adda, D./Grilli, L. (2016): Cherry-picking or frog-kissing? A theoretical analysis of how investors select entrepreneurial ventures in thin venture capital markets, *Small Business Economics*, Vol. 46, pp. 391–405.
- Brander, J. A./Amit, R./Antweiler, W. (2002): Venture-Capital syndication: Improved venture selection vs. the value-added hypothesis, *Journal of Economics and Management Strategy*, Vol. 11(3), pp. 423–452.

- Braumoeller, B. F./Goertz, G. (2000): The methodology of necessary conditions, *American Journal of Political Science*, Vol. 44(4), pp. 844–859.
- Bygrave, W. D. (1987): Syndicated investments by venture capital firms: A networking perspective, *Journal of Business Venturing*, Vol. 2(2), pp. 139–154.
- Castellucci, F./Ertug, G. (2010): What's in it for them? Advantages of higher-status partners in exchange relationships, *Academy of Management Journal*, Vol. 53(1), pp. 149–166.
- Croce, A./D'Adda, D./Ughetto, E. (2015): Venture capital financing and the financial distress risk of portfolio firms: How independent and bank-affiliated investors differ. *Small Business Economics*, Vol. 44, pp. 189–206.
- De Clercq, D./Sapienza, H. J./Zaheer, A. (2008): Firm and group influences on venture capital firms' involvement in new ventures, *Journal of Management Studies*, Vol. 45(7), pp. 1169–1194.
- Dimov, D./De Clercq, D. (2006): Venture capital investment strategy and portfolio failure rate: A longitudinal study, *Entrepreneurship Theory and Practice*, Vol. 30(2), pp. 207–223.
- Dimov, D./Milanov, H. (2010): The interplay of need and opportunity in venture capital investment syndication, *Journal of Business Venturing*, Vol. 25(4), pp. 331–348.
- Dushnitsky, G./Lenox, M. J. (2006): When does corporate venture capital investment create firm value, *Journal of Business Venturing*, Vol. 21(6), pp. 753–772.
- Fiss, P. C. (2011): Building better casual theories: A fuzzy set approach to typologies in organizational research, *Academy of Management Journal*, Vol. 54(2), pp. 393–420.
- Fund, B. R./Pollock, T. G./Baker, T./Wowak, A. J. (2008): Who's the new kid? The process of developing centrality in venture capitalist deal networks, *Advances in Strategic Management*, Vol. 25, pp. 563–593.
- Gomes-Casseres, B. (1996): *The alliance revolution: The new shape of business rivalry*; Cambridge: Harvard University Press.
- Gompers, P. A. (1996): Grandstanding in the venture capital industry, *Journal of Financial Economics*, Vol. 42(1), pp. 133–156.
- Gompers, P. A./Lerner, J. (2001) The venture capital revolution, *The Journal of Economic Perspectives*, Vol. 15(2), pp. 145–168.
- Hochberg, Y. V./Ljungqvist, A./Lu, Y. (2007): Whom you know matters: Venture capital networks and investment performance, *The Journal of Finance*, Vol. 62(1), pp. 251–301.
- (2010): Networking as a Barrier to Entry and the Competitive Supply of Venture Capital. *The Journal of Finance*, Vol. LXV(3), pp. 829–859.
- Hopp, C. (2010): When do venture capitalists collaborate? Evidence on the driving forces of venture capital syndication, *Small Business Economics*, Vol. 35, pp. 417–431.
- Hopp, C./Lukas, C. (2014): A signaling perspective on partner selection in venture capital syndicates, *Entrepreneurship Theory and Practice*, Vol. 38(3), pp. 635–670.
- Kaiser, U./Müller, B. (2015): Skill heterogeneity in startups and its development over time, *Small Business of Economics*, Vol. 45, pp. 787–804.

- Kollmann, T./Kuckertz, A. (2004): Venture Capital Decision Making After the High-Tech Downturn: Considerations Based on German E-Business Investment Cases, *Journal of Private Equity*, Vol. 7(3), pp. 48–59.
- Kuckertz, A./Kollmann, T./Röhm, P./Middelberg, N. (2015): The interplay of track record and trustworthiness in venture capital fundraising. *Journal of Business Venturing Insights*, Vol. 4, pp. 6–13.
- Lerner, J. (1994): The syndication of venture capital investments, *Financial Management*, Vol. 23(3), pp. 16–27.
- Lutz, E./Bender, M./Achleitner, A.-K./Kaserer, C. (2013): Importance of spatial proximity between venture capital investors and investees in Germany, *Journal of Business Research*, Vol. 66(11), pp. 2346–2354.
- Ma, D./Rhee, M./Yang, D. (2013): Power of mismatch and the effectiveness of interorganizational relations: The case of venture capital syndication, *Academy of Management Journal*, Vol. 56(3), pp. 711–734.
- Mackie, J. L. (1965): Causes and conditions, *American Philosophical Quarterly*, Vol. 2(4), pp. 245–264.
- Manigart, S./Lockett, A./Meuleman, M./Wright, M./Landström, H./Bruining, H./Desbrières, P./Hommel, U. (2002): Why do European venture capital companies syndicate?, Report Series Research in Management, ERIM Report Series Reference No. ERS-2002-98-ORG. Available via the internet: <http://ssrn.com/abstract=371048> Accessed: 21 March 2018.
- Merton, R. K. (1968): The Matthew effect in science, *Science*, Vol. 159, pp. 56–63.
- Milanov, H./Shepherd, D. A. (2013): The importance of the first relationship: The ongoing influence of initial network on future status, *Strategic Management Journal*, Vol. 34(6), pp. 727–750.
- Morrison, E. W. (2002): Newcomers' relationships: The role of social network ties during socialization, *Academy of Management Journal*, Vol. 45(6), pp. 1149–1160.
- Ozcan, P./Eisenhardt, K. M. (2009): Origin of alliance portfolios: Entrepreneurs, network strategies, and firm performance, *Academy of Management Journal*, Vol. 52(2), pp. 246–279.
- Ozmel, U./Reuer, J./Gulati, R. (2012): Signals across multiple networks: How venture capital and alliance networks affect interorganizational collaboration, *Academy of Management Journal*, Vol. 56(3), pp. 852–866.
- Petkova, A. P./Wadhwa, A./Yao, X./Jain, S. (2014): Reputation and decision making under ambiguity: A study of US venture capital firms' investments in the emerging clean energy sector, *Academy of Management Journal*, Vol. 57(2), pp. 422–448.
- Podolny, J. M. (1993): A status-based model of market competition, *American Journal of Sociology*, Vol. 98(4), pp. 829–872.
- (1994): Market uncertainty and the social character of economic exchange, *Administrative Science Quarterly*, Vol. 39(3), pp. 458–483.
  - (2001). Networks as the pipes and prisms of the market, *American Journal of Sociology*, Vol. 107(1), pp. 33–60.

- Ragin, C. C. (1987): The comparative method: Moving beyond qualitative and quantitative strategies, Berkley: University of California Press.
- (2006): Set relations in social research: Evaluating their consistency and coverage. *Political Analysis*, Vol. 14, pp. 291–310.
  - (2008): Redesigning social inquiry: Fuzzy sets and beyond, Chicago: University of Chicago Press.
- Sapienza, H. J./Manigart, S./Vermeir, W. (1996): Venture capitalist governance and value added in four countries, *Journal of Business Venturing*, Vol. 11(6), pp. 439–469.
- Shepherd, D. A./Zacharakis, A./Baron, R. (2003): VCs' decision processes: Evidence suggesting more experience may not always be better, *Journal of Business Venturing*, Vol. 18(3), pp. 381–401.
- Sorenson, O./Stuart, T. E. (2001): Syndication networks and the spatial distribution of venture capital investments, *American Journal of Sociology*, Vol. 106(6), pp. 1546–1588.
- (2008): Bringing the context back in: Settings and the search for syndicate partners in venture capital investment networks, *Administrative Science Quarterly*, Vol. 53(2), pp. 266–294.
- Stinchcombe, A. L. (1965): Social structure and organizations, In: *Handbook of organizations*, edited by James. G. March, pp. 142–193. Chicago: Rand McNally.
- Stubner, S./Wulf, T./Hungenberg, H. (2007): Management support and the performance of entrepreneurial start-ups, *Schmalenbach Business Review*, Vol. 59, pp. 138–159.
- Uzzi, B. (1997): Social structure and competition in interfirm networks: The paradox of embeddedness, *Administrative Science Quarterly*, Vol. 42(1), pp. 35–67.
- Washington, M./Zajac, E. J. (2005): Status evolution and competition: Theory and evidence, *Academy of Management Journal*, Vol. 48(2), pp. 282–296.
- Weber, C. (2009): Corporate Venture Capitalists with a 'Bird's-Eye View'-A Dynamic Social Network Perspective, *Schmalenbach Business Review*, Vol. 61, pp. 195–224.
- Wright, M./Lockett, A. (2003): The structure and management of alliances: Syndication in the venture capital industry, *Journal of Management Studies*, Vol. 40(8), pp. 2073–2101.
- Wuebker, R./Hampl, N./Wüstenhagen, R. (2015): The strength of strong ties in an emerging industry: Experimental evidence of the effects of status hierarchies and personal ties in venture capitalist decision making, *Strategic Entrepreneurship Journal*, Vol. 9(2), pp. 167–187.